



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT 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: Kgalagadi Sout (Pty) Ltd
Reg No.: 2013/107661/07
Representative: Neno Knoetze
CELL NO: 082 675 7910
E-Mail: nnknoetze@webmail.co.za

POSTAL ADDRESS: P.O Box 82
Askham 8814
PHYSICAL ADDRESS: Farm Rea Askham

FILE REFERENCE NUMBER SAMRAD: NC30/5/1/3/2/10928MP

Important Notice

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

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

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

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

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

Objective of the 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 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.

DEFINITIONS

Alternatives - In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –

- i. The property on which or location where it is proposed to undertake the activity;
- ii. The type of activity to be undertaken;
- iii. The design or layout of the activity;
- iv. The technology to be used in the activity, and;
- v. The operational aspects of the activity.

Baseline - Information gathered at the beginning of a study which describes the environment prior to development of a project and against which predicted changes (impacts) are measured.

Basic Assessment Process – This is the environmental assessment applied to activities listed in Government Notice No. R 983 (Listing 1) as amended by GNR 327 (dated 7/04/2017) and No. R985 (Listing 3) as amended by GNR 324 (dated 7/04/2017). These are typically smaller scale activities of which the impacts are generally known and can be easily managed. Generally, these activities are considered less likely to have significant environmental impacts and, therefore, do not require a full-blown and detailed Environmental Impact Assessment (see below).

Biodiversity - The diversity, or variety, of plants, animals and other living things in a particular area or region. It encompasses habitat diversity, species diversity and genetic diversity.

Borehole - Includes a well, excavation, or any other artificially constructed or improved groundwater cavity which can be used for the purpose of intercepting, collecting or storing water from an aquifer; observing or collecting data and information on water in an aquifer; or recharging an aquifer.

Community - Those people who may be impacted upon by the construction and operation of the project. This includes neighbouring landowners, local communities and other occasional users of the area.

Construction Phase - The stage of project development comprising site preparation as well as all construction activities associated with the development.

Consultation - A process for the exchange of views, concerns and proposals about a project through meaningful discussions and the open sharing of information.

Critical Biodiversity Area - Areas of the landscape that must be conserved in a natural or near-natural state in order for the continued existence and functioning of species and ecosystems and the delivery of ecosystem services.

Cumulative Impacts - Direct and indirect impacts that act together with current or future potential impacts of other activities or proposed activities in the area/region that affect the same resources and/or receptors.

Environment - The surroundings within which humans exist and that are made up of

- i. The land, water and atmosphere of the earth;
- ii. Micro-organisms, plant and animal life;
- iii. Any Part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Authorisation (EA) – The authorisation by a competent authority of a listed activity.

Environmental Assessment Practitioner (EAP) – The person responsible for planning, management and co-ordination of environmental impact assessment, strategic environmental assessments, environmental management plans or any other appropriate environmental instrument introduced through regulations.

Environmental Impact Assessment (EIA) – In relation to an application to which scoping must be applied, means the process of collecting, organizing, analysing, interpreting and communicating information that is relevant to the consideration of that application. This process necessitates the compilation of an Environmental Impact Report, which describes the process of examining the environmental effects of a proposed development, the anticipated impacts and proposed mitigatory measures.

Environmental Impact Report (EIR) - A report assessing the potential significant impacts as identified during the Scoping phase.

Environmental Management Programme (EMPr) - A management programme designed specifically to introduce the mitigation measures proposed in the Reports and contained in the Conditions of Approval in the Environmental Authorisation.

Gross Domestic Product (GDP) by region - represents the value of all goods and services produced within a region, over a period of one year, plus taxes minus subsidies.

Hydrocarbons – Oils used in machinery as lubricants, including diesel and petrol used as fuel.

Impact - A change to the existing environment, either adverse or beneficial, that is directly or indirectly due to the development of the project and its associated activities.

Interested and Affected Party (I&AP) – Any individual, group, organization or associations which are interested in or affected by an activity as well as any organ of state that may have jurisdiction over any aspect of the activity.

Municipality –

- (a) Means a metropolitan, district or local municipality established in terms of the Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998); or
- (b) In relation to the implementation of a provision of this Act in an area which falls within both a local municipality and a district municipality, means
 - (i) The district municipality, or
 - (ii) The local municipality, if the district municipality, by agreement with the local municipality, has assigned the implementation of that provision in that area to the local municipality.

NEMA EIA Regulations - The EIA Regulations means the regulations made under section 24(5) of the National Environmental Management Act (Act 107 of 1998) (Government Notice No. R 982, R 983, R984 and R 985 in the Government Gazette of 4 December 2014 refer as amended by GNR 324, 325, 326 and 327 of 7 April 2017.

No-Go Alternative – The option of not proceeding with the activity, implying a continuation of the current situation / status quo

Public Participation Process (PPP) - A process in which potential Interested and Affected Parties are given an opportunity to comment on, or raise issues relevant to, specific matters.

Registered Interested and Affected Party – All persons who, as a consequence of the Public Participation Process conducted in respect of an application, have submitted written comments or attended meeting with the applicant or environmental assessment practitioner (EAP); all persons who have requested the applicant or the EAP in writing, for their names to be placed on the register and all organs of state which have jurisdiction in respect of the activity to which the application relates.

Scoping process - A procedure for determining the extent of and approach to an EIA, used to focus the EIA to ensure that only the significant issues and reasonable alternatives are examined in detail

Scoping Report – The report describing the issues identified during the scoping process.

Significant impact – Means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Spatial Development Framework (SDF) - A document required by legislation and essential in providing conservation and development guidelines for an urban area, which is situated in an environmentally sensitive area and for which major expansion is expected in the foreseeable future.

Specialist study - A study into a particular aspect of the environment, undertaken by an expert in that discipline.

Stakeholders - All parties affected by and/or able to influence a project, often those in a position of authority and/or representing others.

Sustainable development - Sustainable development is generally defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. NEMA defines sustainable development as the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

Visibility - The area from which the project components would actually be visible and depends upon topography, vegetation cover, built structures and distance.

Visual Character - The elements that make up the landscape including geology, vegetation and land-use of the area.

Visual Quality - The experience of the environment with its particular natural and cultural attributes.

Visual Receptors - Individuals, groups or communities who are subject to the visual influence of a particular project.

ACRONYMS AND ABBREVIATIONS

amsl	Above mean sea level
BA	Basic Assessment
BPEO	Best Practicable Environmental Option
CBA	Critical Biodiversity Area
DM	District Municipality
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
DSR	Draft Scoping Report
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
EStA	Early Stone Age
FoT	“Free on Truck “: means there is no processing and that it’s a raw product.
FSR	Final Scoping Report
GA	General Authorisation
GDP	Gross Domestic Product
GDPR	Regional Gross Domestic Product
GGP	Gross Geographic Product
GNR	Government Notice Reference
ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
km	Kilometres
km ²	Square kilometres
LED	Local Economic Development
LM	Local Municipality
LoM	Life of Mine
LN	Listing Notice
L/s	Litres per second
LSA	Late Stone Age
m ³	Metres cubed
MAP	Mean Annual Precipitation
MAPE	Mean Annual Potential Evaporation
MASMS	Mean Annual Soil Moisture Stress (% of days when evaporation demand was more than double the soil moisture supply)
MFD	Mean Frost Days
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
MSA	Middle Stone Age
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act 107 of 1998 as amended
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NEM:WA	National Environmental Management: Waste Act 59 of 1998
NFEPA	National Freshwater Ecosystem Priority Area

NHRA	National Heritage Resources Act 25 of 1999
NWA	National Water Act 36 of 1998
PES	Present Ecological State
RDL	Red Data List
ROM	Run of Mine
S&EIR	Scoping and Environmental Impact Reporting
SAHRA	South African National Heritage Resources Agency
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SLP	Social and Labour Plan
StatsSA	Statistics South Africa
WMA	Water Management Area
WML	Waste Management License
WUL A	Water Use License Application

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1. Contact Person & Contact Details EAP

1.1 Details of EAP

Name of The Practitioner: N.J. van Zyl

EAPASA Reg. Number 2019/2034

Tel No.: 082 8898696; Fax No.: 086 6562942

e-mail address: vanzyl.eap@gmail.com

1.2 Expertise of the EAP

The qualifications of the EAP

Current qualifications in this field were obtained through formal studies at the Cape Town Technicon, Nelson Mandela Metropolitan University and the University of the Orange Free State, which is the following:

- National Diploma Nature Conservation (1986)
- National Higher Diploma (B-Tech) Nature Conservation (1992)
- Master's Degree Environmental Management (MOB 750) (2001)

Further qualifications in this field were also obtained through short courses at the University of the Orange Free State, which is the following:

Environmental Impact Assessment (2001)
Wildlife Management through Veld Management (2001)
Resource evaluation and game ranch management (2003)
Arc GIS (2009)

Summary of the EAP's past experience.

(In carrying out the Environmental Impact Assessment Procedure)

With the implementation of the Mineral and Petroleum Resources Development Act 28 of 2002 Mr. van Zyl has started assisting small scale miners with all facets of applications for mining permits in terms of section 27 and prospecting rights in terms of section 16 of the MPRDA. Mr van Zyl has an excellent knowledge of the relevant acts applicable to the mining sector including the following:

- Mineral and Petroleum Resources Development Act 28 of 2002
 - Mineral and Petroleum Resources Development Amendment Act 49 of 2008
 - Mineral and Petroleum Resources Regulations 2004
 - National Environmental Management Act 107 of 1998 as amended
 - National Environment Laws Amendment Act 25 of 2014 as amended
 - NEMA: Environmental Impact Assessment Regulations, 2014
 - NEMA: Financial Provisioning Regulations, 2015
 - NEMA: Waste Act 59 of 2008 as amended
 - NEMA: Regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits, 2015
 - National Water Act 36 of 1998 as amended (with special attention to section 21 water uses)
- Since 2002 Mr. van Zyl completed more than 150 applications for mining permits and more than 100 applications for prospecting rights. The mineral regulations and environmental management for most of these projects were managed throughout the life of the project including:
- Applications – manual and Samrad
 - Prospecting work programs including financial and technical competence
 - Public participation process
 - EIA and EMP's now BAR and EMP's
 - Annual Rehabilitation Plans
 - Final Rehabilitation, Decommissioning and Mine Closure Plans including Risk Assessment Reports
 - Execution and registration of rights including sec 42 diagrams for MPTRD
 - Performance audits including reviews of Annual Closure Plans and Rehabilitation,

Decommissioning and Mine Closure Plans together with financial quantum reviews.

- Application for closure certificate

Although Mr. van Zyl specializes in small scale mining operations and prospecting operations that requires investigation, assessment and communication according to the procedure as prescribed in regulations 19 and 20 of the EIA Regulations he also assists 5 mining rights with environmental management. Other sections of the MPRDA that Mr. van Zyl has experience in is:

- Section 102 applications and Section 20 applications
- Section 53 Applications and Section 11 Applications

2. Location of the overall Activity

Table 1

Farm Name:	Portion of the Remainder of Farm Konga 250
Application area (Ha)	5Ha
Magisterial district:	Gordonia Northern Cape Province Dawid Kruiper Local Municipality Z F Mgcawu District Municipality
Distance from nearest town	125 Km North of Upington on the R360 69.5 Km South of Askham
21-digit Surveyor General Code	C02800000000025000000

2.1 Locality map

The proposed Mining Area is located on a 5Ha portion of the Remainder Farm Konga 250 situated in the Z F Mgcawu District Municipality and Dawid Kruiper Local Municipality of the Northern Cape Province in extend 10958.4533Ha.

The property is registered in the name of Rooipan Landgoed (Pty) Ltd by virtue of Title deed T2288/1981 filed in the Vryburg Deeds Office. LPI Code C02800000000025000000. The mining area is located approximately 69.5 Km South of Askham on the R360 and existing Farm Roads and 125 Km North of Upington on the R360 and existing Farm Roads. Refer to the layout plan **Figure 2 and 3** that shows the properties and co-ordinates.

Farm	Portion	Size (Ha)		LPI	Deed	Owner
		Property	Application			
Farm Konga 250	Remainder	10958.4533	5	C02800000000025000000	T2288/1981	Rooipan Landgoed (Pty) Ltd

Figure 1: Locality map

contemplated in regulation 2(2) read with regulation 2(3) of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 30 of 2002)

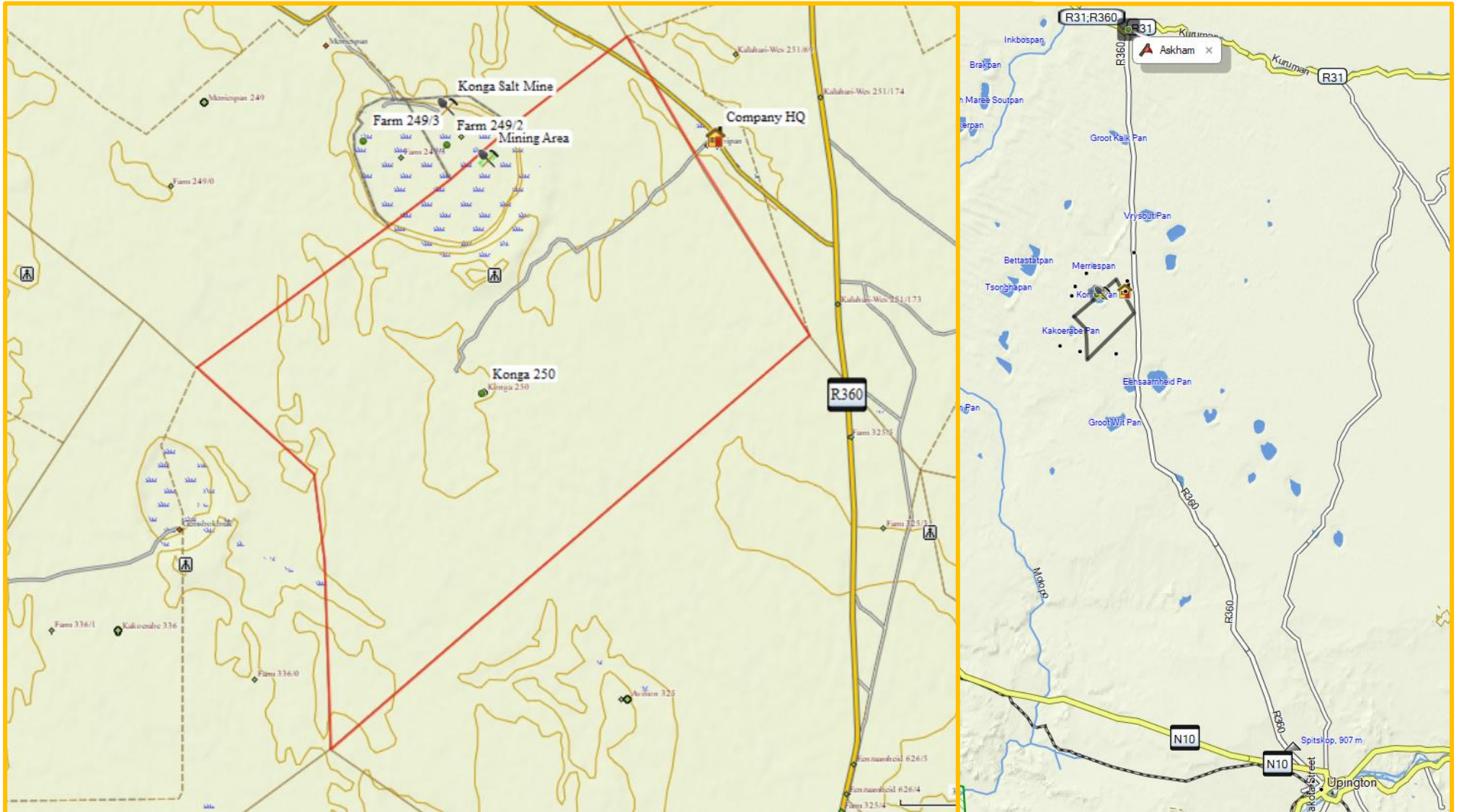


Figure 2: Layout plan

contemplated in regulation 2(2) read with regulation 2(3) of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 30 of 200

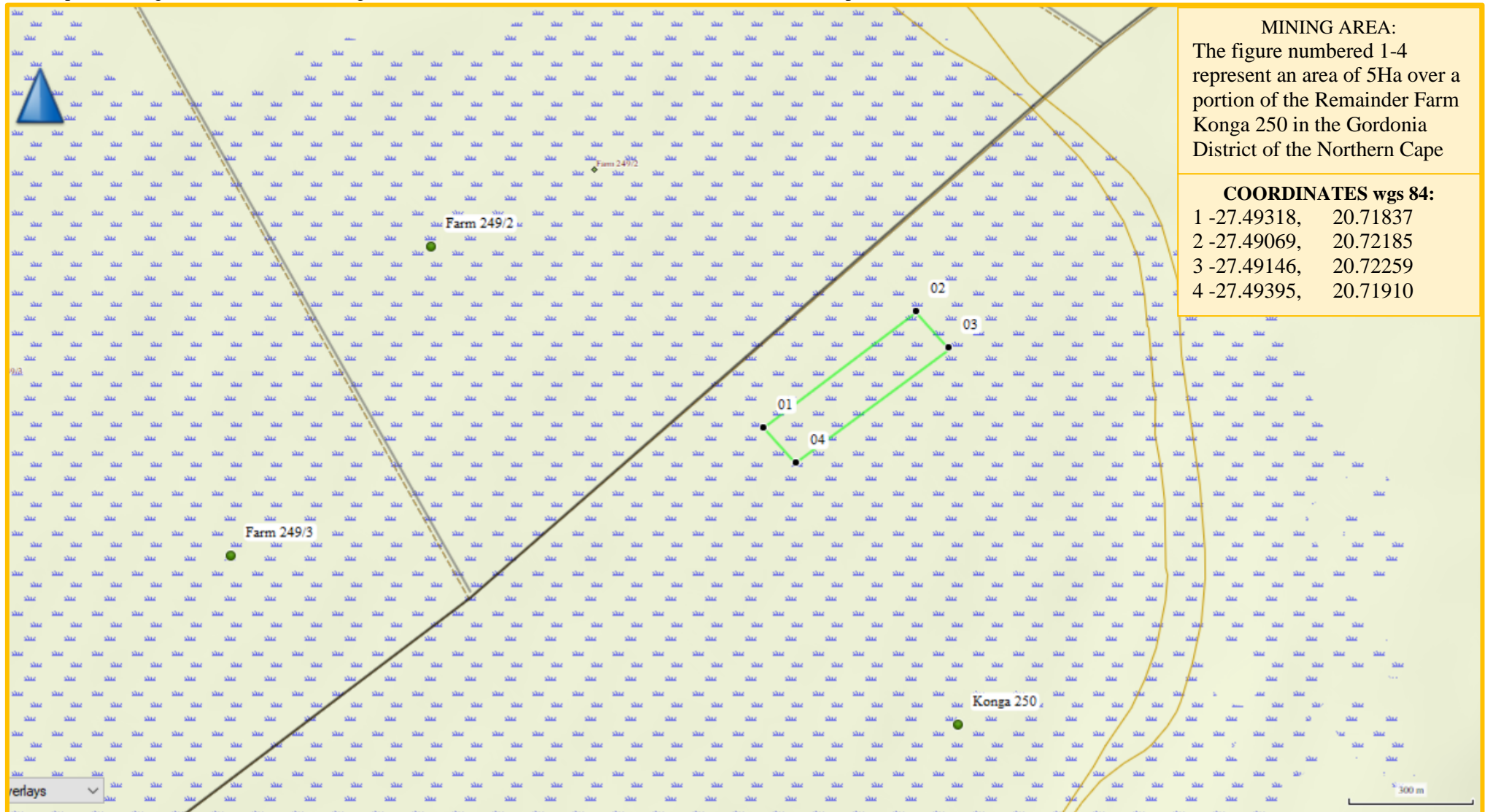


Figure 3: Site Plan



3. Description of the scope of the proposed overall activity

The proposed salt mining area is situated on a 5ha section of the Konga Pan on the Remainder of Farm Konga 250. The salt mining operation is to be carried out by the Applicant, Kgalagadi Sout (Pty) Ltd.

The mineral mined is salt, a clear, brittle mineral that contains the elements of sodium and chlorine. Its chemical formula is NaCl; its mineral name is halite. Salt forms clear, cube-shaped crystals. Impurities can cause salt to appear white, gray, yellow, or red.

All salt deposits began as salty water; brine from seas, oceans, and salt pans. South Africa's salt resources are confined to underground brines associated with inland salt pans, coastal salt pans and seawater. The majority of inland pans lie on rocks of the Karoo Sequence, in a curved belt between 50 and 60 km wide, extending from near Vryburg in the North-West Province to Hopetown on the eastern border of the Northern Cape, continuing westwards past Brandvlei. Most of the pans have formed on shales of the Dwyka and Eccu Groups, which, in that area, were deposited under marine conditions.

The salt deposit on the Farm Konga is an underground deposit of halite or rock salt, to be mined by solution mining. The Konga Pan is located along ancient drainage systems one of a considerable number of large salt pans found in the Kalahari region to the north of Upington. The salt obtained from the pans underlain by the Dwyka Group rocks has a relatively high sodium sulphate content, this probably results from the oxidation of iron sulphate to sulphate

The actual mining of salt only involves the pumping of the underground brine onto crystallisation pans and the harvesting of salt after crystal growth from where it is sold as a Free on Truck (FoT) product. The salt is formed by the process of evaporation and no waste is created. The coarse salt crystals are then harvested and stockpiled to dry from where it is sold. Transport to and the processing plants where it is refined, packaged and distributed does not form part of the mining operation.

This operation will start as small scale mining with the surface area of the crystallisation pans at 5Ha (Figure 1). It is very difficult to predict the lifespan of a mine such as this given that brine is replenished from run-off water (or other unknown events related to permeability and saturation variations, etc.). Depending on quality (95-99% NaCl) and quantity of available underground brine there is a possibility that the operation will expand but then an application for a mining right will be lodged and the information obtained during this mining operation will be used for the development of a resource statement as well as for the mine financial model.

It is estimated that salt harvesting will only start from year 2 and salt is harvested when crystals are about 50 mm thick producing about 350 tons every 6 weeks during summer months on a 1 Ha crystallisation pan. On average 5 Harvests take place per year.

Refer to Figure 3: Site Plan which shows the location of the proposed salt mining permit area, stockpile area including the laydown area and access routes.

Refer section 3.2 for a description of the activities to be undertaken

3.1 Listed and specified activities

Table 2: Listed and specified activities

NAME OF ACTIVITY	Aerial extent of the Activity Ha or m ²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
Mining of salt that involves the pumping of the underground brine onto crystallisation pans and the harvesting of salt after crystal growth from where it is sold as a Free on Truck (FoT) product including development of the following infrastructure and services: Refer to Figure 3: Mine Plan. Mobile ablution facilities. Accessing the site via existing farm tracks. Mobile ablution facilities.	Total footprint is 5 hectares	X	GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 (dated 11 June 2021): Activity 21: Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.”;	No
Develop crystallisation pans and stockpile platforms	4Ha Total extend of area required for mining including product stockpiles	X		No
Prepare areas for infrastructure such as: mobile containers for secure storage area once fully operational; waste management facilities (laydown areas, waste scrap salvage yard)	1Ha	X		No
The rehabilitation, decommissioning and closure of the salt mining site on the Konga Pan, which will only be required at final decommissioning and closure.		X		No

3.2 Description of the activities to be undertaken

The methodology and technology to be employed in each phase is described below:

3.2.1 Construction phase: Development of infrastructure and logistics

The construction phase for salt mines is however much longer than conventional mines as it takes a minimum of 1 year to develop the hardened surfaces of the crystallisation pans.

A total of 4 crystallisation pans will be developed and the development footprint will not expand any further with only the necessary maintenance being done. Depending on quality and quantity of available underground brine there is a possibility that the operation will expand but then an application for a mining right will be lodged and the information obtained during this mining operation will be used for the development of a resource statement as well as for the mine financial model.

During this small-scale mining operation mining of salt involves:

- the development of the 4 crystallisation pans with adjacent stockpile platforms raised 300mm above natural pan floor
- the pumping of the underground brine onto crystallisation pans average 80cm deep to form a hardened surfaces on which crystal growth occurs
- the average depth of boreholes is 60 meters but brine is pumped at a depth of 30 meters
- the preparation of the pan floor is critical to prevent brine seepage and to allow for movement of harvesting equipment without breaking the pan floor
- with the use of waste or low-grade salt from other mining operation the minimum period required to develop the hardened pan floor and stockpile platforms will be 1 year

All infrastructure will be available outside the pan floor located at the farmstead that serve as company HQ with buildings and services and associated infrastructure including, water and electricity supply, accommodation and domestic and industrial waste management facilities, salvage yard, service/wash bay. As all of the surface infrastructure is in place the development footprint will not expand any further with only the necessary maintenance being done.

All infrastructure was developed as part of farm improvements and the infrastructure area including access and service roads will therefore remain after mine closure in terms of section 44 of the MPRDA.

- Access and service roads:

Access to the mine works will be via the R360 between Upton and Askham and existing farm tracks. Service roads were constructed by upgrading existing farm tracks (fire break) and will remain the same over the life of the mine and no new roads will be developed. No haul roads will be necessary as the production of salt is taking place in one concentrated footprint.

- Water supply:

Although groundwater is used it cannot be seen as process water. Salt mining involves the pumping of brine from boreholes for the production of salt by means of solar evaporation. Annual abstraction required approximately 163840 m³. Most of this is abstracted when the pans are filled (8000m³ five times per year) and relatively little groundwater is abstracted to top up the pans (16 m³/day)

A General Authorization from DWAS is required for in terms of Sec 21 for altering bed, bank and characteristics (Sec21c), diverting the flow (Sec21i) and taking of water from a source (Sec21a). Potable water will be obtained from the farm and stored in a 2500l plastic tank.

- Electricity supply:

Electricity is only required for the submersible pumps and will be supplied by solar power or diesel powered gensets provided with spill prevention measures.

- **Logistics:**

No infrastructure is present or will be required due to the small scale and simple mining method. Logistics is available in the farmstead that will serve as company HQ. The product stockpile platforms to be developed as part of the mining area will also serve as parking area and laydown area. Secure storage for stores and equipment will be provided in the form of mobile containers and ablutions will also consist of mobile units.

- **Domestic Waste Management**

Domestic waste (lunch wrappers, containers, food tins, bottles) of daily workers will be collected in municipal refuse bags, sealed in plastic containers and transported weekly to the Upington or Askham solid waste disposal site. Waste collection drums will be provided at strategic points. Demarcate an area at the company HQ (farmstead) for construction of a "temporary waste storage area" for temporary collection and storage of the drums, prior to delivery to the solid waste disposal site for disposal. (On-site dumping/burial is not allowed).

- **Industrial Waste Management**

Identify and demarcate (by fences) the following sites at the farmstead (Company HQ):

- A salvage yard for temporary storage of scrap steel and equipment prior to sale or removal as scrap. Arrange regular sale and collection of scrap from the site.
- A workshop with temporary storage area for all used lubrication products and other hazardous chemicals, banded fuel storage and wash bay.

The wash bay must be provided with oil traps from which oil can be bailed out.

A concrete platform fenced with signposts are to be constructed to store used oil and drums containing used spares, cloths, etc. which are oil contaminated and must be temporarily stored for collection/dispatch to suitable regional disposal site.

All waste oils from servicing of vehicles must be collected in the facility for collection by a waste oil recycling company.

Contaminated spares, oil filters, gaskets, etc. will be collected in a separate drum at the designated storage facility for disposal at a suitable site off-site.

Drip trays or PVC facility needs to be used when servicing equipment on site to prevent any oil spills. All moving equipment needs to be equipped with permanent drip trays to prevent oil spills.

No engines or other equipment parts are to be stored in the scrap yard without either having had the oil drained or suitable measures have been taken to prevent leaking of oil.

- **Diesel and Lubricant Handling Program:**

Identify area for citing of diesel bulk tank at the farmstead (Company HQ) to receive fuel from the delivery tanker truck. Provide tank with bund wall and apron. Refueling either of equipment or of the mobile trailer bowser from the diesel bulk tank must make use of a drip tray or PVC lining.

Generator bays need to be fitted with a steel tray equipped with a drain along its extremities to collect any oil and diesel contaminated run-off and channel it to the oil trap where separated oil will be collected and disposed of in the oil recycling container. Any oil spills are to be treated with Spillsorb or equivalent as per the product instructions.

Instruct the staff in the reasons for good fuel management and the alternative consequences.

3.2.2 Operational phase

Salt mining is characteristically conducted in an unconventional manner in that no rock is broken or excavations created in the mining process. No scarce skills are necessary and salt production essentially entails the pumping of brine onto hardened surfaces where crystal growth occurs by solar evaporation. Topsoil management a critical part of other mining operations is therefore not applicable to salt mining and no fine residue or overburden waste dumps are created as the mining of salt do not produce any overburden or waste rock.

The pan identified for mining has already been disturbed by historic salt mining operations and salt mining on this property has been done for more than 30 years. The mining area will consist of the crystallisation pans, bore holes, electricity supply, stockpile platforms and laydown area. In the case of inland pans, salt production consists of the pumping of brine into evaporation (concentration) ponds and from there into crystallisation pans where salt can crystallize through evaporation. This operation does not make use of concentration ponds and the brine is delivered via a pipeline from the pumps directly to the different crystallisation pans.

The loose scree material on the pan floor is removed to form a $\pm 300\text{mm}$ bund wall to prevent storm water from flooding the crystallisation pans as freshwater can ruin the production. Brine is then pumped into these crystallisation pans over a period of one year to form a level hardened floor on which salt can crystallize. The first salt to be produced is used to build platforms around the pans. When the pans are in full production these platforms are used for stockpiling the salt until it is dry.

It is estimated that salt harvesting will only start from year 2 and salt is harvested when crystals are about 50 mm thick producing about 350 tons every 6 weeks during summer months on a 1 Ha crystallisation pan. On average 5 harvests take place per year. In the summer (September to April) months production rates are at the optimum level and during the winter (May to August) the salt pans go into a resting period where no salt is being produced. During this resting period the annual rehabilitation plan will be implemented and available surface disturbances will be rehabilitated during the resting periods.

No structures will be affected by blasting as no blasting takes place in the mining process and no subsidence will ever occur given that only surface mining is taking place.

A total of 4 crystallisation pans will be developed and the development footprint will not expand any further with only the necessary maintenance being done.

During this small-scale mining operation mining of salt involves:

- the development of the 4 crystallisation pans with adjacent stockpile platforms raised 300mm above natural pan floor
- the pumping of the underground brine onto crystallisation pans average 80cm deep to form a hardened surfaces on which crystal growth occurs
- the average depth of boreholes is 60 meters but brine is pumped at a depth of 30 meters
- the preparation of the pan floor is critical to prevent brine seepage and to allow for movement of harvesting equipment without breaking the pan floor
- with the use of waste or low-grade salt from other mining operation the minimum period required to develop the hardened pan floor and stockpile platforms will be 1 year

Limited equipment is used in the mining process and include:

- Electric pumps driven by solar power for pumping of brine to crystallisation pans
- Tractor with harrow to loosen salt after crystal growth
- Tractor with front and back scraper for harvesting of salt
- Front end loader for loading
- Dump trucks for transport between crystallisation pans and stockpile platforms

3.2.3 Decommissioning phase

Site rehabilitation can make the land more valuable and attractive for resale. Additionally, establishing a closure strategy (and communicating that activity to the public) can help enhance the company's reputation as a socially-responsible operation. The decommissioning and closure phase at the end of the life of the mine will consist of implementing the Final Rehabilitation, Decommissioning and Closure Plan (attached at Annexure 1).

4. Policy and Legislative Context

Table 3: Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
Legislation		
<p>Constitution of South Africa, specifically everyone has a right;</p> <ul style="list-style-type: none"> a. to an environment that is not harmful to their health or wellbeing; and b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: <ul style="list-style-type: none"> i. prevents pollution and ecological degradation; ii. promote conservation; and iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. 	Mining activities	<p>The mining activities shall be conducted in such a manner that significant environmental impacts are avoided, where significant impacts cannot all together avoided be minimised and mitigated in order to protect the environmental right of South Africans.</p>
<p>Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) section 16 (as amended)</p> <p>MPRDA Regulations as amended by GNR349 of 18 April 2011.</p>	Application to the DMR for a mining permit in terms of Section 27 for an area not exceeding 5 hectares in extent.	<p>The conditions and requirements attached to the granting of the Mining Permit will apply to the mining activities.</p> <p>DMR is the Competent Authority (CA) for this NEMA and NEM:WA application.</p>
Mine Health and Safety Act, 1996 (No. 29 of 1996) (MHSA) and Regulations	Mining activities	Mining operations will be governed by the MHSA and associated Regulations.
<p>National Environmental Management Act, No 107 of 1998 (as amended) (NEMA)</p> <p>Environmental Impact Assessment Regulations, 2014 (EIA Regulations 2014) and Environmental Impact Assessment Regulations Listing notices 1, 2 and 3 published in terms of NEMA in Government Notices 982, 983, 984 and 985 of 4 December 2014 (as amended by GN No. 517 of 11 June 2021)</p> <p>Regulation 16{1}(b)(v) submission of a report generated from the national web based environmental screening tool report will be compulsory when submitting an application for environmental authorisation in terms of regulation 19 and regulation 21</p>	Application to the DMR for Environmental Authorisation in terms of the 2014 EIA Regulations	<p>An Application for Environmental Authorisation must be submitted to DMR for an Environmental Authorisation. The application for EA including screening tool report must be acknowledged by the competent authority before the BAR process can start.</p> <p>The listed activities (Listing Notice 1, Activity 21) that are triggered determine the Environmental Authorisation (EA) application process to be followed.</p>

<p>"Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Section 24(5) (a) and (h) and 44 of NEMA, 1998, when applying for EA ("the Protocols"), in Government Gazette (GG) 43110 (dated 20 March 2020) and Government Notice (GN) 320. Protocols in GG 43855 of GN No. 1150 dated 30 October 2020 provide for Terrestrial and Animal Plant Species.</p> <p>Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production</p> <p>National Guideline on minimum information requirements for preparing Environmental Impact Assessments for mining activities that require environmental authorisation, published in terms of NEMA in Government Notice 86 of 2018</p>	<p>Application to the DMR for Environmental Authorisation in terms of the 2014 EIA Regulations</p>	<p>Where specialist assessments were identified the protocols for compiling the identified specialist assessments for specific environmental themes provided as part of the screening tool will form part of the terms of reference for specialist as this protocol replaces the requirements of Appendix 6 of the EIA Regulations. Refer Section 10.3 Summary of specialist reports</p> <p>These regulations have informed the Final Closure Plan and financial provisioning for the Project. The disturbed area shall be rehabilitated in such a way that is stable, non-polluting, non-eroded, free from alien invasive species and suitable for the agreed post closure land use.</p> <p>The compilation of this Basic Assessment Report including a Final Rehabilitation, Decommissioning and Mine Closure Plan and the Public Participation Process are required in terms of NEMA.</p>
<p>National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA) NEM: WA (as amended)</p> <p>National Waste Information Regulations published in GN 625 of 2012</p> <p>Waste Classification and Management Regulations in GN 634 of 2013</p> <p>Waste listed activities in GN 921 of 2013</p> <p>National Norms and Standards for the Storage of Waste, in GN 926 of 2013</p> <p>National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening or Baling of General Waste, in GN 1093 of 2017</p> <p>National Norms and Standards for the Assessment of Waste for Landfill Disposal, in GN 635 of 2013</p> <p>Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation in GN 632 of 24 July 2015.</p>	<p>Part B: EMP and Section 8 and 9</p> <p>General waste management measures as part of environmental awareness plan</p>	<p>These regulations have informed the planning and management of waste for the Project.</p> <p>No listed activities are triggered or included as part of the Environmental Authorisation (EA) application process.</p> <p>The generation of potential waste will be minimized through ensuring employees of the Applicant are subjected to the appropriate environmental awareness campaign before commencement of salt mining.</p> <p>All waste generated during the mining activities will be disposed of in a responsible legal manner.</p> <p>Proof of legal disposal will be maintained on site.</p>
<p>National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) [NEMBA]</p> <p>National list of ecosystems that are threatened and in need of protection, 2011 (in GN 1002 dated 2 December 2011)</p> <p>Alien and Invasive Species List, 2016 (in GN No. 864 dated 29 July 2016)</p>	<p>Section 5 and 8</p> <p>Figure 4, 5, 6, 7, 8, 9, 10, 11 & 12.</p>	<p>There are no listed Critically Endangered, Endangered or Vulnerable ecosystems on site.</p> <p>The site is located within in an Ecological Support Area (ESA).</p> <p>Alien invasive vegetation management is included in the EMP.</p>

<p>National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004). National Dust Control Regulations in GN R827 of 1 November 2013 List of Activities which Result in Atmospheric Emissions, published in GN 893 of 2013 National Ambient Air Quality Standards (NAAQS), in GN 1210 of 2009 National Atmospheric Emission Reporting Regulations, in GN 283 of 2015</p>	Section 9.6.5	<p>These regulations have informed the planning and management of emissions from the Project.</p> <p>Dust control measures are included in the EMPr</p>
<p>National Heritage Resources Act, 25 of 1999 (“NHRA”)</p>	Section 8	<p>Refer to Annexure 3 for a copy of the Heritage Impact Assessment</p>
<p>National Water Act (Act 36 of 2008) Regulations on Use of Water for Mining and Related Activities aimed at the Protection of Water Resources in GNR 704 of 1999 Regulations Regarding the Procedural Requirements for Water Use License Applications and Appeals in GNR 267 of 2017 Several General Authorisations have been published in terms of Section 39 of the NWA (various dates) Purification of Waste Water or Effluent, published in GNR 991 of 1984 Regulations for the erection, enlargement, operation and registration of Water Care Works, published in GNR 2834 of February 1986</p>	Section 8	<p>These regulations have informed the planning and management of water and stormwater arising from the Project.</p> <p>The applicable Water Use activities are Section 21(a) related to abstraction of groundwater, Section 21(c) related to impeding or diverting the flow of water in a watercourse, and Section 21(i) related to altering the bed, banks, course or characteristics of a watercourse.</p>
<p>Promotion of Administrative Justice Act, 2000 (Act 3 of 2000) [PAJA]</p>	Decision by the Competent Authority	<p>Gives effect to section 33 of the Constitution that requires that “Everyone has the right to administrative action that is lawful, reasonable and procedurally fair”. All administrative actions must be based on the relevant considerations</p>
<p>Protection of Personal Information Act, 2013 (Act No. 14 of 2013) (POPIA) Clarity On Applicability of The Protection of Personal Information Act, 2013 To Requirements of The Environmental Impact Assessment Regulations, 2014 Relating to Registers of Interested and Affected Parties and The Inclusion of Comments in Reports (circulated on 3 September 2021)</p>	Annexure 2: PPP Report (to be included with Final BAR)	<p>The guidance document provided by the Department of Forestry, Fisheries and the Environment was used to determine the information to be included or excluded from the public domain to protect private or personal information.</p>
<p>Land Use Planning Act, 2014 (Act 3 of 2014) (LUPA)</p>	Comments required from the Local Municipalities.	<p>Consent use in terms of the Municipal Planning By-Law, 2015 is required to permit mining on properties that are zoned for Agricultural purposes.</p>
<p>Hazardous Substances Act, 1973 (Act No. 15 of 1973) (HAS)</p>	Section 8 and 9	<p>These regulations have informed the planning and management of hazardous substances for the Project.</p>

National Forest Act, 1998 (Act No. 84 of 1998) (NFA)	Section 8	Permit(s) will be required if any protected species are cut, removed and/or translocated from the Project footprints.
Provincial Environmental Legislation: The Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009) (NCNCA)	Section 8	
National Environmental Management: Protected Areas Act, 2003 (No. 57 of 2003) (NEM:PAA)	Section 8 and 9	These regulations have informed the planning and management of the Project. The Project footprint does not overlap with any existing protected areas, or any areas identified for protected area expansion.
Municipal Plans and Policies		
ZF Mgcawu District Municipality Draft IDP 2021 - 2022	Section 5.3	The Need & Desirability of the project is referenced in terms of the District Municipality IDP, specifically relating to employment creation, and ensuring the implementation of environmentally sustainable practices, along with an integrated approach to addressing climate change response, which are included in the EMPr
Dawid Kruiper Draft Integrated Development Plan (2017 - 2022) & Spatial Development Framework	Section 5.4	The Need & Desirability of the project is referenced in terms of the IDP, specifically relating to employment creation and sustainable resource utilisation. Relevant mitigation measures are included in the EMPr.
Northern Cape Provincial Spatial Development Framework (NCPSDF)	Section 5.5	Sustainable development is a key consideration as addressed in this impact assessment report.
Northern Cape Provincial Growth and Development Strategy 2004-2014 (NCPGDS)	Section 5.6	Sustainable development is a key consideration as addressed in this impact assessment report.
Standards, Guidance and Spatial Tools		
Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute. 2013. Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector. Pretoria.	Section 5.1 & 8. Figure 4	The mitigation measures to address and mitigate the potential impacts of the mining are included in the EMPr.
DEA Guideline on Need & Desirability (2017)	Section 5.7	Refer to Section 5.7
DEA Guideline on PPP	Section 7 & Table 4	Refer to Section 7 & Table 4
DMR Guideline on Consultation with Communities and I&APs (undated)		
DEAT Integrated Environmental Management Information Series 5: Impact Significance (2002)	Section 8 and 9	Refer Impact Assessment Tables
DEAT Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Section 8 and 9	Refer Impact Assessment Tables

ZF Mgcawu District Biodiversity Sector Plan (2008)	Baseline environmental description	Used during desktop research to identify sensitive environments within the mining right area.
BGIS (www.bgis.sanbi.org)		
SANS 10103:2008 The Measurement and Rating of Environmental Noise with Respect to Land Use, Health, Annoyance and to Speech Communication	Management / Monitoring measures	Used to set the standard allowable for noise mitigation measures are included in the EMPr.
SANS 1929:2005 Edition 1.1 – Ambient Air Quality Limits for Common Pollutants		Standard for dust fallout. Dust mitigation measures are included in the EMPr.

5. Need and desirability of the proposed activities

5.1 Mining and Biodiversity Guidelines (2013)

The Mining and Biodiversity Guidelines (2013)¹ state that: “Sustainable development is enshrined in South Africa’s Constitution and laws. The need to sustain biodiversity is directly or indirectly referred to in a number of Acts, not least the National Environmental Management: Biodiversity Act (No. 10 of 2004) (hereafter referred to as the Biodiversity Act) and is fundamental to the notion of sustainable development. International guidelines and commitments as well as national policies and strategies are important in creating a shared vision for sustainable development in South Africa”.

DMR, as custodian of South Africa’s mineral resources, is tasked with enabling the sustainable development of these resources. This includes giving effect to the constitutional requirement to “prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”².

The primary environmental objective of the MPRDA is to give effect to the “environmental right”³ contained in the South African Constitution. The MPRDA further requires the Minister to ensure the sustainable development of South Africa’s mineral resources, within the framework of national environmental policies, norms and standards, while promoting economic and social development.

The Mining and Biodiversity Guidelines (2013) document identifies four categories of biodiversity priority areas in relation to their biodiversity importance and implications for mining. The categories of relevance to this Mining area as shown in Figure 4 are: “Category D: Moderate Biodiversity Importance” – moderate risk for mining.

These categories have since been super-ceded by the Critical Biodiversity Area (CBA) map (refer to **Figure 8b**), which would be interpreted as Category B is now CBA 1, Category C is now CBA 2 and Category D is now Ecological support areas.

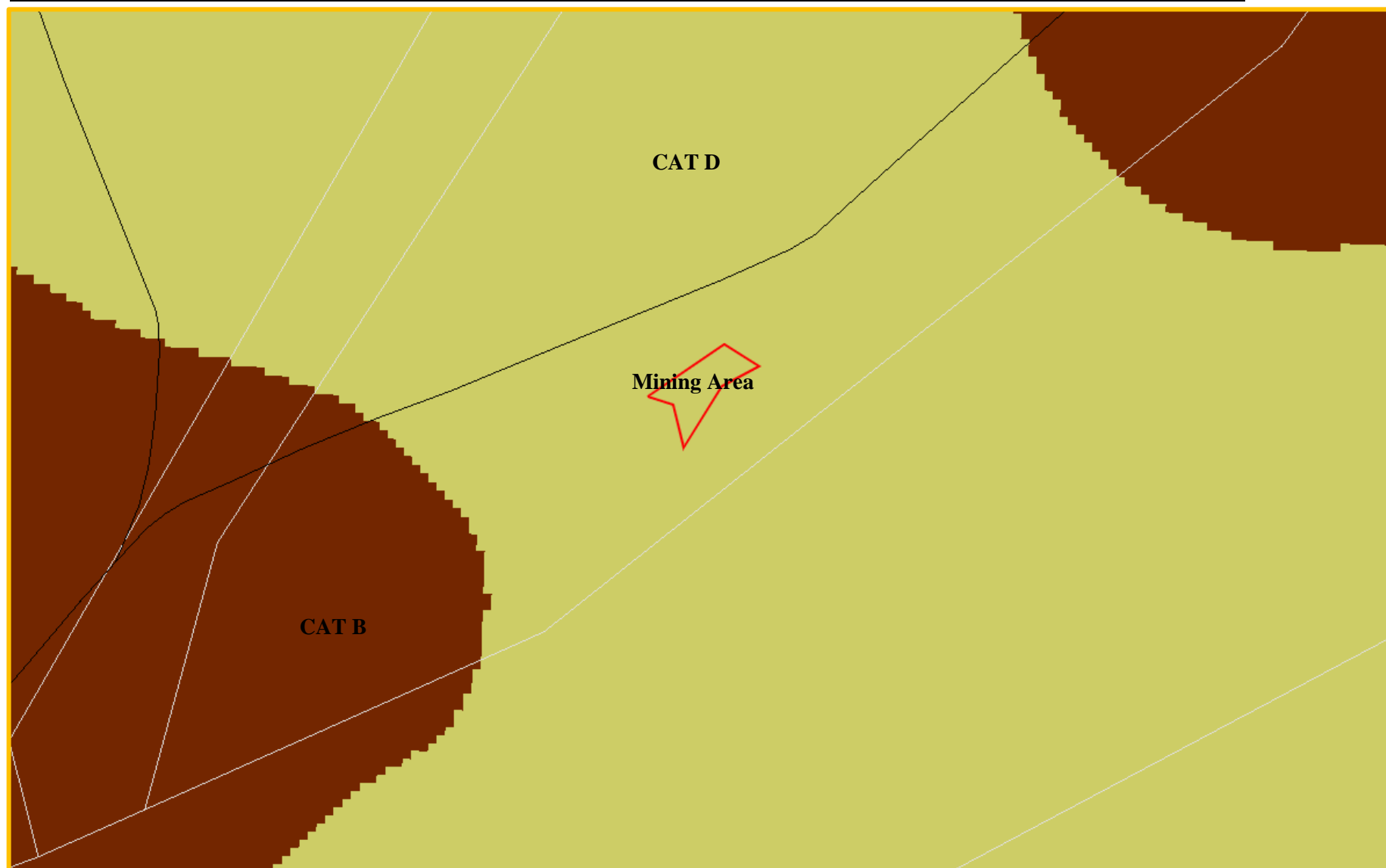
These categories basically require an environmental impact assessment process to address the issues of sustainability.

¹ Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute. 2013. Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector. Pretoria.

² Constitution of the Republic of South Africa (No. 108 of 1996).

³ Section 24 of the Constitution states that “everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

Figure 4: Location of Mining area in terms of Mining and Biodiversity Guidelines sourced off SANB BGIS Map Viewer



5.2 Employment and other benefits

The proposed salt mining activity is considered to be a temporary land use, and the area will be rehabilitated in accordance with the Mining Closure and Rehabilitation Plan, attached as Annexure 1. The benefits of the project can be divided into social and economic classifications. The mine will provide limited direct employment for local persons. The operation further creates indirect employment opportunities in equipment supply, transport and animal food industries.

5.3 ZF Mgcawu District Municipality Draft IDP 2021 - 2022

The ZF Mgcawu District Municipality accounts for about 30% of the Northern Cape economy, and the ZF Mgcawu's economy is largely dominated by mining and agriculture. The vision of this DM is: "Quality support to deliver quality services". The IDP's strategic objective of relevance to this project is considered to be "(v) To Facilitate the Development of Sustainable regional land use, economic, spatial and environmental planning frameworks that will support and guide the development of a diversified, resilient and sustainable district economy", with Local Economic Development (LED) objectives of business development and support highlighted under this objective. The provision of job security, employment and skills transfer are identified as positive environmental impacts in this report.

The ZF Mgcawu District Municipality acknowledges that climate change poses a threat to the environment, its residents, and future development. Actions are required to reduce carbon emissions (mitigation) and prepare for the changes that are projected to take place (adaptation) in the district. ZF Mgcawu District Municipality has therefore prioritised the development of a Climate Change Vulnerability Assessment and Climate Change Response Plan. Through this program key climate change vulnerability indicators were identified. These are indicators where ZF Mgcawu District Municipality may be at risk to the impacts of climate change, and include biodiversity the environment and water.

Changes in climate are predicted to result in the shifting of bioregions in South Africa. In the ZF Mgcawu District Municipality, it is projected that with the warmer temperatures that there will be a replacement of Nama Karoo biome with Savanna and Desert biomes. A large amount of Nama Karoo and Nama Karoo related species will be lost. Terrestrial and river ecosystems and their associated species will also be negatively impacted. The proposed priority responses in the biodiversity and environmental Sector are:

- Research on better veld/land management practices (overgrazing) & awareness conservation.
- Monitoring and enforcement of municipal by-laws focusing on conservation and pollution issues.
- Pursue formal conservation of threatened, endangered and unprotected vegetation types not represented in formal conservation areas.

The ZF Mgcawu District Municipality is currently experiencing issues of water scarcity and quality. Climate change is expected to exacerbate this problem. Drought, reduced runoff, increased evaporation, and an increase in flood events will impact on both water quality and quantity.

The effects of climate change, such as flood events, on the proposed mining project will be mitigated as per the measures contained in the EMP. The mitigation for emissions of greenhouse gases from vehicles associated with the mining activities is included in the EMP.

5.4 Dawid Kruiper Draft Integrated Development Plan (2017 - 2022) & Spatial Development Framework

The Dawid Kruiper Local Municipality (DKLM) comprises an area of about 44 231km² and is formally the largest Local Municipality in the whole of South Africa. DKLM makes up 12% of the total Northern Cape Province and about 4% of the whole of South Africa.

Integrated Development Plan (IDP)

In the Constitution of South Africa (108 of 1996) the objectives of a municipality or local government structure are described as follows under “section 152. (1) the objects of local government are-

- (a) to provide democratic and accountable government for local communities;
- (b) to ensure the provision of services to communities in a sustainable manner;
- (c) to promote social and economic development;
- (d) to promote a safe and healthy environment; and
- (e) To encourage the involvement of communities and community organisations in the matters of local government”.

In terms of economic indicators, the Dawid Kruiper Municipality enjoys comparative advantages in all of the economic sectors, except mining, compared to the district. The Municipality should therefore capitalise on these advantages to further strengthen its position in the district. Furthermore, the fastest growing sectors in the Municipality were those of the agriculture, electricity and water, and mining sectors. The current growth occurring in these sectors should be exploited to ensure the creation of new job opportunities for local people.

The long-term vision for socio-economic development and environmental sustainability for the municipality is expressed in the SDF, in addition to the guidelines for a land use management.

The proposed salt mining project will provide job security, local employment, local skills transfer, economic upliftment and salt supply for the animal fodder sector, in a sustainable manner as ensured through this environmental impact assessment process and implementation of the Closure and Rehabilitation Plan.

Spatial Development Framework (Draft Report August 2017; Section A)

The SDF contains “Principle 2: Spatial Sustainability: which states that spatial planning and land use management systems must promote the principles of socio-economic and environmental sustainability through encouraging the protection of prime and unique agricultural land; promoting land development in locations that are sustainable and limit urban sprawl; consider all current and future costs to all parties involved in the provision of infrastructure and social services so as to ensure for the creation of viable communities.”

5.5 Northern Cape Provincial Spatial Development Framework (NCPSDF)

The NCPSDF states that the: “Northern Cape is not one of South Africa’s richest provinces in monetary terms. Accordingly, there is a need for coherent prioritisation of projects within a spatial economic framework that takes due cognisance of environmental realities and the imperative to create a developmental state”. The NCPSDF was designed as an integrated planning and management tool for all spheres of government to facilitate on-going sustainable development throughout the province.

The NCPSDF, together with the Provincial Growth and Development Strategy (PGDS), is set to fulfil an important role as a spatial and strategic guideline that addresses the key challenges of poverty, inequality and environmental degradation through the innovative use of the resources (capital) of the province for the benefit of all concerned.”

The potential for job security, employment and skills transfer are identified as positive environmental impacts in this impact assessment. The potential negative environmental

impacts will be mitigated through the implementation of the EMP and the Closure and Rehabilitation Plan, to ensure a sustainable mining activity.

5.6 Northern Cape Provincial Growth and Development Strategy (NCPGDS)

The NCPGDS has the following vision for the province: “Building a prosperous, sustainable growing provincial economy to reduce poverty and improve social development.” The strategy for the growth and development of the province is guided by the following key principles:

- Equality – notwithstanding the need to advance persons previously disadvantaged, development planning should ensure that all persons should be treated equally;
- Efficiency –the promotion of the optimal utilisation of existing physical, human and financial resources;
- Integration – the integration of spatially coherent regional and local economic development and improved service delivery systems.
- Good Governance – the promotion of democratic, participatory, cooperative and accountable systems of governance and the efficient and effective administration of development institutions;
- Sustainability – the promotion of economic and social development through the sustainable management and utilisation of natural resources and the maintenance of the productive value of the physical environment;
- Batho Pele – the placement of people and their needs at the forefront of its concern and serve their physical, psychological, developmental, economic, social and cultural interests equitably.

5.7 DEA Guideline on Need and Desirability (2017)

As referenced in the DEA Guideline on Need and Desirability (2017), NEMA defines “evaluation” as “the process of ascertaining the relative importance or significance of information, in the light of people’s values, preferences and judgements, in order to make a decision.” In evaluating each impact (negative and positive) in terms of each of the aspects of the environment, “need and desirability” must specifically be considered in the analysis of each impact of the proposed activity. However, to determine if the proposed activity is the best option when considering “need and desirability”, it must also be informed by the sum of all the impacts considered holistically. In this regard “need and desirability” also becomes the impact summary with regard to the proposed activity.

These Guidelines state that: “In considering the impact summary it must be remembered that ultimately the aim of EIA is to identify, predict and evaluate the actual and potential risks for and impacts on the geographical, physical, biological, social, economic and cultural aspects of the environment, in order to find the alternatives and options that best avoid negative impacts altogether, or where negative impacts cannot be avoided, to minimise and manage negative impacts to acceptable levels, while optimising positive impacts, to ensure that ecological sustainable development and justifiable social and economic development outcomes are achieved”.

The **principles of Integrated Environmental Management (EIM)** as set out in Section 23 of NEMA have been considered in this environmental assessment as explained below.

- **Environmental management placing people and their needs at forefront of its concern, and serve their physical, physiological, developmental, cultural and social interests equitably** – This process is being undertaken in a transparent manner and all effort is being made to involve all the relevant stakeholders and Interested and Affected Parties. I.e., Public participation is being undertaken to obtain the issues / concerns / comments of the affected people for input into the process. Refer to Section 7 in this report.

- **Socially, environmentally and economically sustainable development** – All aspects of the receiving environment and how this will be impacted have been considered and investigated to ensure a minimum detrimental impact to the environment. Where the impact could not be avoided, suitable and effective mitigation measures have been proposed to ensure that the impact is mitigated, and these are detailed in Table 13, and included in the EMPr.
- **Consideration for ecosystem disturbance and loss of biodiversity** – the project site is identified as a Critical Biodiversity Area (CBA) 1 but all invasive activities will be restricted to the drainage channel devoid of vegetation (**refer Figure 8b**). The vegetation type found on site is not listed in the "National List of Threatened Ecosystems that are Threatened and in Need of Protection" in GN 1002 dated 9/12/2011. Ecosystem disturbance and loss of biodiversity are considered in the impact assessment. The mining process is considered to be a relatively benign type of operation. Rehabilitation back to the natural state is a key component and will be undertaken in a phased manner as the activities progress. This EMPr and Closure Plan (Annexure 1) proposes mitigation measures which will minimise the impacts of the mining on the environment.
- **Pollution and environmental degradation** – The implementation of recommendations made and proposed mitigations are detailed in Table 13 the EMPr, and Closure Plan **Annexure 1** to ensure minimum environmental degradation.
- **Landscape disturbance** – All aspects of the receiving environment and how this will be impacted have been considered and investigated to ensure a minimum detrimental impact to the environment. Where the impact could not be avoided, suitable and effective mitigation measures have been detailed in Table 13 the EMPr, and Closure Plan Annexure 1 to ensure that the impacts are mitigated. For example, landscape disturbance impacts associated with the mining operation, erosion and dust have been identified and detailed mitigation measures are included in the EMPr to minimise the impacts.
- **Waste avoidance, minimisation and recycling** – These aspects were considered and incorporated into in Table 13 the EMPr, and Closure Plan Annexure 1.
- **Responsible and equitable use of non-renewable resources** – These aspects have been considered and there is not much scope to reduce the use of non-renewable resources, such as vehicle transport.
- **Avoidance, minimisation and remedying of environmental impacts** - All aspects of the receiving environment and how this will be impacted have been considered and investigated to ensure a minimum detrimental impact to the environment. Where the impact could not be avoided, suitable and effective mitigation measures will be proposed to ensure that the impact is mitigated. A number of mitigation measures have been included in Table 13 the EMPr, and Closure Plan Annexure 1.
- **Interests, needs and values of Interested and Affected Parties** – This process has been undertaken in a transparent manner and all effort is being made to involve all the relevant stakeholders and Interested and Affected Parties (I&APs). Comments received from I&APs on the Draft Basic Assessment Report to be included as part of the Final Basic Assessment Report are summarised in Section 7, Table 4.
- **Access of information** – Potential Interested and Affected Parties were notified of the proposal and the availability of the DBAR. They were also notified of having the opportunity to register as an I&AP and registered I&APs have been kept informed of the commencement of the Basic Assessment process.
- **Promotion of community well-being and empowerment** – This process is being undertaken in a transparent manner and all effort is being made to involve all the relevant stakeholders and registered I&APs.

Potential impacts on the biophysical environment and socio-economic conditions have been assessed, and steps have been taken to mitigate negative impacts, and enhance positive impacts. Adequate and appropriate opportunity is being provided for public participation. Environmental attributes have been considered based on the available information, and environmental management practices have been identified and established to ensure that the proposed activities will proceed in accordance with the principles of IEM.

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

The site was selected as it contains good quality salt located in a convenient position in close proximity to transport routes. The layout and technology of this salt mining project has been determined by the shape, position and orientation of the mineral resource, which is the salt in the Konga Pan. Refer to the Site Plan attached as **Figure 3**. The operational approach is practical and based on best practice to ensure a phased approach of mining followed by rehabilitation in sequential stages.

- The preferred and only location of the salt mining activity is on the earmarked section of the Konga Pan.
- The preferred and only activity is the mining of salt.
- The preferred and only technology is the use of machinery to remove the salt from the Konga Pan, and for trucks to transport the salt to the clients.

The Site Plan or layout of the activity on the site is shown in **Figure 3**.

There are therefore no other reasonable or feasible sites, layouts, activities, technologies, or operational alternatives for further consideration in the impact assessment component, other than the mandatory “no-go” alternative that must be assessed for comparison purposes as the environmental baseline.

7. Details of the Public Participation Process Followed

7.1 Introduction

The public participation process has been conducted according to the requirements as prescribed in Regulations 40 to 44 of the EIA Regulations, 2014 (as amended).

The formal public participation process, which meets the requirements of the NEMA EIA Regulations and the MPRDA will be followed and include the following activities: (Refer **Annexure 2** Public Participation Process- to be included in the F-BAR)

Potential I&APs will be notified about the project and of commencement of the Basic Assessment (BA) process and invited to registration as stakeholders by means of:

- Letters of notification to directly affected landowners;
- Written notifications to other stakeholders including neighbours, Local and District Municipalities (including traditional authorities where applicable); and
- Media advertisements and site notices.
- Circulation of a Background Information Document (BID) with the notification letter to the landowner, neighbouring landowners and potential I&APs;
- Registered I&APs including the Relevant Government Department will be given the opportunity to review and comment on the Draft Basic Assessment Report.
- Registered I&APs will be notified of the outcome of the environmental authorisation, and if required the appeal process to be followed.

7.2 Summary of issues raised by I&Aps

Table 4 Summary of issues raised by I&Aps to be included in the Final BAR

Interested and Affected Parties, persons consulted is marked with an X	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Reference in this report where the issues and or response were incorporated.
ORGANS OF STATE				
Landowners or Lawful occupier/s of the land				
Landowners or lawful occupiers on adjacent properties				
Municipality				
Communities				
Traditional Leaders				
Interested parties - Reply on advertisement and site notices				

8. Process to reach the proposed preferred alternative

8.1 Site Alternatives

8.1.1 Location

The proposed site is located within a section of the Konga Pan on the Remainder of Farm Konga. This site was selected because it contains good quality salt and it is located in a convenient position close to the R360 and the farm Kalahari-Wes 251 portion 10, where the Applicant's company headquarters are located and based on the landowner's willingness to permit salt mining activities on their farm.

Alternative consideration in respect of new operations must always take into account the apparent advantages of extending an existing site as opposed to locating a brand-new site. The advantages relate to the existing knowledge of the site as well as there being no requirement to duplicate infrastructure at another site. Furthermore, in the case of mining it must always be remembered that alternative sites cannot be selected as easily as for other types of developments. The geology dictates where the site can be located. So, the development of a brand-new operation is confounded by:

- Finding suitable geological formation / material
- Finding an area which is not sterilized by surrounding / on site land uses
- Finding a site with limited visual impact

The section of the Pan selected for salt mining has a flat gradient and a large surface area suitable for salt mining, with no permanent surface water and no vegetation on the Pan itself.

The rural nature of the area effectively means that the proposed mining activities will not disturb any local communities. There are no reasonable or feasible location alternatives for further consideration.

8.1.2 Type of activity

The Applicant is not the land owner, so it would not be realistic for this company to propose another type of activity, as their core business is the supply of salt. The holder of a mining permit is required to rehabilitate the environment affected by mining to its natural state or to another predetermined land use. The mining activity takes place over a relatively short time period, so the selection of the best post-mining long term land use is an important consideration. In the case of this application the best post-mining land use alternative is to return the Pan to its natural state. Other activity alternatives have therefore not been considered as the purpose of the proposed project is to mine salt from the section of the Konga Pan as indicated. The only other activity required to be assessed in terms of NEMA is the "do-nothing" alternative, as detailed further below.

8.1.3 Design or Layout of activity

The design or layout of a mining project is determined by the shape, position and orientation of the mineral resource, which in this case is an underground deposit of brine within a circular salt pan. The significance of the environmental impacts associated with different possible design or layout alternatives would be very similar, therefore layout alternatives have not been assessed in the impact ratings table.

8.1.4 The technology to be used in the activity

Salt mining technology is very simple and has remained the same for decades. The use of scrapers, dumpers, front-end loaders will be used to collect salt from the crystallisation pans and move the stockpile platforms for drying. There are no technology alternatives for further consideration.

8.1.5 Operational alternatives

The proposed salt mining activities will take place during normal working hours from 07h00 to 18h00 on week days and Saturdays. The hauling of the salt will therefore also take place during these hours. There are no operational alternatives for further consideration.

8.1.6 The No-go Alternative

The assessment of alternatives must at all times include the “no-go” option as a baseline against which all other alternatives must be measured. The “no go” alternative is therefore assessed together with the preferred alternative.

The No-Go Alternative will result in the status quo remaining of the section of the Konga Pan earmarked for salt mining. The No-Go Alternative will mean that salt mining will not take place that goes against the principle of optimization of resource as espoused in the MPRDA.

There will also be no new employment opportunities or guaranteed job security provided.

8.2 Site sensitivity (Baseline Environment)

8.2.1 Regional setting

The mining area is located within the broader savanna biome that constitutes the southernmost extension of the most widespread biome in Africa. It represents 32.8% of South Africa (399 600 km²) and 74.2% of Swaziland (12 900 km²). It extends beyond the tropics to meet the Nama-Karoo Biome on the central plateau, the Grassland Biome at higher altitudes towards the east and extends down the eastern seaboard interior and valleys where it grades into Albany Thicket in the Eastern Cape.

The Savanna biome in South Africa and Swaziland does not occur at high altitudes and is found mostly below 1 500 m and extending to 1 800 m on parts of the highveld mainly along the southern-most edges of the Central Bushveld.

8.2.2 Geology

The geology surrounding the salt pan is not complex, and comprises essentially the rocks from the Dwyka- and Kalahari Groups. Some tillite float was encountered on the deflation surface of the pans. Red colored sand dunes of the Gordonina formation of the Kalahari group are found along the edges of these pans. It appears as if the paleo-drainage system in which these pans occur is divided by dune formation along the channel. The sedimentation of the Karoo Supergroup was initiated by the Permo-Carboniferous glaciation known as the Dwyka Formation. The composition of much of the sediments show that most of the material was deposited from melt-water streams issuing from the fronts of glaciers, and pebble drop mudstone indicates that the shore of the Dwyka Sea was located nearby. The movement of the Dwyka ice sheets has been interpreted as representing a series of lobes moving broadly southwards. The Karoo episode closes in the Jurassic with the Drakensberg volcanic event of which only the hypabyssal event i.e., the intrusion of dolerite dykes is present in the study area. This volcanic event is related directly to the break-up of Gondwanaland and the separation of Africa from the southern continents. The formation of the escarpment and interior basin was a direct result of the rifting which accompanied the break-up of Gondwanaland as a consequence of sea-floor spreading and plate tectonics. By Early Cretaceous, Africa emerged as a separate plate and the Kalahari Basin, of which we see the southern fringe, was created as a shallow depository. By this time the Southern African landmass was one of erosion related to new base levels. The Kalahari Basin has been in existence for the whole Cenozoic with rivers draining into this region, dumping gravel, clay and calcareous sand. Initially the climate was wet and large valleys were cut into the African Surface. This fairly wet cycle was followed by a generally dry cycle which gave rise to the Gordonina Formation.

Following is a short description of the lithologies found:

- **Qg - Gordonia Formation**

The Gordonia Formation is represented by a vast accumulation of unconsolidated, red aeolian sand. These Aeolian sands are made up of highly rounded quartz grains and commonly form longitudinal dunes. These dunes are separated by 'straats', often exposing the calcrete of the Mokalanen Formation. The Gordonia Formation overlies a fairly even surface of the Milalanen Formation. The red colouration is caused by a thin coat of iron-oxide on the grains. The possible source of the iron is accessory- and clay minerals in the sand. In pans and certain river beds the red sands were leached to produce a white-coloured sand. Although the sand is unconsolidated, the dunes have been, for most part, fixed by vegetation.

- **T-Qm - Mokalanen Formation**

The Mokalanen Formation comprises essentially calcrete, diatomaceous in places and diatomaceous limestone. This unit has a wide distribution and forms the boundary between the Tertiary and Quaternary rocks (Thomas, et al. 1989). The calcareous rocks can be subdivided into a sandy limestone and a hardpan calcrete. This hard calcrete is a calc-conglomerate with angular calcareous clasts, cemented by a calcareous matrix containing rounded quartz grains. The limestone is silicified in some areas and gives rise to small lenses and discontinuous layers of grey silicate. The diatomaceous limestone is a white coloured, loosely consolidated limestone with low density. It contains hollow tubes of recent origin and minor rounded quartz grains are included.

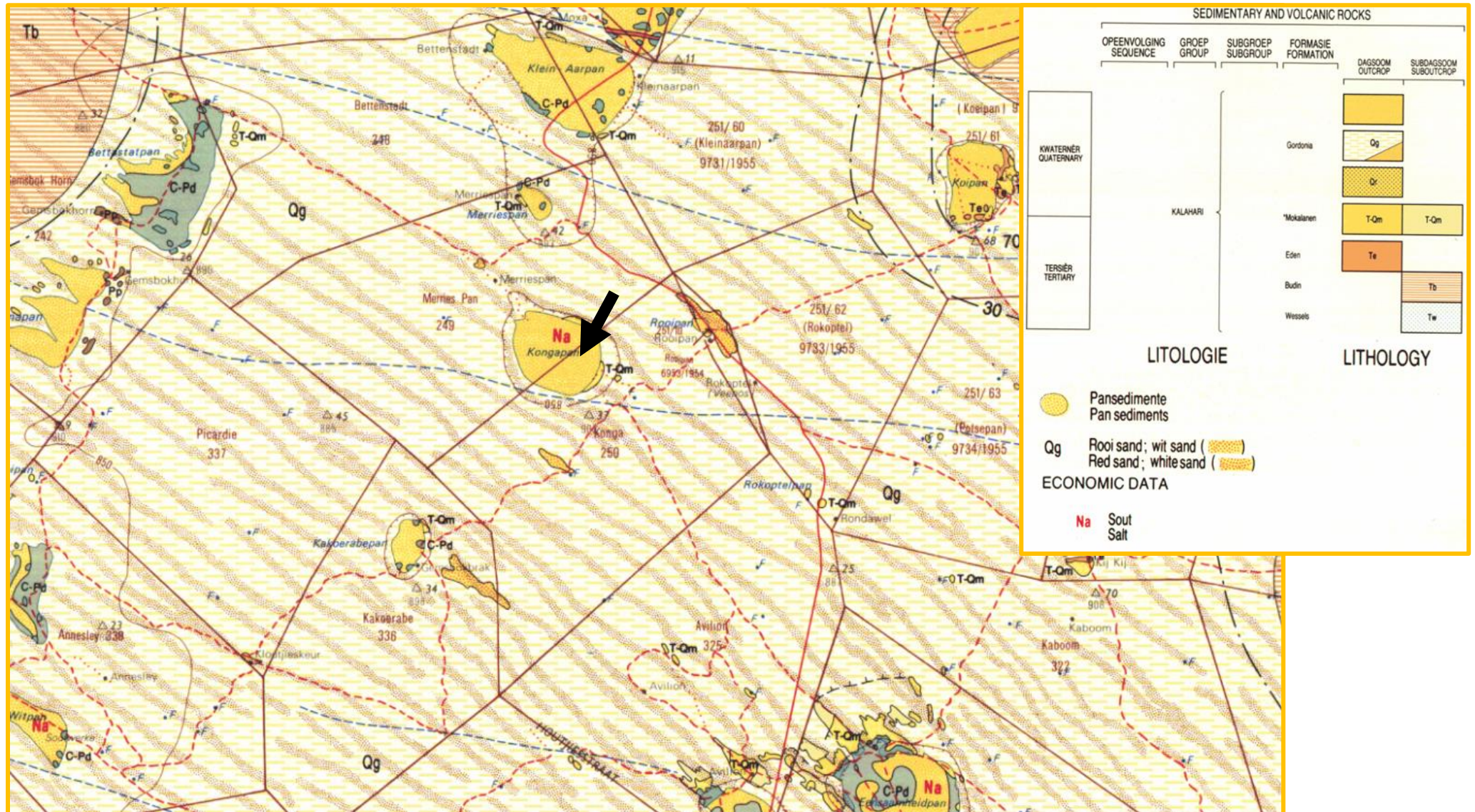
- **C-Pd - Dwyka Formation**

Large areas are underlain by sedimentary rocks of the Dwyka Formation. The exposed rocks in the area comprise essentially tillite, blue-green shales and mudstone. The tillite contains pebble-sized, sub-angular clasts with surface glacial striations and chatter marks. There is a wide variety of rock types found on the deflation surfaces of the pans and some of these pebbles show a provenance from the east and north-east. The clasts include lava, dolomite, banded ironstone, jasper, quartzite, granite and gneiss. The tillite becomes sandy towards the top of the succession and is associated with lenses and pockets of immature conglomerate, ferruginous sandstone and impure limestone and calcarenite. These clastic beds are laterally discontinuous.

- **Pan sediments**

In most pans the sediments are generally off-white to buff coloured and finer grained than that of the Gordonia Formation. The sediments are derived from dune sand, with the white colour removed by leaching by ground water. Most pans are covered in pebbles derived from the eroded Dwyka tillite. These pebbles represent a wide variety of lithologies as described under the previous heading. Small inner dunes can be seen in some areas. These inner dunes are of the same composition of sandy-clay sediments found in the pans. The larger outer dunes have the same composition as the surrounding sand which leads to the conclusion that they formed as the sand was initially blown away from the depression.

Figure 5: Geology of Mining area



8.2.3 Soil and land capability

The Kalahari Dunes consist of red coloured sand dunes mostly stabilised by grassy vegetation. There is very little to differentiate the orthic A horizon (upper sand layer deplete of nutrients) and the lower lying sands and these are often mixed during droughts when mixing will occur through shifting sand dunes.

These sands have limited growth medium potential due to high concentration of minerals as well low water retention capability. This together with low rainfall limits success of any revegetation intervention. The potential for wind erosion of the sands is aggravated by the strong winds.

The site is located in the Kalahari Dune system which is characterised as follows in terms of agricultural potential:

- Rainfall between 50-150mm per year (mostly late summer)
- Extremely high temperatures, strong dry winds, saline water and high evaporation combine to preclude crop production.
- No irrigation takes place
- Livestock watering a challenge with often poor-quality water available.
- Majority of soils have poor moisture retention, low pH and low nutritive quality

There are 2 land units to consider:

Off pan areas: These areas are used for grazing by livestock and game farming. Land capability is non arable and low potential grazing and veld has an extremely low carrying capacity ($\pm 80\text{ha/AU}$).

On pan areas: Most of the disturbance area is on the pan with approximately 5ha disturbed for the ponds and the stockpiling area. The pumps on the pan also lead to very insignificant impact.

According to the screening report (DEA) no nearby wind or solar developments or intersections with Environmental Management Framework areas are present.

The proposed project site is located within the Konga Pan, which is classified as a Valley floor Depression wetland. There are no irrigation activities in this stretch of the Konga Pan and the only other land use except for existing salt mines is grazing. The property is boarded by mostly undeveloped natural areas although large scale salt mining is present.

For the Agriculture Theme the sensitivity is regarded as medium (Refer Figure 6a and Table 5a) but this not correct and should be a low rating as no agriculture is viable within a salt pan.

Note that current land cover indicators do not take into account degradation due to, for example, spread of alien plants, secondary impacts of mining (e.g., sand mobilization) or overgrazing by livestock. The Land Capability map is provided as Figure 6b and as the area is bare and not vegetated the small footprint of mining activities 5Ha will not have an impact on other land uses or agricultural production.

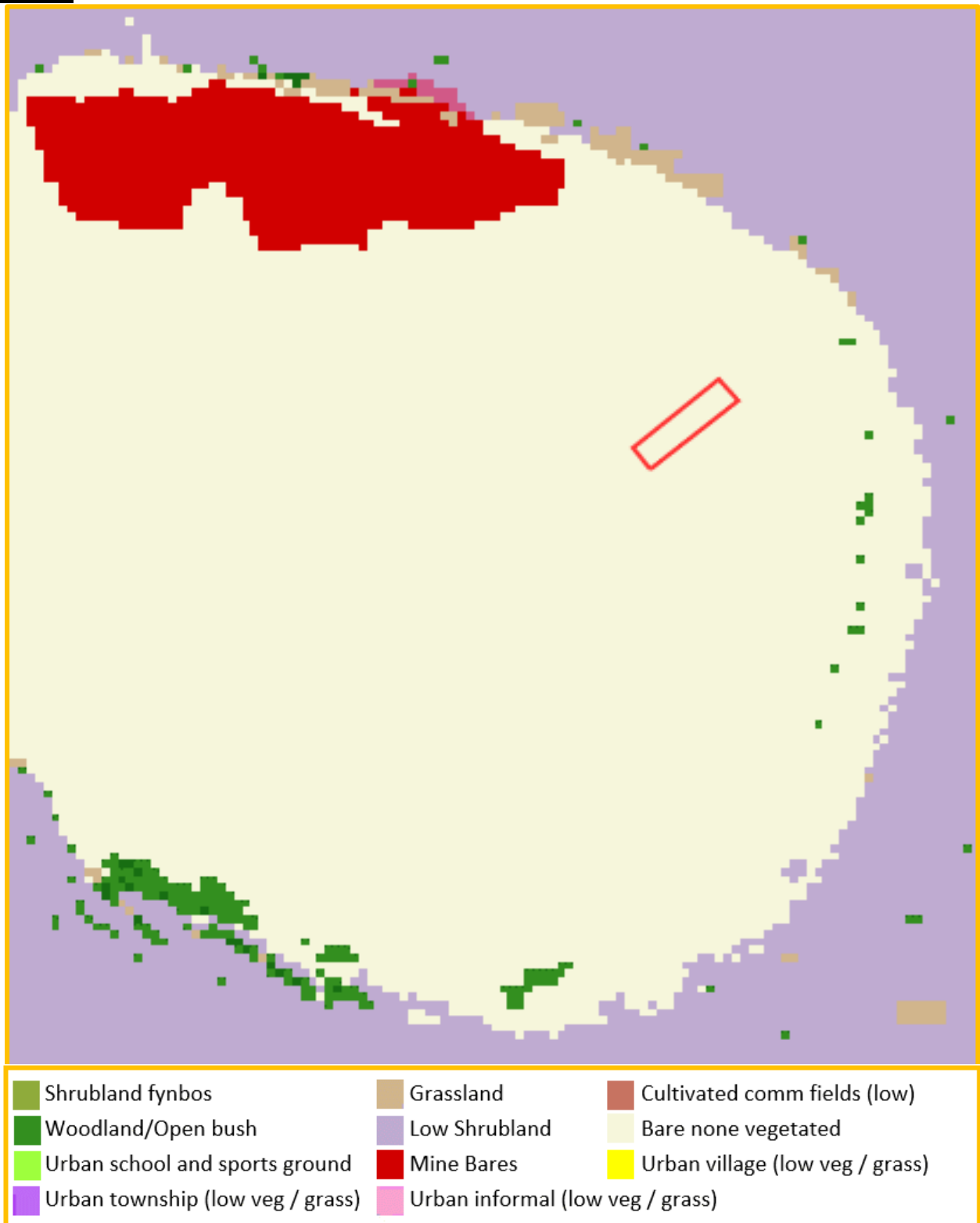
Table 5a: Agriculture theme Sensitivity Features

Sensitivity	Feature(s)
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

Figure 6a: Map of relative agriculture theme sensitivity



Figure 6b: Location of Mining area in terms of Land Cover sourced off SANB BGIS Map Viewer



8.2.4 Landscape - Topography

Figure 1 and 2 which shows the contours at 20-meter intervals indicate the location of the site at 820m above mean sea level. Topography usually has a bearing on visual impact. In this case, there is no visual impact on surrounding land user, given the extreme isolation of the site.

The topography is typical Kalahari Dune topography with the occasional pan or "vloer" forming locally inward draining basins. The surrounding sand covering can get very deep, up to 120m in places.

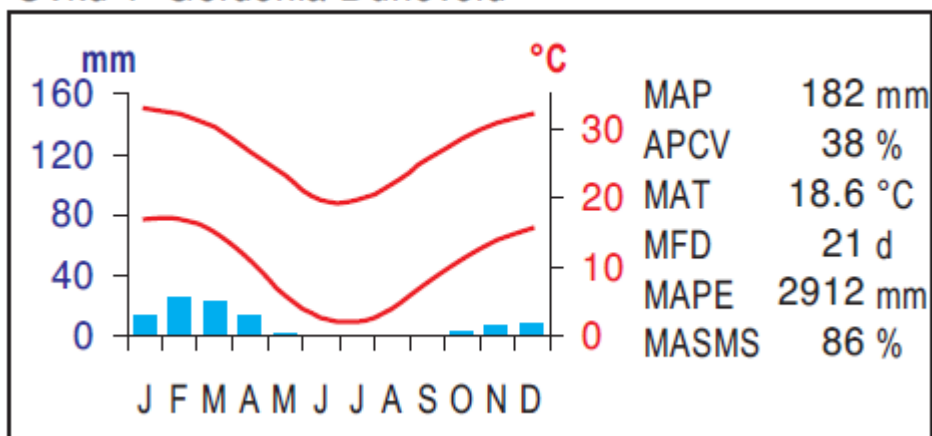
The pan was probably formed through the scouring action of the winds causing depressions where localised run-off has resulted in accumulations of clay particles and soluble minerals. Continuous scouring of the pan has enlarged the area and given rise to the hard salt crust on the pan which prevents the formation of sand dunes on the pan surface.

8.2.5 Climate

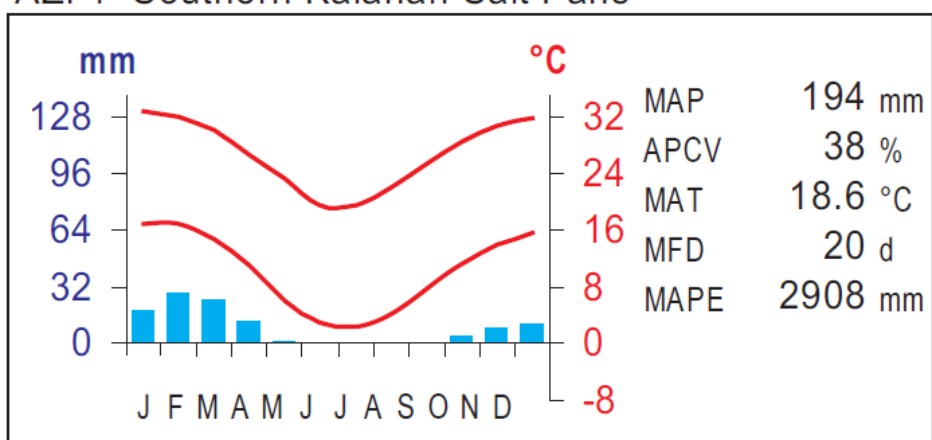
Climate Subarid region with seasonal, summer-rainfall regime with a slight shift of the major peak towards late summer (February-March). Overall MAP 240 mm (ranging from 180 mm at southwestern boundary to as much as 420 mm further north). High thermic continentality is obvious from the extreme differences between the mean daily maximum and minimum temperatures in January and July: 34°C and 1°C, respectively, great daily temperature differences (sometimes reaching amplitude between 25°C and 30°C, especially in transitional climatic periods) as well as the fairly frequent occurrence of frost. The overall MAT of 19°C. See also climate diagram for AZi 4 Southern Kalahari Salt Pans and SVkd 1 Gordonia Duneveld (Figure 7).

Figure 7: Climate Figure

SVkd 1 Gordonia Duneveld



AZi 4 Southern Kalahari Salt Pans



8.2.6 Biodiversity, Flora and Fauna

• Biodiversity

According to the screening report (DEA) the mining area is regarded as very high sensitivity with regard to Terrestrial Biodiversity as it is located within an Ecological Support Area (ESA) (Refer Table 6 and Figure 8a). This is verified by the 2016 Northern Cape Critical Biodiversity Areas (Refer Figure 8b). The ESA status relates to the presence of the wetland therefore the Aquatic biodiversity is also regarded as very high sensitivity. This rating is therefore a duplication as the surrounding area of the Konga Pan is regarded as Other Natural Areas with low sensitivity with regard to Terrestrial Biodiversity.

Even the Mining and Biodiversity Guidelines (2013) document identify the area as Category D: Moderate Biodiversity Importance” – moderate risk for mining (Refer Figure 4).

Table 6: Terrestrial biodiversity theme Sensitivity Features

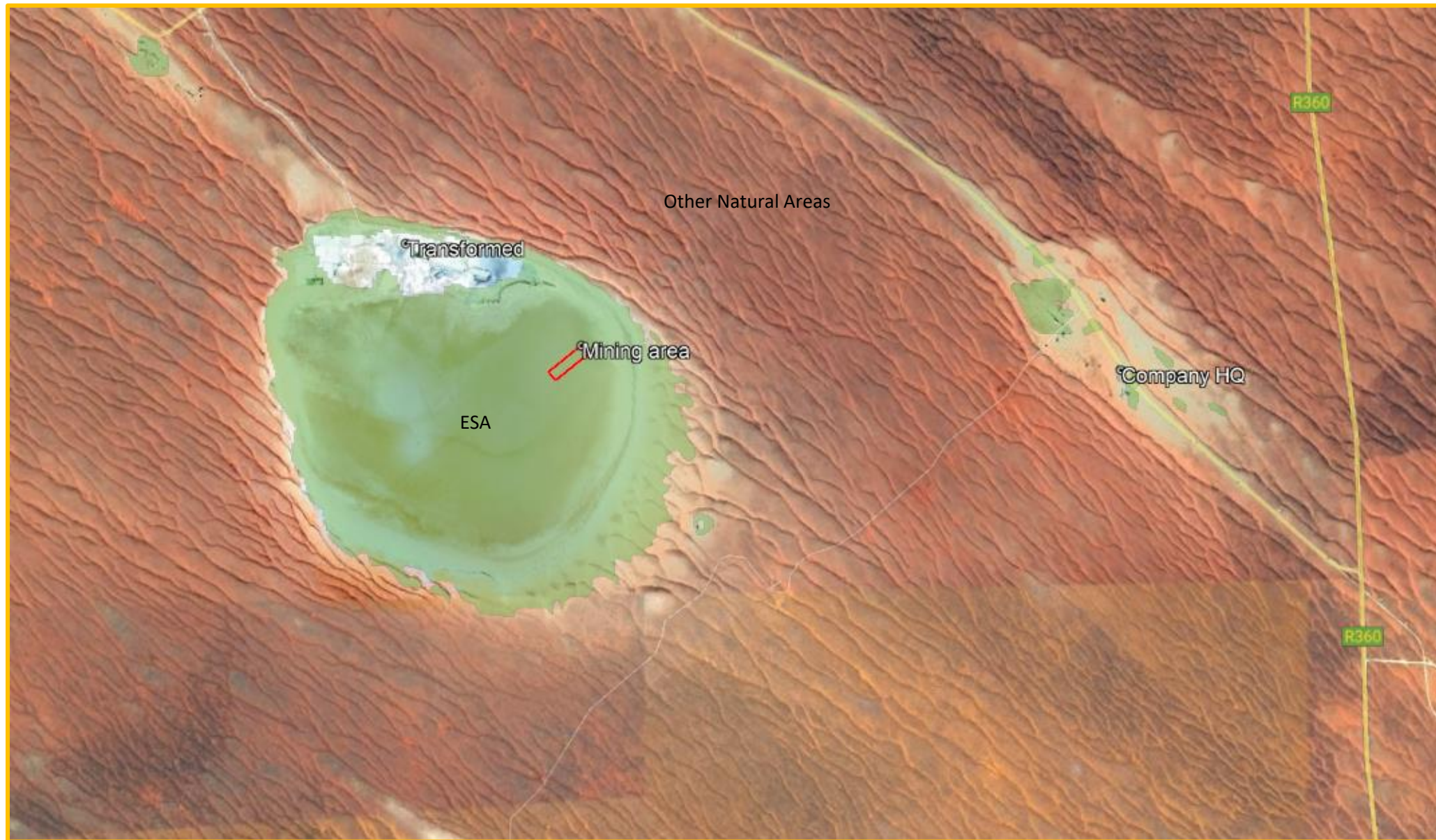
Sensitivity	Feature(s)
Very High	Ecological support area

Figure 8a: Map of relative terrestrial biodiversity theme sensitivity



According to the National Protected Areas Expansion Strategy (NPAES) Department of Environment Affairs (DE) 2009 the area is not included in the NPAES and no protected areas are located within a 10Km radius of the mining area. No other sensitive ecosystems and areas are present. The area is however covered by a terrestrial FEPA (Code 4 upstream FEPA) not regarded as sensitive.

Figure 8b: Critical Biodiversity Areas



- **Fauna**

According to the screening report (DEA) the mining area is regarded as low sensitivity with no Animal Species theme Sensitivity Features present (Refer Table 7 and Figure 9)

Although no animal species of conservation concern are listed for the area, vast expanses of the same vegetation surrounding the site provide a habitat suitable for species typical of the area. The large scale of the habitat type when compared to the extent of the existing activities negates any significance of any impact in this regard.

Table 7: Animal Species theme Sensitivity Features

Sensitivity	Feature(s)
Low	Low sensitivity

Figure 9a: Map of relative Animal Species theme sensitivity



- **Flora**

The mining area is located within a Valley floor Depression wetland and therefore regarded as Azonal and not included in any specific biome. The mining area is covered by the Southern Kalahari Salt Pans (AZi 4) vegetation unit (Refer Figure 8a).

According to the screening report (DEA) the mining area is rated as having a low sensitivity with no Plant Species theme Sensitivity Features (Refer Table 8 and Figure 10a and 10b)

The project will have a low significant impact with regard to Flora on the off-pan areas due to the small areas to be disturbed and short duration of activities. Mitigation of the disturbance is also possible and after mitigation the impact will be regarded as insignificant.

Table 8: Plant Species theme Sensitivity Features

Sensitivity	Feature(s)
Low	Low sensitivity

Figure 10a: Map of relative Plant Species theme sensitivity



Southern Kalahari Salt Pans (AZi 4)

The conservation status of the Namaqualand Riviere, according to Driver et al. 2005 and Mucina et al. 2006 is given as Least Threatened. Target 24%. About 8% statutorily conserved in the Kgalagadi Transfrontier Park. The vegetation of the pans is subject to natural degradation/regeneration cycles controlled by concentration of grazing animals (antelopes in particular). The majority of the pan is devoid of vegetation (Refer photo 1, 2 and 3 below).

Figure 10b: Vegetation



Photo 1: Landscape view of the existing salt mining operation situated in the northern part of Konga Pan



Photo 2 View towards the north showing the surface of the pan close to its centre.



Photo 3 View towards the southwest from the pan dune along the eastern rim of the salt pan.



8.2.7 Aquatic biodiversity and Water Resources

The property is located within the Department of Water & Sanitation's Orange Water Management Area and quaternary drainage area D42D. Within this D42D quaternary drainage area the major river system is the Molopo River a non-perennial river, classed as Category C: Moderately Modified as referenced from the SANBI BGIS NFEPA Database Map Viewer.

There are no strategic water source areas for surface water near the proposed project site and the nearest strategic water source areas for underground water is the Sishen / Kathu Cluster approximately 190Km West of the mining area.

According to the screening report (DEA) the mining area is rated as having a very high sensitivity regarding Aquatic biodiversity as inland aquatic ecosystems according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa are present. According to the classification system distinction is made between seven Hydrogeomorphic (HGM) units the finest spatial scale (Level 4) namely Floodplain wetlands, Un-channeled valley-bottom wetlands, Wetland flats, Channeled valley-bottom wetlands, Depressions, Seeps and Rivers (Table 9 & Figure 11a). The Konga Pan is classified as a Valley floor Depression wetland and no other wetlands and estuaries are present Figure 11b & 11c

Table 9: Aquatic biodiversity theme Sensitivity Features

Sensitivity	Feature(s)
Very High	Wetlands and Estuaries

Figure 11a: Map of relative Aquatic biodiversity theme sensitivity



The idea is not for FEPAs to be fenced off from human use, but rather that they should be supported by good planning, decision-making and management to ensure that human use does not impact on the condition of the ecosystem⁴.

⁴ "Implementation Manual for Freshwater Ecosystem Priority Areas Report to the Water Research Commission" (WRC Report No. 1801/1/11; AUGUST 2011)

Given the disturbance of a wetland (i.e., pan surface) by the mining it is incumbent on the applicant to lodge a Water Use Authorization (WUA) in terms of the National Water Act, Act 36 of 1998, Section 21(a) related to abstraction of groundwater but as it falls within the ambit of the General Authorisation no. 4229: Government notice 509 of 2016 it is regarded as permissible in terms of Section 22 (1) (a) (iii) of the NWA.

Other potential Water Use activities are, Section 21(c) related to impeding or diverting the flow of water in a watercourse, and Section 21(i) related to altering the bed, banks, course or characteristics of a watercourse. This needs to be confirmed by the competent authority as the definition of a watercourse do not include salt pans.

Figure 11b: Location of Mining area in relation to Aquatic biodiversity and Water Resources

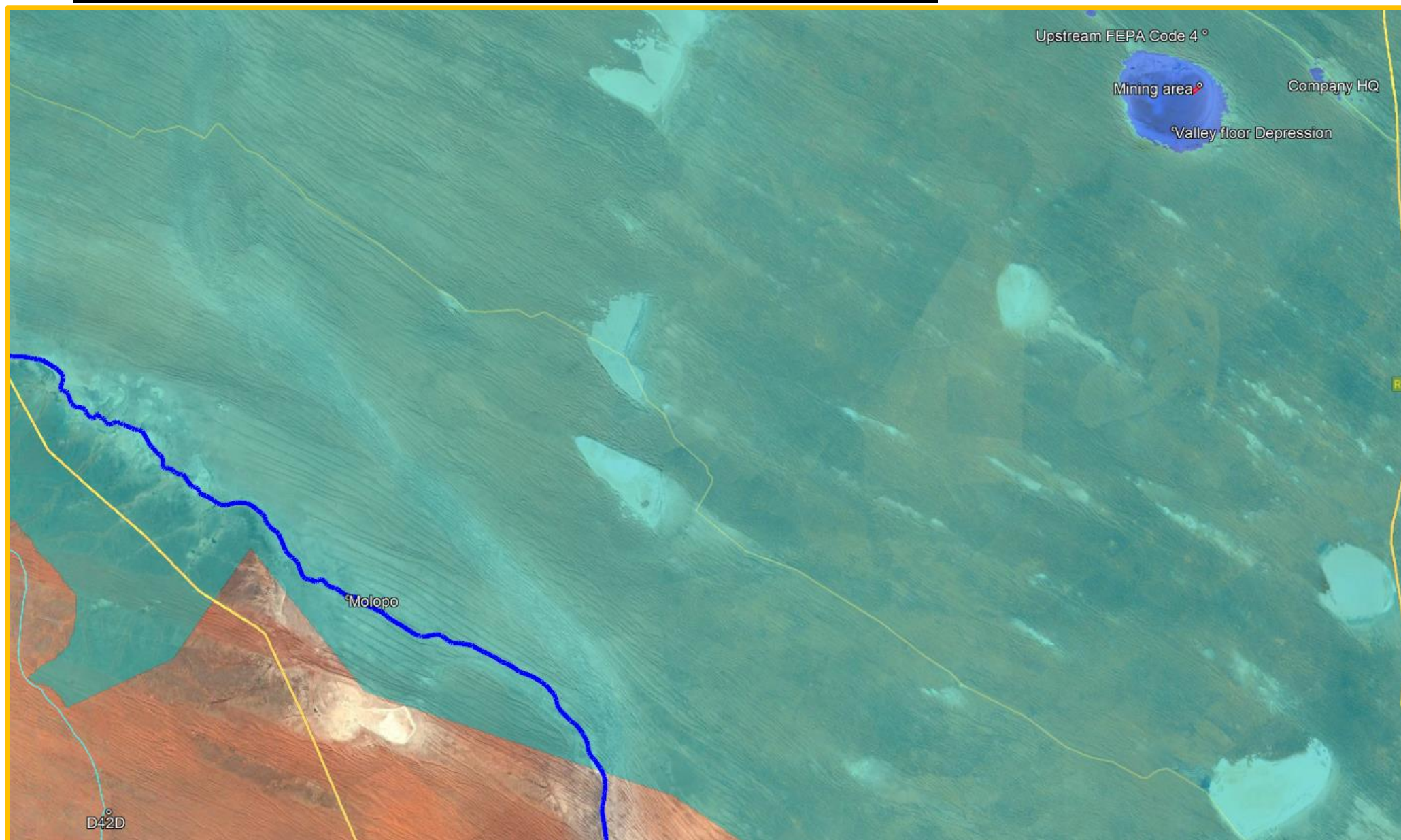
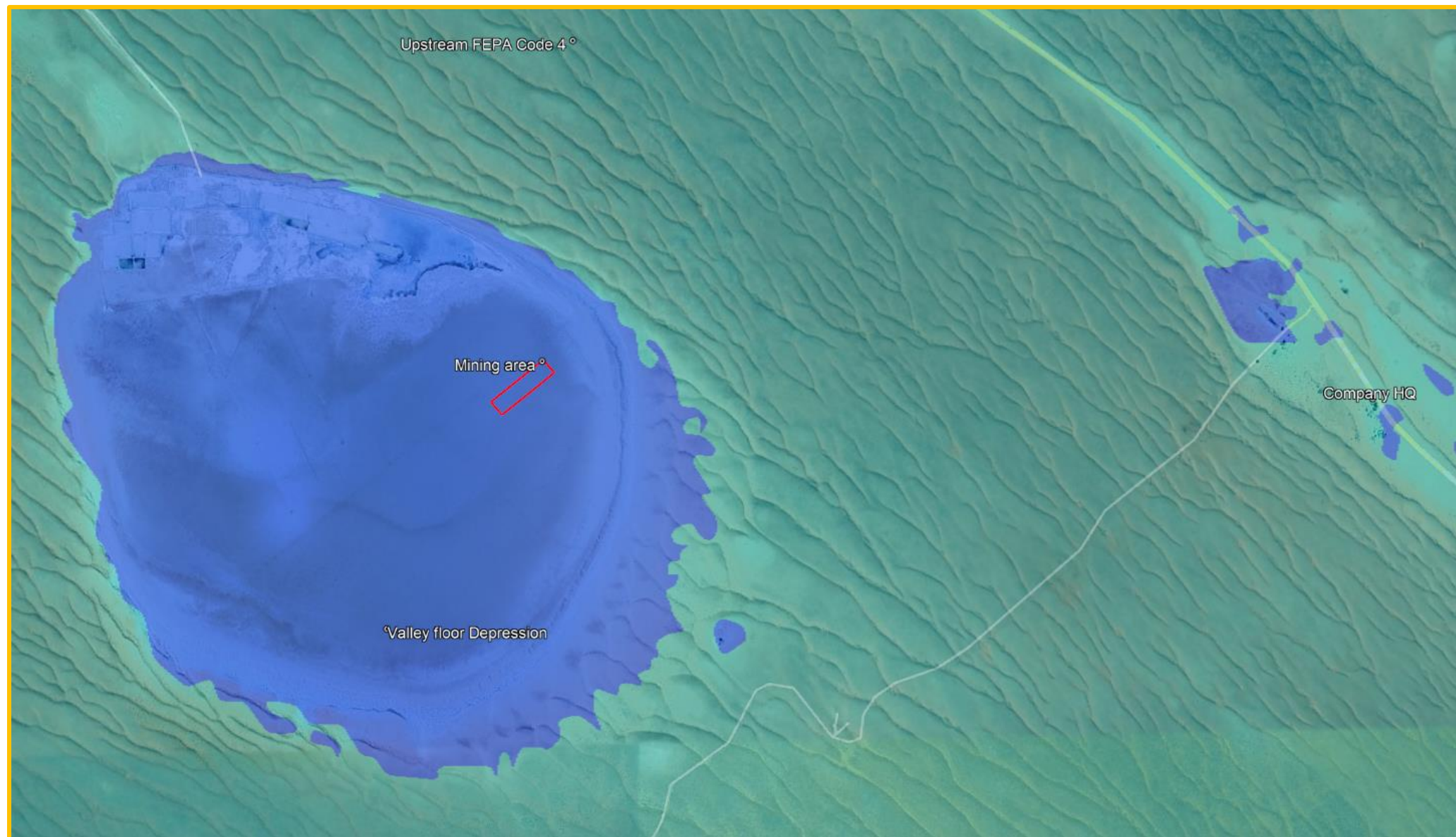


Figure 11c Location of Mining area within the Konga Pans



8.2.8 Emissions

- **Air Quality**

It is important to note that people experience dust deposition as a nuisance effect, and that there are no direct human health implications because the dust is not inhaled. Heavy dust deposition can have detrimental effects on plants if the leaves are smothered to the extent where transpiration and photosynthesis are affected.

Dust is generated by wind over un-vegetated or denuded areas and given the surrounding extent of semi-desert dust generation is high under windy conditions (dust storm). Dust generation from this site is very low and no dust impact will occur on any surrounding land user or land use. Mining activities will take place in a very remote area and dust generation will be limited to a small radius around the operation.

- **Noise**

Farm traffic-generated noise and noise from earth moving equipment and machinery associated with the existing mining operation on the adjacent mine occurs in the area and such noise levels are low (observed estimate at $\pm 55\text{dBA}$). The following equipment/activities will generate noise. Remember that all of these activities currently take place on the adjacent mine and there have been no complaints in respect of noise (and none are anticipated):

- Earthmoving equipment during harvesting and loading of salt to plant and dispatch vehicles
- Noise of haul trucks
- General traffic generated noise

There will be no major change in traffic volume and no traffic impact statement or impact study is relevant. Taking into account the existing background noise levels of the general area which is rural in nature, the significance of the noise caused by the earth moving equipment, vehicles going to and from the mining area is rated as low significance before mitigation.

8.2.9 Socio-economic

The operation does provide employment opportunities (albeit limited) to residents in the region, as well as down the line indirect benefits to a range of suppliers, thereby meeting one of the socio-economic imperatives of the IDP, viz employment

Whilst mining is underway the impacts in socio - economic sense will be in respect of landowner, compensation, mine owner compensation, limited employment opportunities, positive impact on down the line industries and suppliers, local / regional / national availability of salt. The salt mine is to all intents and purposes a permanent operation given the renewable nature of the brine. As such, there is no impact on future generations.

8.2.10 Paleontological, Archaeological and Cultural and Heritage Resources

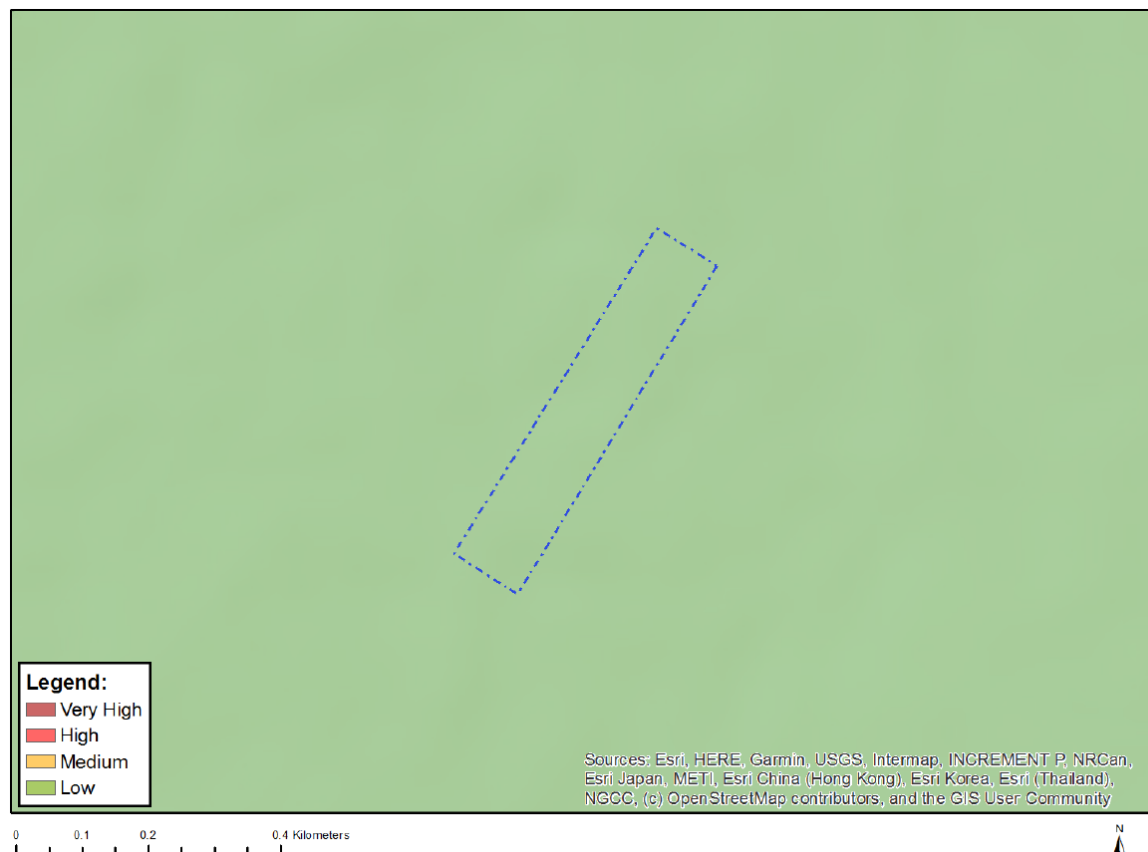
According to the screening tool the relative archaeological and cultural heritage sensitivity is rated as low as verified in the specialist report attached as Annexure 3a (Refer Table 10a and Figure 12a).

The only recommendation according to the Heritage Impact Assessment (Annexure 3a) that is included as part of the EMP is that at closure, all waste must be removed and the site left in a tidy state, and if any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Table10a: Archaeological and Cultural and Heritage theme Sensitivity Features

Sensitivity	Feature(s)
Low	Low sensitivity

Figure 12a: Map of relative Archaeological and Cultural and Heritage theme sensitivity



According to the screening tool the relative Palaeontological sensitivity is rated as medium (Refer Table 10b and Figure 12b). However, within the pan, the SAHRA Palaeontological (fossil) Sensitivity Map (Figure 12c) show the area as low significance and for the surrounding area moderate significance requiring a desktop paleontological impact assessment.

The desktop paleontological impact assessment (Annexure 3b) concluded that; “Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the aeolian sands, sandstones, calcrete and surface limestone are typical for the country and do not contain fossil plant, insect, invertebrate and vertebrate material. Only the palaeo-pans or palaeo-springs could entrap fossils, but no fossils were seen on the walk-through, therefore it is extremely unlikely that they occur in the mine and infrastructure footprint.”

The only recommendation according to the Palaeontological Impact Assessment is to include the chance find protocol in the EMP. The protocol is as follow and the procedure is only required if fossils are seen on the surface when surveyed and when mining commences.

- If any fossiliferous material (plants, insects, bone) is seen it should be put aside in a suitably protected place. This way the construction activities will not be interrupted.
- Photographs of similar fossil plants must be provided to the developer to assist in recognizing the fossil plants in the shales and mudstones. This information will be built into the EMP’s training and awareness plan and procedures.

- Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
- If there is any scientifically important fossil material as assessed from the submitted photographs, then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the site and excavate (having obtained a SAHRA permit).
- Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study.
- Annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered then the site inspection by the palaeontologist will not be necessary.
- If no fossils are found during the survey, then no further palaeontological impact assessment is required.

Authorisation will be obtained from SAHRA confirming whether or not mining may proceed.

Table10b: Paleontology theme Sensitivity Features

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity

Figure 12b: Map of relative Paleontology theme sensitivity

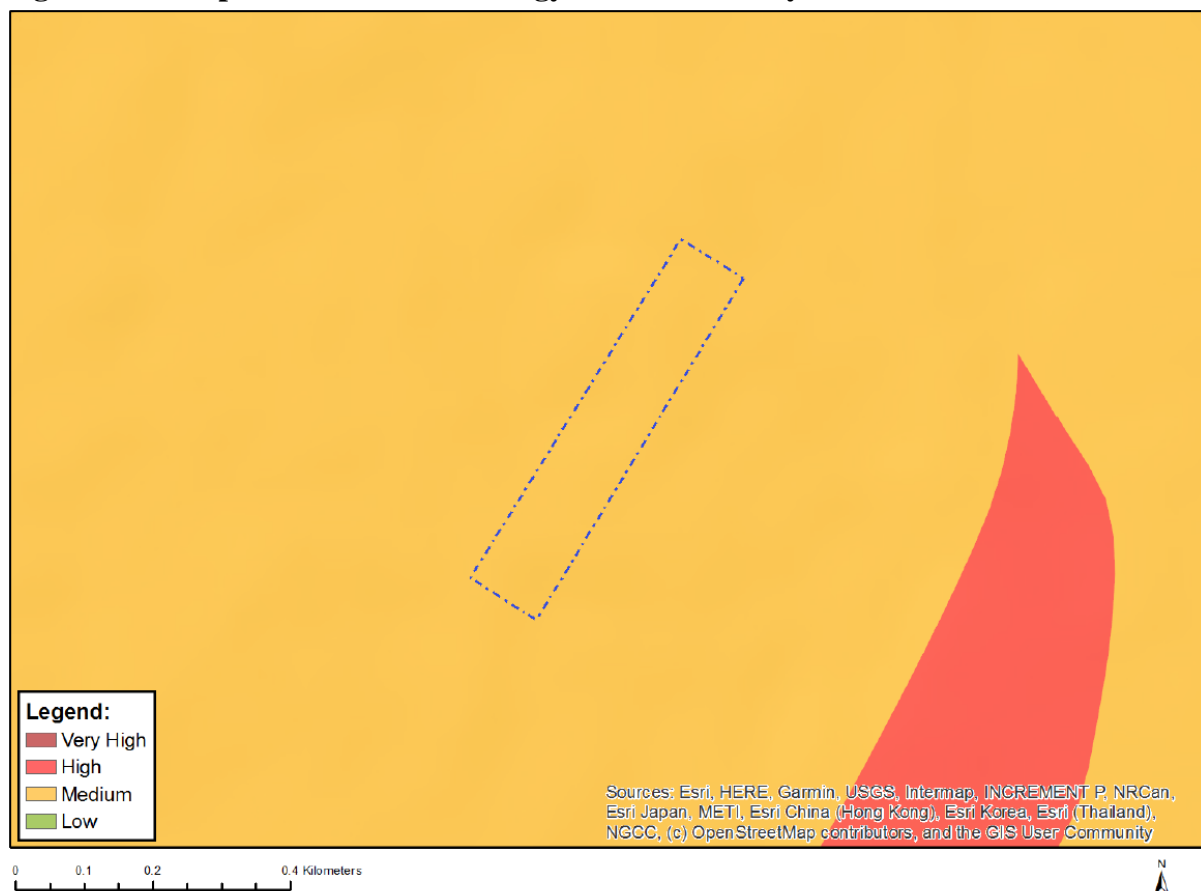
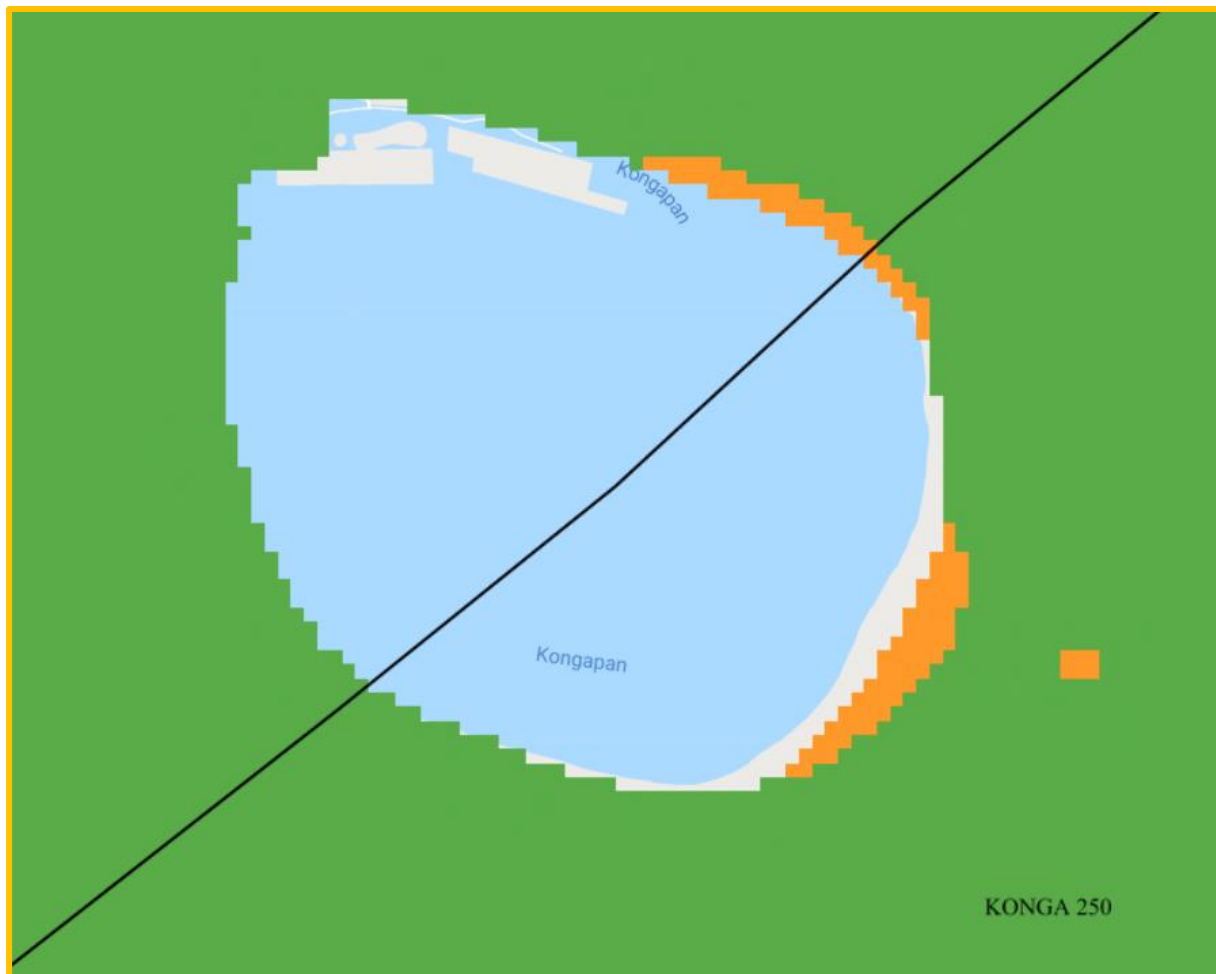


Figure 12c: Map of relative Palaeontological theme Sensitivity (*Extract from the SAHRIS Palaeosensitivity Map*) Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero.



8.2.11 Description of specific environmental features and infrastructure on the site

Refer to Figure 4 to 12 which provides an overview of the position of the propose project site in the Konga Pan. The farmstead dwellings and other farm infrastructure will be avoided. The area also has a number of farm tracks that traverse the site from the R360.

The invasive activities will seek to use existing roads in order to access the property and it is not expected that any new access roads will be opened up. The map Figure 1 and 3 above gives an overview of the mining area, settlements and roads that traverse the site.

8.2.12 Environmental and current land use maps

Refer to Figure 4 to 12 and section 8.2. provided as part of the specific attributes

9. Risks and associated Impacts identified

The potential risks per activity is provided in Table 11 and focuses only on the invasive aspects (associated activities) as these will have the potential to impact on the biophysical and social environment. The activities are furthermore separated into three distinct phases, namely:

- Construction phase (Site establishment);
- Operational phase (Sampling and Drilling), and.
- Decommissioning

The potential impact rating is as follow:

39	SIGNIFICANCE Consequence x Probability Presented as a score out of 108	
40	Rating	Criteria
41	84-108 High	Long-term environmental change with great social importance.
42	50-83 Medium	Medium to long term environmental change with fair social importance.
43	27-49 Low	Short to medium term environmental change with little social importance.
44	12-26 Very low	Short-term environmental change with no social importance
45	3-11 Neutral	No environmental change

9.1 Potential Risks

- Post-mining landform not compatible with the surrounding landscape and not capable of productive land use that achieves a land capability equal to that of pre-mining conditions.
- The post-mining landscape increases the requirement for long-term monitoring and management.
- Long term changes in land use are caused by not implementing prompt rehabilitation and not mitigating disturbances when possible as part of the annual rehabilitation plan.
- Unsuccessful rehabilitation can reduce the post-mining land use options. Rehabilitated areas could be too unstable to support post-mining land use objectives compatible with surrounding areas.
- The potential risks related to waste management practices creating or leaving legacies, that will require implementing of mitigation and management actions to limit the residual impact after mine closure.
- Sub-surface infrastructure remaining behind, limiting the intended post-closure land use including footings and foundations, power supply and water installations including pumps and pipelines.
- Unwanted ruins, buildings, foundations, footings, equipment and other items used during the mining operation were left behind creating or leaving legacies regarding safety.
- No industrial or mine waste is generated during the mining process. No processing will take place so no mining waste or overburden and fine residue dumps will be created and there will be only limited product stockpiles present on site.
- Disturbance to sensitive environments such as Critical Biodiversity areas and any associated biodiversity corridors, land with historical or conservation value part of NPAES, Wetlands and other Aquatic Ecosystems, terrestrial habitats for species of conservation concern (SCC) and high potential agricultural land.
- Creation of unnatural surface topography or slope which could impact lower or adjacent slopes due to increased runoff velocity.
- Altered storm water runoff response due to large impervious areas and concentrated runoff in drainage systems. Concentrated storm runoff from infrastructure areas is erosive, causing
- Terrain morphology plays a critical role in defining the visual envelope of mine developments and can either reduce or enhance visual impact. Apart from visual intrusion, there is also the risk of a reduced sense of place. The visual intrusion impact of mining activity would be on nearby roads, homesteads, settlements, tourist accommodation, and along tourism routes or corridors.
- The cumulative effect of a rise in the ambient noise levels or high noise levels in specific areas that exceed specified levels would impact on communities in close proximity.
- Noise disturbance and light pollution would result from night-time activities (if applicable)

in areas that are in close proximity to communities.

- Lack of compliance with the approved EMPr and a lack of auditing of the EMPr.
- Closure stalled due to non-compliance with relevant legislation (national, provincial and local).
- Insufficient funds for complete rehabilitation.

9.2 Potential Risks associated with the Preferred Alternative.

Refer to Section 3, Section 5 and Section 6 above, which describes the location, type of activity, design or layout, technology and operational alternatives, and the preliminary result of having a preferred and only alternative. The potential impact from this preferred and only alternative are listed in Table 11 below.

9.3 Potential Risks associated with the No-Go Alternative

There would be no change to the biophysical environment with the No-Go Alternative. The No-Go Alternative implies that the Applicant would forgo an opportunity to provide employment opportunities in an area and sector identified for opportunities for job provision and economic growth, and the sourcing of minerals. This potential would not be reached with the "no-go" option.

Table 11: Preferred Alternative: Potential Risks per Phase and Activity

Activities	Potential Impacts							
	Other land uses	Soil & Land capability	Topography	Biodiversity Flora & Fauna	Aquatic biodiversity & Water Resources	Emissions (Air Quality, Visual & Noise Generation)	Socio-economic features	Paleontological, Archaeological & Cultural Heritage Resources
Site Access and Site Establishment Phase (Including associated infrastructure, Water infrastructure, Electricity infrastructure, Waste management, crystallisation pans and stockpiles)								
Upgrading of fire brake as haul road and the clearing of site access points - will result in the removal of existing vegetation, which will disturb the soil increasing the potential for soil erosion by wind and loss of soil in the event of rainfall.								
Destruction of vegetation on the banks will lead to scouring, increased soil erosion causing loss of topsoil.								
Repeated use of access tracks - soil compaction and potential loss of invertebrates that live in the top layers of the soil.								
Umanaged use of hydrocarbons and incorrect storage of hazardous substances on-site - potential contamination of soil and soil poisoning.								
Use of hydrocarbons and accidental spills not cleaned up immediately - potential contamination of soil and soil poisoning and will cause vegetation die-back.								
Waste Management - Recycling of waste material creates employment - Windblown litter will cause visual blight. A lack of waste food management encourages vermin.								
Establishment of logistical facilities within pan floor, including secure storage, water and electrical supply, generator facility, waste storage and laydown area.								
Development of crystallisation pans walls on pan .								
Establishment of product stockpile and movement areas.								

Activities	Potential Impacts							
	Other land uses	Soil & Land capability	Topography	Biodiversity Flora & Fauna	Aquatic biodiversity & Water Resources	Emissions (Air Quality, Visual & Noise Generation)	Socio-economic features	Paleontological, Archaeological & Cultural Heritage Resources
Operational Phase								
(Pumping of brine and harvesting of salt on the pan floor, movement of trucks and earthmoving equipment and waste								
Uncontrolled expansion of mining footprint by not restricting the area disturbed by mining and the associated activities/infrastructure, resulting in loss of land with agricultural potential.								
Disturbance of ecology due to loss of habitat and cumulative impact of illegal collecting during long-term or life of mine can degrade areas and reduce the viability of adjacent areas								
Inadequate control of alien invasive vegetation species can result in the establishment of populations or seed sources that threaten adjacent areas								
Borehole pumping water virtually continuously from middle of pan into crystallisation pans (via on surface pipes). Crystallisation pans contain brine on the pan surface.								
Evaporated salt scraped off surface by scraper								
Scraped salt loaded by front end loader to haul truck								
Salt hauled to drying area -Stockpile platforms								
Dried salt hauled to sorting and packaging plant in Upington.								
Increasing the extent of hardened surfaces -impact on surface water through modification of infiltration rates.								
Vehicles using unsurfaced roadways								
Use of diesel and storage in mobile fuel bowser								
Emergency repairs to equipment								
Potable water trucked in as required (minor volumes)								
Mobile toilet maintenance								
Disturbance of local communities in urban and rural areas caused by noise and dust emissions and increase in heavy vehicles along transport routes.								
An influx of people into the local communities looking for work, with an increase in demand for housing, schooling and services. Such an influx of workers into a community often results in a change in social dynamics. Negative social impacts include, for example, an increase in substance abuse, HIV transmission and unwanted pregnancies								
Positive impacts include, for example, the creation of both formal and informal businesses to supply additional needs, whilst	Positive							
Disturbance of identified surface, or unknown sub-surface sites, if mitigation and monitoring is not implemented as per mitigating measures in the Heritage and Palaeontology Impact Assessment								

Activities	Potential Impacts							
	Other land uses	Soil & Land capability	Topography	Biodiversity Flora & Fauna	Aquatic biodiversity & Water Resources	Emissions (Air Quality, Visual & Noise Generation)	Socio-economic features	Paleontological, Archaeological & Cultural Heritage Resources
Decommissioning and Aftercare Phase								
Staff losing their jobs at mine closure can have devastating effects on communities that are reliant on mine-based income.								
Job losses of secondary industries, businesses and contractors and contractual agreements with service providers surpassing mine closure date.								
Remove final product stockpiles						Positive		
Remove / flatten all evaporation pond side walls.						Positive		
Remove all structures foundations and footings (unless required by landowner)						Positive		
Rip surface of stockpile platform and stockpiling area to 30 -45cm deep						Positive		
Allow to revegetate naturally						Positive		
Remove alien vegetation, if present						Positive		
Conduct final performance assessment								
Lodge closure Application								

9.4 Methodology used in assessing potential environmental impacts

Refer to Table 12 below, which provides the impact assessment criteria applied in the rating of the impacts associated with each phase of the proposed mining activity for the Preferred and Only Alternative.

Table 12: Impact Assessment Criteria

ASSESSMENT CRITERIA	
Nature	
Rating	Criteria
Positive	Beneficial to the receiving environment
Negative	Harmful to the receiving environment
Neutral	Neither beneficial or harmful
Severity	
Rating	Criteria
6 Very High	The impact is result in a complete loss of all resources. Irreparable damage to highly valued species, habitat or ecosystem. Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order.
5 High	The impact will result in significant loss of resources. Very serious, long-term environmental impairment of ecosystem function that may take several years to rehabilitate.. Very serious widespread social impacts. Irreparable damage to highly valued items.
4 Medium	The impact will result in marginal loss of resources. Serious medium term environmental effects. Environmental damage can be reversed in less than a year. On-going social issues. Damage to structures/items of cultural resources of low significance, mostly repairable.
3 Low	Moderate, short- term effects but not affecting ecosystem function. Rehabilitation requires no intervention of external specialists and can be done in less than a month. On-going social issues. Some damage to insignificant cultural resiurces.
2 Very low	Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/ without help of external consultants. Minor medium-term social impacts on local population. Low-level repairable damage to commonplace historical structures
1 None	The impact will not result in the loss of any resources. Limited damage to minimal area of low significance, (e.g. ad hoc spills within plant area). Will have no impact on the social environment. Cultural functions and processes not affected.

Spatial Scale	
Rating	Criteria
6 Very High	Will affect areas across international boundaries
5 High	Will affect the entire country
4 Medium	Will affect the entire province or region
3 Low	Will affect the local area or district
2 Very low	The impact will only affect the site
1 None	The impact will only affect portions of the site
Duration	
Rating	Criteria
6 Very High	Permanent no mitigation possible
5 High	Permanent but mitigation possible
4 Medium	Long term (6-15 years)
3 Low	Medium term (1-5 years)
2 Very low	Short term (Less than 1 year)
1 None	Immediate (Less than 1 month)
Probability	
Rating	Criteria
6 Very High	Certain/Definite Impact will certainly occur (100% probability of occurring)
5 High	Almost certain/ High probability Impact will occur (>75% probability of occurring)
4 Medium	Impact likely to occur (50 - 75% probability of occurring)
3 Low	Impact may occur (25-50% probability of occurring)
2 Very low	Unlikely/ Low probability. Impact unlikely to occur (0 - 25% probability of occurring)
1 None	Highly Unlikely/ None Impact unlikely to occur (0% probability of occurring)

SIGNIFICANCE Consequence x Probability Presented as a score out of 108																	
Rating	Criteria																
84-108 High	Long-term environmental change with great social importance.																
50-83 Medium	Medium to long term environmental change with fair social importance.																
27-49 Low	Short to medium term environmental change with little social importance.																
12-26 Very low	Short-term environmental change with no social importance																
3-11 Neutral	No environmental change																
	Consequence = Severity + Spatial Scale +Duration Presented as a score out of 18																
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Probability	2	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
	3	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
	4	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72
	5	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
	6	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108

CUMULATIVE EFFECTS	
Rating	Criteria
High	The impact would result in significant cumulative effects
Medium	The impact would result in moderate cumulative effects
Low	The impact would result in minor cumulative effects
REVERSIBILITY	
Rating	Criteria
Reversible	Impacts can be reversed though the implementation of mitigation measures
Irreversible	Impacts are permanent and can't be reversed by the implementation of mitigation measures
DEGREE TO WHICH IMPACT COULD BE AVOIDED/MANAGED/MITIGATED	
Rating	Criteria
High	The impact could be significantly avoided/managed/mitigated.
Medium	The impact could be fairly avoided/managed/mitigated.
Low	The impact could be avoided/managed/mitigated to a limited degree.
Very Low	The impact could not be avoided/managed/mitigated; there are no mitigation measures that would prevent the impact from occurring.

9.5 Positive and negative impacts of proposed activity

9.5.1 Positive impacts

- Creation of employment and job security and economic spin-offs (positive impact)
- Provision of materials for construction industry to support local and regional economic growth related to the renewable energy industry.
- Removal of alien invasive plant species, such as Prosopis and Tamarisk spp.

9.5.2 Negative impacts

The key potential negative impacts associated with the mining activity include the following:

- Site Establishment Activities
 - Disturbance of onsite fauna and flora
 - Soil compaction from repeated use of access track
 - Noise Generation
 - Visual intrusion
 - Dust fall and noise nuisance from activities
 - Wildlife and vegetation disturbance from site preparation
 - Wetland contamination from hydrocarbons
 - Contamination and disturbance wetland from compaction and soil disturbance due to stockpile platforms and crystallisation pans
- Mining operations within the wetland, movement of earth moving equipment and waste generation and management:
 - Noise caused by the machinery and vehicles on site, and by vehicles going to and from the mining site
 - Visibility of the mining operations
 - Dust emissions from general site activities (vehicle entrained dust)
 - Creating raised crystallisation pans and stockpile platforms impacting on aquatic ecosystem by altering the panfloor and diverting water flow and storm water run-off during infrequent rainfall events
 - Contamination and disturbance wetland from compaction and soil disturbance due to stockpile platforms and crystallisation pans
 - Wildlife and vegetation disturbance from front end loader and trucks
 - Socio-economic impact on job security, employment creation and economic spin-offs (positive impact)
- Rehabilitation of the mining area, scarifying compacted areas and vehicle tracks
 - Dust emission from decommissioning activities (vehicle entrained dust)
 - Soil erosion of topsoil
 - Ongoing removal of alien invasive plant species (positive impact)

9.6 The mitigation measures and the level of risk.

Refer to Table 13 for the impact assessment and the key measures to mitigate the potential impacts.

9.6.1 Soil and Land Capability:

The impacts of soil and land capability have been assessed as being of very low to low significance even before mitigation. The activities and actions associated with achieving a stable post mining landform, which is compatible with the surrounding landscape and which is capable of a productive land use that achieves a land capability equal to that of pre-mining conditions are discussed below. It is important to note that for the mine to meet the key objective of economically viable and sustainable grazing, it is imperative that its other key objectives, viz. a safe post-mining area with limited residual impacts and optimal post-mining social opportunities are met.

The building block of viable and sustainable small stock production on the disturbed areas is the shaping of the slope of excavations or raised platforms and ripping of compacted areas.

The risks associated with stability are the formation of erosion gulley's and a collapsing slope of any remaining excavations or raised platforms. The risk can be regarded as insignificant given the extremely low rainfall in the area (outside forces) and small size and even slope of any remaining excavation or raised platforms. The risk will be mitigated by levelling evaporation pan walls and ripping of compacted areas including evaporation pan floors and stockpile platforms to facilitate water flow within the pan. Furthermore, waste or product stockpiles will remain on site.

The above soil preparation will be combined with sound management practices through application of the land use principles, guidelines and recommendations with regard to carrying capacity. These actions should mitigate the risks of erosion and inferior agricultural results due to improper farming practices.

The impact on soil compaction can be reduced to very low by limiting the activities and clearance to the smallest area that is necessary. Incremental clearing of ground cover should take place to avoid unnecessary exposed surfaces. Where clear scraping (dozing) or removal of vegetation cannot be avoided areas should be kept to an absolute minimum. All compacted areas that are not required for aftercare access shall be scarified. All tracks (twee-spoor) will be scarified and any topsoil stockpiled to be spread over the disturbed area. Dual use access roads must be handed back to the landowner in a good state of repair. The impact can be further reduced only using existing farm roads and tracks.

The impact on soil contamination can be reduced to very low by the mitigating measure applicable to waste management. In order to ensure that waste classes are kept in separate streams, communication will be passed on and people will be trained on the different waste classes. Separation of wastes into classes will ensure that waste is disposed of safely and according to the correct procedure. Implementation of the following tasks to manage the risks associated with mining activities will ensure that waste management practices do not create and/or leave legacies and will limit the residual impact of mine closure. Regular inspections and audits will be used as management system to ensure compliance.

All equipment and other items used during the mining operation needs to be removed from the site. Waste material of any description, including receptacles, scrap, rubble and tires, will be

removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be buried or burned on the site. Implementing screening as part of the cleaning activities before materials are moved from the mine. The infrastructure area will be screened for petrochemical spills and cleaned and waste from the temporary storage facility will be removed and the area cleaned. Any compacted movement areas will be screened for petrochemical spills and cleaned before it is ripped and levelled. Redundant structures will be removed for use elsewhere or demolished and discarded. All steel structures and reinforcing will be discarded or sold as scrap. All equipment and other items used during the mining operation needs to be removed from the site. Remove all power and water supply installations not to be retained by landowner in terms of section 44 of the MPRDA. Final walk through of complete mining lease area to ensure no mining related waste and of re-usable infrastructure remain on site.

9.6.2 Topography

The impacts of topography have been assessed as being of very low significance before mitigation. As part of ensuring slope stability re-shaping (sloping) of any remaining excavations or raised stockpile platforms and evaporation pans will be done where required. The land-use plan will be to create an even surface and prepare the area for natural re-vegetation and not impeding or diverting the flow of water by implementing erosion control measures including waterways, drainage lines and storm water infrastructure if necessary. Actions to mitigate the risk also include ensuring stability of the bank of the pan by re-shaping and backfilling of the access point with suitable material where required.

Actions to mitigate the risk of erosion will be through implementation of practices such as leaving the profiling contours. All spoils and leftover product need to be returned to the excavations for backfilling. Having these actions in place should ensure that there is no negative effect on surface water flow and will assist in achieving the aim of limited residual impact.

The focus of topographic rehabilitation may not be obvious at the time of mine planning and must be addressed as the mine develops and the Final Rehabilitation, Decommissioning and Closure Plan must be reviewed periodically for continued relevance in the light of changed prospecting path or long-term plans.

9.6.3 Biodiversity Flora and Fauna:

The impacts of mining have been assessed as being of medium significance before mitigation. The impact can be reduced to very low significance by prior delineation of the area via geophysical characterisation in order to limit the activities and clearance to the smallest area that is necessary and rehabilitating the disturbed area as soon as possible.

The concomitant impacts on soil, land capability, topography and vegetation will be addressed through the reshaping of the landscape and the protection of the area until fully re-vegetated or stabilised. Unnecessary destruction of vegetation should be avoided by ensuring that traffic and personnel movement be restricted to demarcated areas. Movement and stockpile areas must be rehabilitated by scarifying trampled and compacted areas to a dept of $\pm 300\text{mm}$. Windrows created by scarifying needs to be left in place to create a rough surface that can act as seed trap and create a micro-habitat to promote natural re-vegetation. No traffic should be allowed on the rehabilitated areas and vehicle's speed must take into account the possibility of collisions with fauna.

9.6.4 Aquatic Biodiversity and Water Resources:

Potential Impacts on Aquatic biodiversity & Water Resources is assessed as being of low significance even before mitigation. The activities and actions associated with achieving a stable, free draining post mining landform, which is compatible with the surrounding landscape are discussed below. To prevent significant negative effects arising from changes in post-mining surface water quantities, the post-mining topography will be adjusted where possible to minimise the effect on water flow and increase potential for re-vegetation. Another potential risk arising from the mining area after mine closure are changes in the quality of surface water compared to pre-mining quality that may negatively affect the area. The impact can be avoided by ensuring that measures are put in place to prevent contamination of surface and groundwater with hydrocarbons.

The mine will not produce any residue that could lead to water contaminated. Should the attenuation measures for prevention of soil pollution as described be implemented, the effect on surface water will be insignificant. The most important of these is that any oil or fuel leaks caused during operations must be removed immediately with the saturated soil and placed in bags or drums for disposal at a suitable site.

Fuel storage must be contained in mobile bowsters and refuelling will be done with care to minimise the chance of spillages. Only re-fuel machines at fuelling station, if possible, and construct structures to trap fuel spills at fuelling station. Oils and lubricants must be stored within sealed containment structures and minimise storage of hazardous substances onsite.

Only emergency repairs to mechanical equipment will take place onsite. Maintaining all equipment as per supplier specification and using drip trays or UPVC sheets to prevent spills/leaks onto the soil. When not in use, a drip tray must be placed beneath mechanical equipment and vehicles. Ensure vehicles and equipment are in good working order and regularly inspected for leaks and drivers and operators are properly trained. A spill kit will be available on each site where activities are in progress. No water will be abstracted in terms of section 21(a) of National Water Act, 1998 (Act no. 36 of 1998) without the necessary authorisations

9.6.5 Emissions (Air quality, visual intrusion & Noise Generation):

- **Air quality**

The stipulations in the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) with revisions in Government Notice R.827, published in Government Gazette No. 36974 of 1 November 2013 were used in this dust fall monitoring programme and report.

A Standard for the acceptance dust fall rate is set out in the table below for residential and non-residential areas.

Restriction Areas	Dust fall rate (D) (mg/m ² /Day, 30- day average)	Permitted frequency of exceeding dust fall rate
Residential area	$D < 600$	Two within a year, not sequential months
Non-residential area	$600 < D < 1\ 200$	Two within a year, not sequential months

Attention is drawn to paragraph 4.8.4 of the extract from SANS regarding recognition that certain enterprises need to operate within "band 3" by virtue of "the practical operation of the enterprise..." provided that the best available control technology is applied for the duration".

"DUST FALL STANDARDS SANS 1929:2004

4.8 Dust Deposition

4.8.1 General

The four-band scale to be used in the evaluation of dust deposition is given in 4.8.2 and target, alert and action levels indicated in 4.8.3. Permissible margins of tolerance are outlined in 4.8.4 and exceptions noted in 4.8.5

4.8.2 Evaluation Criteria for Dust Deposition

Dust deposition rates shall be expressed in units of $\text{mg m}^{-2} \text{ day}^{-1}$ over a 30-day averaging period. Dust deposition shall be evaluated against a four-band scale as presented in Table 9.

Table 9 – Four-band scale evaluation criteria for dust deposition

Band number	Band description label	DUSTFALL RATE (D) ($\text{mg} / \text{m}^2 / \text{day}^{-1}$ 30-day average)	Comment
1	Residential	$D < 600$	Permissible for residential and light commercial.
2	Industrial	$600 < D < 1\,200$	Permissible for heavy commercial and industrial.
3	Action	$1\,200 < D < 2\,400$	Requires investigation and remediation if two sequential months lie in this band, or more than three occur in a year.
4	Alert	$2\,400 < D$	Immediate action and remediation required following the first exceedance. Incident report to be submitted to relevant authority.

4.8.3 Target, Action and Alert Thresholds are given in Table 10

Table 10 – Target, action and alert thresholds for dust deposition

Level	DUSTFALL RATE (D) ($\text{mg} / \text{m}^2 / \text{day}^{-1}$ 30-day average)	Averaging period	Permitted frequency of exceedances
Target	300	Annual	
Action residential	500	30 days	Three within any year, no two sequential months
Action industrial	1 200	30 days	Three within any year, no two sequential months.
Alert threshold	2 400	30 days	None. First exceedance requires remediation and compulsory report to authorities.

4.8.4 Margin of Tolerance

An enterprise may submit a request to the authorities to operate within Band 3 (ACTION Band), as specified in Table 9, for a limited period, providing that this is essential in terms of the practical operation of the enterprise (for example the final removal of a tailings deposit) and provided that the best available control technology is applied for the duration.

No margin of tolerance will be granted for operations that result in dustfall rates which fall within Band 4 (ALERT Band) as specified in Table 9.

4.8.5 Exceptions

Dustfalls that exceed the specified rates but that can be shown to be the result of some extreme weather or geological event shall be discounted for the purpose of enforcement and control. Such event might typically result in excessive dustfall rates across an entire metropolitan region, and not be localised to a particular operation. Natural seasonal variations, such as dry windy period during the Highveld spring will not be considered extreme events for this definition"

The impact of dust is assessed as being of low significance before mitigation. If the mitigation measure below is put in place the significance rating can be reduced to insignificant.

The company may be required to operate within the air quality requirements of the Municipality's Air Quality Management Plan.

The impact of dust generated by vehicles travelling over unpaved areas can be readily mitigated by enforcement of low vehicle speeds and wet suppression.

- **Visual intrusion**

The nuisance (visual) impact of the mining activities is also assessed as being of Low Significance. The nuisance (visual) impact can be reduced by taking into account available vegetation screening, the locations of visual receptors on the mining area and adjacent properties and locating the equipment in a way that it is screened from points of visual reception wherever possible. Visual impact can be reduced to one of insignificance by appropriate location of visually prominent items on the site and placement in consultation with the landowner.

- **Noise Generation**

SANS 0103 titled The Measurement and Rating of Environmental Noise with regard to Land Use, Health, Annoyance and Speech and its recommended levels shall apply.

Recommended limits: Assuming working hours of between 06h00 and 19h00 which classifies as daytime, a recommended maximum noise level of 45dBA is set for rural districts in terms of the table below.

Type of district	Equivalent Continuous Rating Level for Noise ($L_{Aeq,T}$) - (dBA)					
	Outdoors			Indoors		
	Day-night ($L_{R,dn}$)	Daytime ($L_{Req,d}$)	Night-time ($L_{Req,N}$)	Day-night ($L_{R,dn}$)	Daytime ($L_{Req,d}$)	Night-time ($L_{Req,N}$)
RESIDENTIAL DISTRICTS						
Rural districts	45	45	35	35	35	25
Suburban districts (little road traffic)	50	50	40	40	40	30
Urban districts	55	55	45	45	45	35
NON-RESIDENTIAL DISTRICTS						
Urban districts (some workshops, business premises, main roads)	60	60	50	50	50	40
Central business districts	65	65	55	55	55	45
Industrial districts	70	70	60	60	60	50

In terms of community response to noise, SANS recommendations are to be used as follows:

Excess dB above ambient	Estimated Community / Group Response	
	Category	Description
0	None	No observed reaction
5	Little	Sporadic complaints
10	Medium	Wide spread complaints
15	Strong	Threats of community / group action
20	Very Strong	Vigorous community / group action

In addition, the general noise industry rule of "ambient +7 dB" shall indicator above which levels are generally "not acceptable".

Typical noise levels generated by various types of construction equipment are listed in the table below.

Equipment	Typical operational Noise level at given offset (dBA)							
	5m	10m	25m	50m	100m	250m	500m	100m
Air compressor	91	85	77	71	65	57	51	46
Crane (mobile)	93	87	79	73	67	59	53	47
Dozer	95	89	81	75	69	61	55	49
Pump	86	80	72	66	60	52	46	40
Rock Drill	108	102	94	88	82	74	68	62
Trucks	87	81	73	67	64	60	57	54

Taking into account the existing background noise levels of the general area which is rural in nature, the significance of the noise caused by the earth moving equipment, vehicles going to and from the mining area is rated as low significance before mitigation.

Mitigation if required will include limiting the site establishment activities to daylight hours (06h00 to 18h00) and not undertaking such activities at all on Sundays and public holidays. If mining on Sundays and public holidays cannot be avoided then agreements with any potential noise recipient must be put in place at least 7 days before activities. The vehicles on site will be limited to the absolute minimum required. It must be noted that the speed limit for driving within the prospecting area shall be limited to 40Km/h.

If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient.”

9.6.6 Socio- economic impact

The impact on Socio- economic impact is of medium significant and even with mitigation, the impact will remain one of medium significance due to the impact off job losses, ccontractual agreements with service providers surpassing mine closure date.

Job creation and local economic spin offs through increased income earned, and through purchasing of local materials is a positive impact and outweigh the insignificant negative impacts below. The mining area is located in a rural farming area with farm dwellings.

Some landowners cherish the peaceful and quiet lifestyle of the area and friction between local residents and a crew of strangers is very possible. Conflict with other mining companies or land users on the same property is also a possibility. The potential for conflict is assessed as being of low significance. The impact can be reduced to one of very low significance by taking appropriate social management measures.

All access will be arranged beforehand with landowner and a supervisor will be present at all times and will report to the landowner when accessing and leaving the property. Indemnity will be signed by all mining personnel entering the property to protect the landowner against claims regarding personal loss and injury. Landowner will be updated with regard to the progress of mining and concurrent rehabilitation will be planned in consultation with landowner. Agreements between any existing mining operations or other land users and landowner will be respected and adopted as part of this operation.

Other impacts like not undertaking environmental management according to approved EMPr and plans and no auditing of the environmental management systems as well as insufficient funds for complete rehabilitation can however be mitigated to some degree as follow.

A review of the final rehabilitation, decommissioning and closure plan must be done annually to ensure all outstanding environmental liabilities are covered and sufficient funds is available to implement the closure plan.

Contract durations with service providers will be limited to address the risk of contractual agreements with service providers surpassing the mine closure date. Maintain positive and transparent relationships with stakeholders as well as maintaining communication channels and undertaking environmental management in accordance with the approved EMPr and Closure Plan.

9.6.7 Palaeontological, Archaeological and Cultural Heritage Resources

The impact on Cultural and Heritage Resources is assessed as being of medium significance before mitigation. The impact can be avoided by ensuring that recommendations from specialist studies listed below are implemented.

- At closure, all waste must be removed and the site left in a tidy state; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Regardless of the above recommendations, all mining areas should be carefully inspected by project staff to ensure that no heritage features are present. Equipment moving on site will,

where ever possible, be confined to established roads and tracks. Where this is not possible, access routes will be walked prior to entry of equipment to ensure that there are no graves present. Should graves be identified, the access route will be realigned to avoid such heritage resources, which will then be clearly demarcated to minimise risk of accidental damage.

If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Any identified heritage feature will be demarcated and cordoned off and measures put in place to prevent any activities within 100m. All personnel including contractors involved in the construction activities will be made aware of the locations of all identified heritage resources, the necessity of avoiding impacts on such resources and the penalties for damaging them. Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites. It will be emphasised that archaeological artefacts such as potsherds, stone tools, grinding stones, etc. must be left in situ and undisturbed.

No-go areas of particular palaeontological sensitivity are not identified in the Project Area. The proposed mining area lies on the Quaternary Kalahari Group aeolian sands, alluvium and calcrete and a small portion of surface limestone. There is a very small chance that fossils may occur in palaeo-pans or palaeo-springs but this is not common in this region. The northern part of the pan is already highly disturbed from current mining operations, but the area under consideration is completely undisturbed. No fossils were seen on the surface by the specialist when he did a walkthrough for the heritage impact assessment. Nonetheless, a Fossil Chance Find Protocol should be added to the EMP: if fossils are found once the surveyor and/or the environmental officer have checked the sites for the planned facilities, the fossils should be photographed, their position recorded, then removed and stored. Photographs sent to the palaeontologist will enable him/her to assess the scientific importance of the fossils and act accordingly.

Table 13: Significance of Impacts per Activity per Phase

Site Access and Site Establishment - Potential Impacts on other land uses (No impact)			
<p>No Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area identified.</p> <p>No intersection with Environmental Management Frameworks relevant to the application</p> <p>Development incentives, restrictions, exclusions or prohibitions and their implications are not applicable to mining operations as the state is the custodian of all minerals and is responsible for the screening process as part of the acceptance process of applications taking into account any section 53 applications by other land users.</p> <p>The impact on Civil Aviation and Defence although regarded as low sensitivity is also not applicable to this application as no high structures will be constructed and no defence installations or test areas are present in close proximity to this project.</p> <p><u>Indirect impacts:</u></p> <p>None</p> <p><u>Residual impacts:</u></p> <p>None</p>	Significance	Before	After
	Nature	Neutral	Neutral
	Severity		
	Spatial Scale		
	Duration		
	Consequence		
	Probability		
	Significance		
	Cumulative Effects		
	Reversibility		
Degree to which the impact can be avoided/managed/mitigated:			
<p><u>Mitigation</u></p> <p>• None as mining will only be a temporary change in land use</p>			
Site Access and Site Establishment - Potential Impacts on Soil (contamination, erosion, compaction) & Land capability (Low sensitivity)			
<p>Regarding Land capability for Agriculture the mining area is located within a salt pan devoid of any vegetation therefore the sensitivity of the area is regarded as low and the main ecological drivers are located along the fringes of the pan (interface between the hinterland and pan surface) that is used for grazing. In this case, no further disturbance of that interface will take place as all logistics will be available at the company HQ shared with the Rooipan Guesthouse and farmstead .</p> <p>The clearing of site access points will result in the removal of existing vegetation, which will disturb the soil increasing the potential for soil erosion by wind and loss of soil in the event of rainfall. Soil compaction will result from repeated use of access tracks.</p> <p>Potential contamination of soil from unmanaged use of hydrocarbons on-site, and incorrect storage of hazardous substances.</p> <p>Accidental spills not cleaned up immediately.</p> <p><u>Indirect impacts:</u></p> <p>Windblown litter will cause visual blight. Hydrocarbons are toxic and will cause vegetation die-back and soil poisoning.</p> <p>A lack of waste food management encourages vermin.</p> <p>Dust impacting on adjacent vegetation and causing a nuisance to workers.</p> <p>Compaction of topsoil where vehicles drive outside demarcated areas damages seed bank and habitat for invertebrates.</p> <p><u>Residual impacts:</u></p> <p>The only real risk of pollution to the site and surrounds is through hydrocarbon pollution. All mitigation and monitoring efforts aimed at minimising or preventing any negative impacts are contained in the approved EMP and Final Rehabilitation, Decommissioning and Closure plan.</p> <p>Recycling of waste material creates employment.</p> <p>Potential loss of invertebrates that live in the top layers of the soil.</p> <p>Current land cover indicators do not take into account degradation due to, for example, spread of alien plants, secondary impacts of mining (e.g., sand mobilization) or overgrazing by livestock.</p>	Significance	Before	After
	Nature	Negative	Negative
	Severity	4	1
	Spatial Scale	2	1
	Duration	2	1
	Consequence	8	3
	Probability	4	4
	Significance	32	12
	Cumulative Effects	Low	Very Low
	Reversibility		Reversible
Degree to which the impact can be avoided/managed/mitigated:			
			High

Mitigation

- After clearing the access points, the affected area shall be stabilized to prevent any erosion or sediment runoff. Stabilized areas shall be demarcated accordingly.
- Incremental clearing of ground cover should take place to avoid unnecessary exposed surfaces.
- Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against the wind and stormwater run-off.
- Top soil shall be removed separately and stockpiled separately from other soil base layers.
- Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material.
- Topsoil storage areas must be convex and should not exceed 2m in height.
- Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction.
- In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 metres. Trucks may not be driven over the stockpiles.
- Reduce drop height of material to a minimum. Temporarily halt material handling in windy conditions.
- A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit.
- Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation.
- Contaminated soil must be treated by first removing the source of contamination - removing the source of contamination should allow the system to recover without further clean-up required.
- Petrochemical spillages to be collected in a drum and store excavated spill affected soil for disposal at a registered facility or onsite treatment.
- Fuel storage must be contained in mobile bowsters and refuelling will be done with care to minimise the chance of spillages
- The most promising techniques for in on-site treatment involve bioremediation. Bioremediation involves the use of microorganisms to destroy hazardous contaminants.

Waste Management provided at company HQ (farmstead)

- Separation of wastes into classes will ensure that waste is disposed of safely and according to the correct procedure. In order to ensure that waste classes are kept in separate streams, people will be trained on the different waste classes. Recycling and reusing materials may reduce garbage haul fees or generate income through the sale of scrap metal and old equipment.
- All waste should be stored in a temporary waste storage area with pollution prevention measures and unwanted steel, sheet metal and equipment need to be stored in a demarcated salvage yard.
- Used oils / hydrocarbons fuels / liquids are to be collected in sealed containers (stored on concrete slabs) and removed from site for recycling by a reputable company.
- All waste in the temporary storage area for used lubrication products and other hazardous chemicals will be disposed of at a collection point from where it will be collected by a waste recycling company.
- Mobile generators or fuel bowser to be supplied with bunded facility or necessary pollution control measures (drip trays).
- Clean out content of oil traps and dispose of waste at registered and purpose designed landfill sites.
- Tyres to be return to supplier or a company that uses old tyres for making door mats, shoes, swings, etc.
- Batteries to be return to supplier or dispose at a permitted hazardous waste facility.
- Fluorescent tubes to be collected in sealed containers (stored on concrete slabs) and removed from site for disposal at a permitted hazardous waste facility.
- Chemical containers to be returned to supplier or disposed of at a legal, permitted facility that is capable of disposing of the waste. (DO NOT sell chemical containers to workers or communities).
- Laboratory waste (chemicals) - Returned to supplier or disposed of at a permitted facility that is capable of disposing of the waste. These liquid wastes cannot be disposed of on the waste dumps.
- Domestic waste (i.e., waste that is generated from the accommodation and offices) separated at source into recyclable products. These must then be removed and recycled by recognised contractors. (Note that the mine is responsible for the waste from cradle to grave). Domestic waste generated by workers needs to be sorted and all biodegradable waste must be stored in separate drums. This biodegradable waste will be dumped in a landfill provided for onsite.
- Disposal non-biodegradable waste at a registered and officially permitted commercial or municipal landfill site is the most cost-effective option for materials that cannot be recycled.

Site Access and Site Establishment - Potential Impacts on topography

No change in topography during Site Access and Site Establishment as the site access points along the fringes of the pan (interface between the hinterland and pan surface) already exist.

Indirect impacts:

None

Residual impacts:

None

Significance	Before	After
Nature	Neutral	Neutral
Severity		
Spatial Scale		
Duration		
Consequence		
Probability		
Significance		
Cumulative Effects		
Reversibility		Reversible
Degree to which the impact can be avoided/managed/mitigated:		High

Mitigation

- Shape remaining / residual edges to mimic natural contours so that no slope exceeds 1:3 at final decommissioning

Site Access and Site Establishment - Potential Impacts on Biodiversity (Very high sensitivity), Flora (Low sensitivity) & Fauna (Low sensitivity)	Significance	Before	After
<p>Potential impact on Threatened Ecosystems, Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as wetlands and similar systems requiring specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure and Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"). The site is divided into off pan and on pan activities.</p> <p>The off pan activities only include the upgrading of 18Km existing farm tracks as access and haul roads by resurfacing and widening to 4m. This have resulted in the linear disturbance of some 7.2ha of Gordonia Duneveld Vegetation type SVkd1 (Mucina and Rutherford, 2012). This vegetation type is not classified as threatened (in terms of NEMBA). Furthermore this area is classified as Other Natural Area in the CBA mapping of the Northern Cape (2016). According to the (NPAES) (DEA) 2009 the area is not included in the NPAES and no protected areas are located within a 10Km radius. The main ecological drivers are located along the fringes of the pan (interface between the hinterland and pan surface). In this case, no further disturbance of that interface will take place as all logistics will be available at the company HQ shared with the Rooipan Guesthouse and farmstead .</p> <p>The on pan activities take place over an area of 5ha (not including pump locations) in Southern Kalahari Salt Pans AZi4 vegetation type, despite the lack of vegetation on the salty pan surface. The 2016 CBA mapping for the Northern Cape classifies the pan as being an Ecological Support Area due to the presence of the Valley floor Depression (Pan) and therefore rated as having a very high sensitivity. A terrestrial upstream FEPA (Code1) rated as low sensitivity cover the major portion of the Gordonia Duneveld. The surface activities at this site do not represent a permanent or significant impact. This can be assessed with a high degree of confidence given the current operational status of the adjacent salt mining operations.</p> <p>Regarding Fauna no species of conservation concern (SCC) were recorded and the sensitivity regarding animal species are regarded as low. Regarding Flora no SCC is present within the salt pan and the vegetation units present are also regarded as Least threatened.</p> <p>The clearing of site access points will result in the removal of existing vegetation.</p> <p>Soil compaction slowing natural re-vegetation will result from ongoing repeated use of movement areas and driving off-road.</p> <p><u>Indirect impacts:</u></p> <p>Soil disturbance caused by vegetation clearing will provide suitable conditions for the establishment and spreading of alien invasive vegetation.</p> <p>Removal of alien invasive vegetation is a positive impact, and will benefit the ecological functioning.</p> <p><u>Residual impacts:</u></p> <p>Access points have been earmarked for existing disturbed areas where clearing would be minimal, resulting in little impact on ecological functioning at a local level during the construction process.</p> <p>The clearing of alien invasive vegetation is a positive impact, and will benefit and improve the ecological functioning of the wetland and adjacent areas.</p> <p>This development will resulted in some disturbance of ecosystem but that impact is clearly insignificant. The approved EMP and Final Rehabilitation, Decommissioning and Closure plan will aim to reduce or eliminate any negative impact which occurs from this site.</p>	Nature	Negative	Negative
	Severity	5	2
	Spatial Scale	2	1
	Duration	2	1
	Consequence	9	4
	Probability	6	2
	Significance	54	8
	Cumulative Effects	Medium	Neutral
	Reversibility	Reversible	
	Degree to which the impact can be avoided/managed/mitigated:	Medium	
<p><u>Mitigation</u></p> <ul style="list-style-type: none">Mitigation measures for soil erosion & soil compaction will also be applicable to promote natural revegetation:Identify existing disturbed patches for laydown areas, and demarcate areas for clearing. Existing farm tracks will be used, and disturbed areas have been earmarked for laydown areas.Remove alien invasive vegetation and ensure ongoing alien vegetation clearing in the area. No indigenous plants outside of the demarcated work areas may be damaged.The noise and vibration caused by the earthmoving equipment will disturb smaller animals (e.g. snakes). These will move away whilst operations are in progress. Should any animals be encountered these should be moved away by a suitably trained nature conservation officer, if necessary.Movement of vehicles and machinery will be restricted to demarcated areas and roads with no off-road driving permitted. Vehicles speed must take into account the possibility of collisions with fauna. .Provide all workers with environmental awareness training. Ensure all workers comply with the requirements of the EMP.			

Mitigation <ul style="list-style-type: none"> The Applicant shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations and limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Sub clause 4.1 regarding “built-up” area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. Activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise on neighbours. No amplified music shall be allowed on site. Engines shall be turned off when the vehicle is temporarily parked or stationary for long periods. Noise abatement equipment, such as mufflers on diesel engines, will be maintained in good condition. Minimise use of reverse alarms by proper route planning If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient. On public roads the vehicles shall adhere to municipal and provincial traffic regulations including speed limits. At the mining area a speed limit of 40km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit. The wetting of the roads helps reduce dust generation as will applying dust suppression and/or hardening compound. The earth moving equipment and other visually prominent items on the site will be located in consultation with the landowner. Vehicles used on site for the construction related activities shall be maintained and in a good working condition so as to reduce emissions. 			
Site Access and Site Establishment - Potential Impacts on Socio-economic features		Significance	Before
Conflict with landowner and other land users		Nature	Negative
Employment can be lost by an individual due to non-performance but the loss of job provision is irreversible		Severity	5
<u>Indirect impacts:</u>		Spatial Scale	5
Upskilling		Duration	6
Local economic spin-offs through increased income earned, and through purchasing of local materials		Consequence	16
Income generation for landowners in a time of severe drought where livestock farming is not sustainable.		Probability	4
<u>Residual impacts:</u>		Significance	64
The upliftment of unemployed people, with positive impact on standard of living for their families.		Cumulative Effects	Neutral
Local and regional economic spin-offs from investment through Social Labour Plan.		Reversibility	Irreversible
		Degree to which the impact can be avoided/managed/mitigated:	High
Mitigation <ul style="list-style-type: none"> All access will be arranged beforehand with landowner and a supervisor will be present at all times and will report to the landowner when accessing and leaving the property. Indemnity will be signed by all mining personnel entering the property to cover the landowner against any claims regarding injuries or damage to equipment. Any other mining companies or land users operating legally will be regarded as affected parties and consulted. Areas of operations will be demarcated and no overlapping will be allowed or agreements regarding environmental liabilities need to be put in place. Agreements between any existing mining operations or other land users and landowner will be respected and adopted as part of this operation. Employment of local previously disadvantaged labour wherever possible, with provision of training (upskilling) 			
Site Access and Site Establishment - Impacts on Paleontological (Medium sensitivity), Archaeological & Cultural Heritage Resources (Low sensitivity)		Significance	Before
With regard to Archaeological and Cultural Heritage the area has been rated as low sensitivity. The site was inspected and found to be flat with a light scattering of natural stone fragments and artefacts in some areas. The surrounding dunes, where examined, were sterile. The archaeological materials were in very low densities and seemed to be largely from the Middle Stone Age, but with occasional flakes possibly being Later Stone Age. Graves are not expected in the pan but could occur in the sand dunes. Although the pan has already been compromised by the large salt works in the north, it is not visible from the surrounding landscape due to the sand dunes in the area. None of the potential impacts is of any concern with all rated as being of low significance.		Nature	Negative
The SAHRIS Palaeosensitivity Map shows the site to be of unknown (salt mine) and medium (road) palaeontological sensitivity with the possibility of finding buried fossils in the study area. The specialist also noted there is a very small chance that fossils may occur in palaeo-pans or palaeo-springs but this is not common in this region.		Severity	5
<u>Indirect impacts:</u>		Spatial Scale	5
Loss of archaeological resources, graves and precolonial cultural landscape		Duration	1
The material fossil evidence of “deep time” is embedded in the creation of the sacred landscape and contributes to the “sense of place” cultural aesthetic of the region. The loss of fossils and concomitant interpreted knowledge impoverishes the tangible testimony of the prehistoric landscape and ecological context of ancient humans.		Consequence	11
<u>Residual impacts:</u>		Probability	1
Negative residual impact arises from the unavoidable loss of fossils of unknown significance in spite of mitigation efforts. Positive residual impact arises from the successful rescue of fossil material for posterity, resulting in material for future research, employment opportunities for budding, young researchers and enhanced insights into the prehistory of the Northern Cape.		Significance	11
		Cumulative Effects	Neutral
		Reversibility	Irreversible
		Degree to which the impact can be avoided/managed/mitigated:	High

<u>Mitigation</u> <ul style="list-style-type: none">• The impact can be avoided by ensuring that recommendations from specialist studies listed below are implemented.• If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution. Regardless of the above archaeological opinion, all sample sites should be carefully inspected by project staff to ensure that no heritage features are present; <ul style="list-style-type: none">• The fossil Chance Finds Procedure must be implemented in the event of any chance finds of fossils, and• If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.• A safe distance of at least 100 metres will be maintained between the identified heritage resource and mining activities.• Any identified heritage feature will be cordoned off with stakes and Chevron tape. All personnel including contractors involved in the construction activities will be made aware of the locations of all identified heritage resources, the necessity of avoiding impacts on such resources and the penalties for damaging them.• Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites. It will be emphasised that archaeological artefacts such as potsherds, stone tools, grinding stones, etc. must be left in situ and undisturbed.• The best mitigating measure is to try and avoid as many archaeological sites as possible, so mitigation as described here will only be required for those sites that cannot be avoided. Management measures are also required like careful planning by the developer of the project layout. Maps should be prepared showing all areas that will require disturbance.				
Operational Phase - Potential Impacts on other land uses No Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area identified. No intersection with Environmental Management Frameworks relevant to the application Development incentives, restrictions, exclusions or prohibitions and their implications are not applicable to mining operations as the state is the custodian of all minerals and is responsible for the screening process as part of the acceptance process of applications taking into account any section 53 applications by other land users. The impact on Civil Aviation and Defence is also not applicable to this application as no high structures will be constructed and no defence installations or test areas are present in close proximity to this project. <u>Indirect impacts:</u> None <u>Residual impacts:</u> None	Significance	Before	After	
	Nature	Neutral	Neutral	
	Severity			
	Spatial Scale			
	Duration			
	Consequence			
	Probability			
	Significance			
	Cumulative Effects			
	Reversibility			
	Degree to which the impact can be avoided/managed/mitigated:			
<u>Mitigation</u> <ul style="list-style-type: none">• None				
Operational Phase - Potential Impacts on Soil (contamination, erosion, compaction) & Land capability Mining is taking place in an salt pan devoid of any vegetation and the limited extend of mining 5Ha will not lead to a loss of agricultural production.. The veld has an extremely low carrying capacity (±80ha/LSU). Loss of grazing off pan will be due to the access road 4-6m wide to 9km from nearest public road. Salt mining is currently taking place at this pan and the site is extremely isolated and the only other feasible off pan land use is low level grazing for small stock units. Although mining per se is not a sustainable land development practice and process, this is not true of salt mining from brine. Furthermore it can be conducted in such a way as to minimise the impact on the environment Potential contamination of soil from unmanaged use of hydrocarbons on-site, and incorrect storage of hazardous substances and accidental spills not cleaned up immediately. The clearing of off pan areas for movement areas will result in the removal of existing vegetation and topsoil, which will disturb the soil increasing the potential for soil erosion by wind and loss of soil in the event of rainfall. Soil compaction will result from ongoing repeated use of access tracks. The mobile nature of the sands and the fact that the topsoil is just Kalahari dune sand means that treatment of hardened topsoil through ripping will be sufficient rehabilitation <u>Indirect impacts:</u> Hydrocarbons are toxic and will cause vegetation die-back and soil poisoning. Compaction of topsoil where vehicles drive outside demarcated areas damages seed bank and habitat for invertebrates. Dust impacting on adjacent vegetation and causing a nuisance to workers or residents. <u>Residual impacts:</u> It may be argued that grazing could provide socio-economic returns, but those pale into insignificance when compared with the mining's economic potential. In addition, the proposed mining does not preclude post mining future use of the site for grazing. Recycling of waste material creates employment. Potential loss of invertebrates that live in the top layers of the soil.	Significance	Before	After	
	Nature	Negative	Negative	
	Severity	4	2	
	Spatial Scale	1	1	
	Duration	3	1	
	Consequence	8	4	
	Probability	4	4	
	Significance	32	16	
	Cumulative Effects	Low	Very Low	
	Reversibility		Reversible	
		Degree to which the impact can be avoided/managed/mitigated:		Medium

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<u>Mitigation</u> The same mitigating measures as for Site Access and Site Establishment especially waste management will be applicable as well as the following: • Compacted areas including stockpile platforms and hardened evaporation pan floors must be ripped and after scarification post mining the affected area shall be stabilized to prevent any erosion or sediment runoff. • Stabilized areas shall be demarcated accordingly. • Incremental clearing of vegetation should take place to avoid unnecessary exposed surfaces. • Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against the wind and stormwater run-off. • Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material. • Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation. • To ensure long-term stability, the restored topsoil cover should attempt to mimic the pre-mining distribution of soil texture and thickness. • Staff to be trained in respect of hydrocarbon pollution and contamination clearing methodologies to be employed • Separate waste streams and handle accordingly			
Operational Phase - Potential Impacts on topography Change in topography due to excavations during removal of material outside of pan to serve pond walls on pan and development of the pond walls on pan surface up to 0.5m in height. Other insignificant potential impacts on topography is remaining waste salt dumping heaps and product stockpiles <u>Indirect impacts:</u> None <u>Residual impacts:</u> Very slight visual change in landscape and topography following rehabilitation.		Significance Nature Severity Spatial Scale Duration Consequence Probability Significance Cumulative Effects Reversibility Degree to which the impact can be avoided/managed/mitigated:	Before Negative 2 1 1 4 6 24 Very Low Reversible Medium
After Negative 1 1 1 3 1 3 Neutral Reversible Medium		<u>Mitigation</u> • Backfill buffer and concentration ponds with excess/waste salt. All spoils and leftover product need to be returned to the evaporation pond for backfilling and levelling. • Spread evaporation pond walls and allow natural processes to level the pan. Remaining pond walls must be levelled by spreading and stockpile platforms ripped.	
Operational Phase - Potential Impacts on Biodiversity, Flora & Fauna Refer site establishment above regarding potential impact on CBA's and SCC. The vegetation of the pans is subject to natural degradation/regeneration cycles controlled by concentration of grazing animals (antelopes in particular). Mining activities do not result in the disturbance of any corridor and movement for fauna is not restricted. <u>Indirect impacts:</u> Soil disturbance caused by vegetation clearing will provide suitable conditions for the establishment and spreading of alien invasive vegetation. Removal of alien invasive vegetation is a positive impact, and will benefit the ecological functioning. <u>Residual impacts:</u> The noise and vibration caused by the earthmoving equipment will disturb smaller animals (e.g., snakes). These will move away whilst operations are in progress.		Significance Nature Severity Spatial Scale Duration Consequence Probability Significance Cumulative Effects Reversibility Degree to which the impact can be avoided/managed/mitigated:	Before Negative 5 1 3 9 6 54 Medium Reversible Medium
		After Negative 2 2 2 6 2 12 Very Low Reversible Medium	

<u>Mitigation</u> <ul style="list-style-type: none">• Mitigation measures for soil erosion & soil compaction will also be applicable to promote natural revegetation. No revegetation activities (planting) will be required.• Identify existing access tracks. active mining and stockpile areas, that must be demarcated and the footprint contained within the demarcated area.• All movement to be restricted to demarcated areas with no off road driving.• The annual rehabilitation plan must be implemented.• Remove alien invasive vegetation, and ensure ongoing alien vegetation clearing in the area.• No indigenous plants outside of the demarcated work areas may be damaged.• The noise and vibration caused by the earthmoving equipment will disturb smaller animals (e.g. snakes). These will move away whilst operations are in progress. Should any animals be encountered these should be moved away by the ECO, if necessary• No poaching or trapping of animals is permitted. Ensure staff report any snare or poaching noted.			
Operational Phase - Potential Impacts on Aquatic biodiversity & Water Resources <p>Disturbance by pond development and processing and stockpiling totals 5ha could impact on flow regime, water quality and quantity, and aquatic biota of the wetland. identified as very high sensitivity. Most of the disturbance area is on the pan with approximately 5ha disturbed for the ±4 ponds and the processing and stockpiling area. The pumps on the pan also lead to very insignificant impact.</p> <p>Mining will only take place within the pan floor that seldom flooded and impacts will have little effect on water resource functionality as a whole, as there is no permanent surface water, and storm water run-off events are very seldom in the arid climate. Water uses that require authorisation will however take place.</p> <p>Potential contamination of groundwater from unmanaged use of hydrocarbons on-site, incorrect storage of hazardous substances and accidental spills not cleaned up immediately.</p> <p>The pumping only takes place to depths of 20-30m and only impacts on a pan based "perched" water table and not a regional aquifer which would be at a much deeper level. The very poor quality of the water precluding any use as drinking, stock watering or cultivation.</p> <p><u>Indirect impacts:</u></p> <p>Rainfall is very seldom and evaporation rate is very high.</p> <p>Indirect impacts on surface water are very unlikely.</p> <p><u>Residual impacts:</u></p> <p>In the normal course of events, excessive abstraction would cause drawdown and "downstream" impacts on quantity (and possibly quality).</p>	Significance	Before	After
	Nature	Negative	Negative
	Severity	2	1
	Spatial Scale	1	1
	Duration	2	1
	Consequence	5	3
	Probability	6	2
	Significance	30	6
	Cumulative Effects	Low	Neutral
	Reversibility	Reversible	
	Degree to which the impact can	High	
<u>Mitigation</u> <p>The same mitigating measures as for Site Access and Site Establishment will be applicable especially waste management.</p> <ul style="list-style-type: none">• Adhere to prescriptions of the Water Use Licence when obtained• All spoils and leftover product need to be returned to the evaporation pond for backfilling and levelling.• Remaining pond walls must be levelled by spreading and stockpile platforms ripped.• Any impact on surrounding users of groundwater must be avoided.			
Operational Phase - Potential Impacts from Emissions (Air Quality, Visual intrusion & Noise Generation) <p>At present, the ambient dust levels are low and any existing dust impact is the result of occasional vehicles on unsurfaced roads in the area and wind generated dust on a regional level (especially during dry times). Dust generation from this site is very low and no dust impact will occur on any surrounding land user or land use.</p> <p>Noise is generated by earthmoving equipment during harvesting and loading of salt to plant and dispatch vehicles, noise of haul trucks and general traffic generated noise. All of these activities is currently taking place and there have been no complaints in respect of noise (and none are anticipated).</p> <p>No visual intrusion, except negligible impact to anyone who enters the confines of the basin. Te site is remote and rural in nature with no receptors (people) as it is located on private property. Local visual intrusion caused by mine machinery, product stockpiles, raised evaporation ponds, and movement of trucks on site during mining operations.</p> <p><u>Indirect impacts:</u></p> <p>There are few indirect impacts as the area is remote and rural, with no people (receptors) living near the site.</p> <p>Residents along the access tracks and roads are used to noise, dust and vehicle movement due to existing mining activities.</p> <p><u>Residual impacts:</u></p> <p>Good housekeeping will ensure a neat and well-maintained mining area reducing visual impact.</p>	Significance	Before	After
	Nature	Negative	Negative
	Severity	2	1
	Spatial Scale	3	1
	Duration	1	1
	Consequence	6	3
	Probability	4	2
	Significance	24	6
	Cumulative Effects	Very Low	Neutral
	Reversibility	Reversible	
	Degree to which the impact can be avoided/managed/mitigated:	High	

Mitigation <ul style="list-style-type: none"> The Applicant shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations and limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Sub clause 4.1 regarding “built-up” area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. Activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise on neighbours. Engines shall be turned off when the vehicle is temporarily parked or stationary for long periods. Minimise use of reverse alarms by proper route planning. Noise abatement equipment, such as mufflers on diesel engines, will be maintained in good condition. No amplified music shall be allowed on site. If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient. On public roads the vehicles shall adhere to municipal and provincial traffic regulations including speed limits. At the mining area a speed limit of 40km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit. The wetting of the roads helps reduce dust generation as will applying dust suppression and/or hardening compound. Vehicles used on site for the construction related activities shall be maintained and in a good working condition so as to reduce emissions. Restrict working hours to normal work day hours with no work over weekends when holidays occur to minimize hauling trucks along access roads. Temporarily halt material handling in windy conditions and or reduce drop height of material to a minimum. Trucks shall have tarpaulins to prevent salt from blowing off in transit. If dust result in any complaints from surrounding parties (highly unlikely), then a dust monitoring programme must be established and best options installed to eliminate any future dust from that source. Product stockpiles must be maintained (covered where necessary) to avoid wind erosion of the material, temporarily halt material handling in windy conditions. Health and safety equipment is required for workers The earth moving equipment and other visually prominent items on the site will be located in consultation with the landowner. The movement and stockpile platforms shall be kept neat and tidy at all times. Equipment must be kept in designated areas and stockpiling shall be kept orderly. Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material. 			
Operational Phase - Potential Impacts on Socio-economic features			
<p>Whilst mining is underway the impacts in socio - economic sense will be in respect of landowner, compensation, mine owner compensation, limited employment opportunities, positive impact on down the line industries and suppliers, local / regional / national availability of salt.</p> <p>The salt mine is to all intents and purposes a permanent operation given the renewable nature of the brine. As such, there is no impact on future generations.</p> <p>Potential conflict with landowner and other land users</p> <p>The operation does provide employment opportunities (albeit limited) to residents in the region, as well as down the line indirect benefits to a range of suppliers, thereby meeting one of the socio-economic imperatives of the IDP, viz employment</p> <p>Creation of employment & job security during mining with local & regional economic spin-offs</p> <p><u>Indirect impacts:</u></p> <p>Upskilling</p> <p>Local economic spin-offs through increased income earned, and through purchasing of local materials required for operational activities.</p> <p>Income generation for landowners in a time of severe drought where livestock farming is not sustainable.</p> <p><u>Residual impacts:</u></p> <p>The upliftment of unemployed people, with positive impact on standard of living for their families.</p>	Significance	Before	After
	Nature	Negative	Negative
	Severity	5	1
	Spatial Scale	5	1
	Duration	6	1
	Consequence	16	3
	Probability	4	1
	Significance	64	3
	Cumulative Effects	Medium	Neutral
	Reversibility		Irreversible
Degree to which the impact can be avoided/managed/mitigated: High			
Mitigation <ul style="list-style-type: none"> Co-ordinate invasive activities with existing mining activities or land uses to reduce the time of disturbances Landowner will be updated with regard to the progress of the mining operation and concurrent rehabilitation will be planned in consultation with landowner. All operations will be carried out under the guidance of strong, experienced manager and ECO with proven skills in public consultation and conflict resolution. All personnel will be made aware of the local conditions and sensitivities in the mining area and the requirements of the local residents. There will be a strict requirement to treat local residents with respect and courtesy at all times. Employment of local previously disadvantaged labour wherever possible, with provision of training (upskilling) 			

Operational Phase - Potential Impacts on Paleontological, Archaeological and Cultural and Heritage Resources			
Cultural and Heritage Resources Direct impacts to archaeological resources would occur primarily during the construction phase y (e.g. if an excavator drives beyond the demarcated area during construction). Impacts to graves could occur during the construction phase. The impact on paleontological resources takes place during all earthmoving activities. <u>Indirect impacts:</u> Loss of archaeological resources, graves and precolonial cultural landscape The material fossil evidence of “deep time” is embedded in the creation of the sacred landscape and contributes to the “sense of place” cultural aesthetic of the region. The loss of fossils and concomitant interpreted knowledge impoverishes the tangible testimony of the prehistoric landscape and ecological context of ancient humans. <u>Residual impacts:</u> Negative residual impact arises from the unavoidable loss of fossils of unknown significance in spite of mitigation efforts. Positive residual impact arises from the successful rescue of fossil material for posterity, resulting in material for future research, employment opportunities for budding, young researchers and enhanced insights into the prehistory of the Northern Cape <u>Mitigation</u> The same mitigating measures as for Site Access and Site Establishment will be applicable.	Significance	Before	After
	Nature	Negative	Negative
	Severity	5	1
	Spatial Scale	5	1
	Duration	6	1
	Consequence	16	3
	Probability	1	1
	Significance	16	3
	Cumulative Effects	Very Low	Neutral
	Reversibility		Reversible
Degree to which the impact can be avoided/managed/mitigated:		Medium	
Decommissioning and closure - Potential Impacts on other land uses			
No Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area identified. No intersection with Environmental Management Frameworks relevant to the application Development incentives, restrictions, exclusions or prohibitions and their implications are not applicable to mining operations as the state is the custodian of all minerals and is responsible for the screening process as part of the acceptance process of applications taking into account any section 53 applications by other land users. The impact on Civil Aviation and Defence is also not applicable to this application as no high structures will be constructed and no defence installations or test areas are present in close proximity to this project. <u>Indirect impacts:</u> After closure certificate has been issued the area will once again be available for other land uses <u>Residual impacts:</u> None <u>Mitigation</u> • None	Significance	Before	After
	Nature	Neutral	Neutral
	Severity		
	Spatial Scale		
	Duration		
	Consequence	0	0
	Probability		
	Significance	0	0
	Cumulative Effects		
	Reversibility		
Degree to which the impact can be avoided/managed/mitigated:			
Decommissioning and closure - Potential Impacts on Soil (contamination, erosion, compaction) & Land capability			
The proposed rehabilitation methodology will result in a post mining land use which is very similar / same as current land use/ state of the surrounding land. Implementation of Rehabilitation, Decommissioning and Mine Closure Plan <u>Indirect impacts:</u> Mitigation of land capability linked to decommissioning rehabilitation and revegetation of the disturbed area <u>Residual impacts:</u> Increase in natural habitat following rehabilitation processes.	Significance	Before	After
	Nature	Positive	Positive
	Severity		
	Spatial Scale		
	Duration		
	Consequence	0	0
	Probability		
	Significance	0	0
	Cumulative Effects		
	Reversibility		
Degree to which the impact can be avoided/managed/mitigated:			

<u>Mitigation</u> <ul style="list-style-type: none"> • Return the site to serve as pan/ wilderness / grazing function after full rehabilitation of the site. • Compacted areas that are not required for aftercare access shall be scarified and allowed to revegetate naturally. Dual use access roads must be handed back to the landowner in a good state of repair. • Implementing screening as part of the cleaning activities before materials are moved from the mine. The infrastructure area will be screened for petrochemical spills and cleaned and waste from the temporary storage facility will be removed and the area cleaned. Any compacted movement areas will be screened for petrochemical spills and cleaned before it is ripped and levelled. • Redundant structures will be removed for use elsewhere or demolished and discarded. • All steel structures and reinforcing will be discarded or sold as scrap. • All equipment and other items used during the mining operation needs to be removed from the site. • Remove all power and water supply installations not to be retained by landowner in terms of section 44 of the MPRDA. • Final walk through of complete mining lease area to ensure no mining related waste and of re-usable infrastructure remain on site. 			
Decommissioning and closure - Potential Impacts on topography		Significance	Before
Implementation of Rehabilitation, Decommissioning and Mine Closure Plan		Nature	Positive
Indirect impacts:		Severity	Positive
Historic disturbances rehabilitated		Spatial Scale	
Residual impacts:		Duration	
Increase in natural habitat following rehabilitation processes.		Consequence	0
		Probability	0
		Significance	0
		Cumulative Effects	
		Reversibility	
		Degree to which the impact can be avoided/managed/mitigated:	
<u>Mitigation</u> <ul style="list-style-type: none"> • All mitigation will be addressed as part of the annual rehabilitation plan as part of mining operations. • The focus of topographic rehabilitation may not be obvious at the time of mine planning and must be addressed as the mine develops and the Final Rehabilitation, Decommissioning and Closure Plan must be reviewed periodically for continued relevance in the light of changed mining path or long-term plans. 			
Decommissioning and closure - Potential Impacts on Biodiversity, Flora & Fauna		Significance	Before
Implementation of Rehabilitation, Decommissioning and Mine Closure Plan		Nature	Positive
Indirect impacts:		Severity	Positive
Biodiversity of area will improve due to removal of alien invasive vegetation.		Spatial Scale	
Fauna will return to the disturbed areas.		Duration	
Residual impacts:		Consequence	0
None.		Probability	0
		Significance	0
		Cumulative Effects	
		Reversibility	
		Degree to which the impact can be avoided/managed/mitigated:	
<u>Mitigation</u> <ul style="list-style-type: none"> • All outstanding rehabilitation not completed as part of the Annual Rehabilitation plan needs to be completed as part of the final Rehabilitation, Decommissioning and Mine Closure Plan • Compacted areas shall be scarified after use during decommissioning and rehabilitation. • Any stored topsoil shall be spread over the scarified surface. • Shaping of pan floor to avoid steep profiles and hollows. • Ongoing removal of alien invasive vegetation 			

Decommissioning and closure - Potential Impacts on Aquatic biodiversity & Water Resources		Significance	Before	After
None during decommissioning activities		Nature	Neutral	Neutral
<u>Indirect impacts:</u>		Severity		
None		Spatial Scale		
<u>Residual impacts:</u>		Duration		
None		Consequence	0	0
		Probability		
		Significance	0	0
		Cumulative Effects		
		Reversibility		
		Degree to which the impact can be avoided/managed/mitigated:		
<u>Mitigation</u>				
None				
Decommissioning and closure - Potential Impacts from Emissions (Air Quality, Visual intrusion & Noise Generation)		Significance	Before	After
None during decommissioning activities or less than for operational phase		Nature	Neutral	Neutral
<u>Indirect impacts:</u>		Severity		
Mitigation of visual intrusion linked to decommissioning rehabilitation and revegetation of the disturbed area		Spatial Scale		
<u>Residual impacts:</u>		Duration		
None		Consequence	0	0
		Probability		
		Significance	0	0
		Cumulative Effects		
		Reversibility		
		Degree to which the impact can be avoided/managed/mitigated:		
<u>Mitigation</u>				
None				
Decommissioning and closure - Potential Impacts on Socio-economic features		Significance	Before	After
Staff losing their jobs. Contractual agreements with service providers surpassing mine closure date		Nature	Negative	Negative
Poorly defined transition from mining to farming activities within different legislation		Severity	4	4
Not undertaking environmental management according to approved EMPr and plans and no auditing of the environmental management system.		Spatial Scale	3	3
Insufficient funds for complete rehabilitation		Duration	3	3
<u>Indirect impacts:</u>		Consequence	10	10
Job losses of secondary industries, businesses and contractors		Probability	3	3
Mine closure stalled due to non-compliance with South African legislation (national, provincial and local)		Significance	30	30
<u>Residual impacts:</u>		Cumulative Effects	Low	Low
Closure standards not accepted and/or are changing Mine closure being jeopardised by other land uses		Reversibility		Irreversible
The use of brine and the harvesting of salt represent a renewable function and this operation could in theory continue in perpetuity.		Degree to which the impact can be avoided/managed/mitigated:		Medium
The proposed final rehabilitation of the site results in no permanent or residual impact for future generations.				
<u>Mitigation</u>				
<ul style="list-style-type: none"> Contract durations with service providers will be limited to address the risk of contractual agreements with service providers surpassing the mine closure date. Maintain positive and transparent relationships with stakeholders and maintaining communication channels. Undertaking environmental management in accordance with the approved EMPr and Closure Plan. 				

Decommissioning and closure - Potential Impacts on Paleontological, Archaeological and Cultural and Heritage Resources			
None during decommissioning activities or less than for operational phase <u>Indirect impacts:</u> None <u>Residual impacts:</u> None	Significance	Before	After
	Nature	Neutral	Neutral
	Severity		
	Spatial Scale		
	Duration		
	Consequence	0	0
	Probability		
	Significance	0	0
	Cumulative Effects		
	Reversibility		
Degree to which the impact can be avoided/managed/mitigated:			
<u>Mitigation</u> None			

9.6.8 Assessment of potential cumulative impacts

Cumulative impacts are the successive, incremental and combined impacts of one, or more, activities on society, the economy and the environment. Cumulative impacts result from the aggregation and interaction of impacts on a receptor and may be the product of past, present or future activities.

In this case the potential cumulative impacts will be insignificant due to the small scale of operations. The total mining area is $\pm 5\text{Ha}$ the total footprint of all disturbance planned.

9.7 Motivation where no alternative sites were considered

Alternatives have been considered for this project, as described in Section 6 above. Where alternatives are not likely to be considered in the Impact Assessment Phase, reasons have been provided in Section 6 above.

9.8 Statement Motivating the Preferred Sites

The site was selected as it contains good quality salt located in a convenient position in close proximity to transport routes. The layout and technology of this mining project has been determined by the shape, position and orientation of the mineral resource which is the salt in the Konga Pan. Refer to the Site Plan attached as Figure 2 and 3.

10. Environmental impact assessment

10.1 Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site

This BAR and EMPr were compiled through a detailed desktop investigation and site assessment in order to determine the environmental setting in which the project is located. Input from stakeholders during the public participation process also assist the EAP in the identification of any additional impacts associated with the proposed mining activities.

The methodology described above was used to assess the significance of the potential impacts of the mining activities. The assessment of impacts is based on the experience of the EAP.

The mitigation measures proposed are considered to be reasonable and based on the location of the mining area and must be implemented in order for the outcome of the assessment to be accurate.

10.2 Assessment of each identified potentially significant impact and risk

The supporting impact assessment is provided in Table 13.

10.3 Summary of specialist reports.

The Screening Report in terms of Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014 was developed to allow a proponent intending to submit an application for environmental authorisation in terms of the Environmental Impact Assessment (EIA) Regulations 2014, as amended to screen their proposed site for any environmental sensitivity and enable the applicant to manipulate the development footprint on a site to avoid environmental sensitivities before submitting the application. The Screening Report also identify specialist assessments for inclusion in the assessment report based on the environmental sensitivities of the proposed development footprint.

It is however the responsibility of the EAP to confirm the list of specialist assessments and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation. The site sensitivity assessment report form part of section 8.2 in this BAR and the specialist studies identified is listed in table 14 (to be confirmed by the competent authority).

For mining operations, the position of the mineral resource to be mined is fixed therefore the Screening Report required to accompany any application for Environmental Authorisation is not applicable as there are no alternative footprints for screening and comparison.

For small scale mining and prospecting operations where there will be no permanent infrastructure development and where the location of development is informed by historical prospecting and production records for the area, as well as the most likely position of potential mineral deposits no reasonable and feasible alternatives can be investigated.

In the case of prospecting the location of these sample sites will also not be known at the time that the application for EA is lodged. For prospecting areas, that normally covers a large area it is accepted that some areas will be of high or even very high sensitivity and no specialist assessments is needed to verify this. For this reason, mining operations that is a short-term change in land use must provide mitigation measures and financial provision to return the site to it pre-prospecting during the closure phase not applicable to other development.

For mining operations, the initial list of environmental attributes will be compiled based on experience of the EAP in similar development types and through site visits and appraisals, desktop screening via Geographical Information System (GIS) and aerial photography, incorporating existing information from previous studies, and input received from authorities and l&APs.

Further to this, the Screening Tool identifies related exclusions e.g., industrial development zones that is not applicable to minerals as the state is the custodian of all minerals and is responsible for the screening process as part of the acceptance process of applications taking into account any section 53 applications by other land users.

Table 14: Summary of specialist studies

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOM. HAVE BEEN INCLUDED IN THE EIA REPORT	SECTION WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Heritage Impact Assessment (Attached as Appendix 3a)	No mitigation is required. Should any heritage resources be found SAHRA should be contacted immediately.	Yes	Section 8.2 Table 13 Impact Assessment
Palaeontological Impact Assessment (Attached as Appendix 3b)	No mitigation is required. Should any Palaeontological resources be found the chance find protocol should be immediately implemented.	Yes	Section 8.2 Table 13 Impact Assessment

11. Environmental impact statement

11.1 Summary of the key findings of the environmental impact assessment

The assessed impact ratings are as follows:

Site Access and Site Establishment

- Potential Impacts on other land uses - No impact (Neutral)
- Potential Impacts on Soil (contamination, erosion, compaction) & Land capability - Low significance, reduced to Very Low with mitigation
- Potential Impacts on topography - No impact (Neutral)
- Potential Impacts on Biodiversity, Flora & Fauna - Medium significance, reduced to No impact (Neutral)
- Potential Impacts on Aquatic biodiversity & Water Resources – Low significance, reduced to reduce to No impact (Neutral)
- Potential Impacts from Emissions (Air Quality, Visual intrusion & Noise Generation) – Very low significance, reduced to No impact (Neutral)
- Socio - economic impact - Medium significance, reduced to No impact (Neutral) with mitigation
- Potential Impacts on Paleontological, Archaeological and Cultural Heritage Resources – No impact (Neutral), stay No impact (Neutral) with mitigation

Operational Phase

- Potential Impacts on other land uses - No impact (Neutral)
- Potential Impacts on Soil (contamination, erosion, compaction) & Land capability - Low significance, reduced to Very Low with mitigation
- Potential Impacts on topography - Very Low, reduced to No impact (Neutral) with mitigation
- Potential Impacts on Biodiversity, Flora & Fauna - Medium significance, reduced to Very Low with mitigation
- Potential Impacts on Aquatic biodiversity & Water Resources - Medium significance, reduced to No impact (Neutral) with mitigation
- Potential Impacts from Emissions (Air Quality, Visual intrusion & Noise Generation) - Very Low significance, reduced to No impact (Neutral) with mitigation
- Socio - economic impact - Medium significance, reduced to No impact (Neutral) with mitigation
- Potential Impacts on Paleontological, Archaeological and Cultural Heritage Resources – Very Low significance, reduced to No impact (Neutral) with mitigation

All of the identified impacts will occur for a limited period and the extent of the impacts will be localised. All of the identified impacts can be suitably mitigated with the residual impact ratings being of Insignificant to Very Low. The main impacts associated with mining can be suitable mitigated. After mining have been completed and rehabilitated, the impacts will cease to exist.

11.2 Final Site Map

Please refer to **Figure 4 to 12** for the Environmental Sensitivities Map including the target area of interest for proposed mining activities.

11.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

11.3.1 Positive Impacts

Refer section 9.5.

11.3.2 Negative Impacts

Refer section 9.5.

11.4 Proposed impact management objectives and the impact management outcomes for inclusion in the EMP

11.4.1 Management Objectives

The impact management objectives are listed below:

- Objective 1 - To create a safe and rehabilitated post-mining environment
 - Safe mining area (Bore holes capped and no potentially dangerous areas like evaporation ponds)
 - Maintaining the affected environment in a stable condition that will not be detrimental to the safety and health of humans and animals.
 - The crystallisation pans are to be shaped and levelled at each stage of closure and rehabilitation.
 - Promote re-vegetation of with natural vegetation.
 - Minimise risk of erosion from either increased base flow or mining operations followed by prompt rehabilitation and maintenance of erosion events.
 - Limited residual environmental impact (No surface and/or groundwater contamination, waste management practices not creating or leaving legacies with a post mining landscape that reduces the requirement for long term monitoring and management)
 - No waste in the form of dumps or structures will remain on surface after mine closure
 - No development of infrastructure and services will take place and facilities at the company headquarters will be used. Existing farm roads must be used for mining.
 - Unwanted steel, sheet metal and equipment need to be removed from the mining area on a daily basis and no salvage yard will be established.
 - No temporary storage area for used lubrication products and other hazardous chemicals will be developed and waste must be disposed of at a collection point at the company headquarters on a daily basis.
 - Equipment used in the mining process will be adequately maintained in the workshops available at the company headquarters so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.
 - Accidental petro-chemical spills if any must be cleaned up immediately by removing the spillage together with the polluted soil (salt).
- Objective 2 - To create a stable, free draining post mining landform, which is compatible with the surrounding landscape and which is capable of a productive land use that achieves a land capability equal to that of pre-mining conditions
 - Prevent long term changes in land use: revert back to mainly small stock farming (grazing).
 - Topsoil must be removed from virgin areas to be disturbed and vegetation cleared, keeping disturbance to the native vegetation to an absolute minimum.
 - Any topsoil removed from stockpile area must be stored separately for later reuse.
 - Topsoil borrowing from the virgin areas to cover disturbed areas will not take place.
 - All topsoil which is removed prior to any activity will be stockpiled in berms (no higher than 2m) along with its resident seed bank and vegetation cover to an area above the proposed development.
 - This berm will then serve a storm water control function in the unlikely event of surface water run-off.
 - Movement of vehicles will be restricted to demarcated areas so as to keep the footprint of the mining operation to the absolute minimum.

- Movement of equipment must be restricted to existing roads and no ad hoc driving or turning outside demarcated loading and hauling areas will be allowed.
- All equipment and other items used during the mining operation needs to be removed from the site at final closure.
- All compacted areas due to stockpiling, loading and hauling will be ripped with erosion control measures.
- All stockpiles and leftover product must be removed or used to backfill the excavations
- Minimise the loss of land with agricultural potential: minimize footprint of disturbances to facilitate recovery of degrading patches into active patches through colonization of the patch by dispersing species (patch dynamics)
- Minimising footprint of disturbed areas including stockpile platforms and loading and hauling areas.
- Minimise loss of vegetation within the disturbance footprint: scarifying of all compacted areas as soon as possible for natural plant succession.
- Minimise disturbance of ecology due to loss of habitat and noise/visual/dust
- Ensuring the hydrological integrity of the pan.
 - Preventing attenuating or diverting any of the natural flow.
 - Maintaining bank stability to be able to withstand high flow conditions.
 - Prevent canalisation of the flow that can lead to scouring or erosion.
 - Levelling of the pan floor to prevent impeding and damming.
- Limit residual environmental impact with no surface water or soil contamination by ensuring that no fuel or oil spills occur in the mining area.
 - Ensure that no solid waste or rubble is dumped on the site.
 - Ensure that portable toilets are used.
- Provide sufficient information and guidance to plan the mining activities in a manner that would reduce impacts as far as practically possible.
- Objective 3 – To provide optimal post-mining social opportunities
 - Optimised benefits for the social environment
 - Maintain positive and transparent relationships with stakeholders and maintaining communication channels.
 - Provide stakeholders including government authorities with relevant information as per legislative requirements.
 - Undertaking environmental management in accordance with the approved EMP and Closure Plan.
 - Ensure that workers remain within the mining permit area.
 - Minimal negative aesthetic impact
 - Minimise visual disturbance: implementation of mitigating measures from the public road views.
 - Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be buried or burned on the site.
 - Minimise noise disturbance: limiting earth moving to day time.
 - Management of air emissions to minimise nuisance effects or health risk; implementation and maintenance of dust monitoring programs accompanied by dust suppression activities by spraying water and/or dust-allaying agents.
 - Prevent long term changes in land use: revert back to grazing land where possible
 - Respond rapidly to any complaints received.

11.4.2 Outcomes

- By providing sufficient information to strategically plan the mining activities, unnecessary social and environmental impacts be avoided.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.
- Provide a management plan that is effective and practical for implementation.
- Through the implementation of the proposed mitigation measures it is anticipated that the identified social and environmental impacts can be managed and mitigated effectively.
- Noise generation can be managed through consultation and restriction of operating hours and by maintaining equipment and applying noise abatement equipment if necessary.
- Dust fall can be managed by reducing driving speeds when driving on unpaved roads.
- Wildlife disturbance and clearance of vegetation will be limited to the absolute minimum required and disturbed areas will be re-vegetated with locally indigenous species as soon as possible.
- Surface water and groundwater contamination by hydrocarbons can be managed by conducting proper vehicle maintenance, refueling with care to minimise the chance of spillages and by having a spill kit available on each site where mining activities are in progress.

11.5 Description of any assumptions, uncertainties and gaps in knowledge.

This report has been completed to the best of the EAPs ability, based on his experience and on information currently available to the EAP as well as provided by the applicant.

- The desk-top research included reference to the SANBI BGIS database map viewer for the various baseline environmental attributes, and any assumptions or gaps in knowledge expressed by SANBI in the provision of this information would be applicable to this information as referenced.
- The latest Google Earth™ reference available is outdated (2016) for purposes of current land use identification in close proximity to the proposed site on adjacent properties.
- It is assumed that the proposed mitigation measures as listed in this report and included in the EMPr will be implemented and adhered to. Mitigation measures are proposed which are considered to be reasonable and must be implemented in order for the outcome of the assessment to be accurate.

11.6 Reasoned opinion as to whether the proposed activity should or should not be authorized

11.6.1 Reasons why the activity should be authorized or not

It is the opinion of the EAP that the proposed mining activity should be authorised. In reaching this conclusion the EAP has considered that:

Provided rehabilitation takes place a high level of compliance with the provisions of any future specialist recommendation and EA prescriptions, then there is no reason why the activity should not go ahead.

- The “preferred alternative” takes into account location alternatives, activity alternatives, layout alternatives, technology alternatives and operational alternatives.
- The approach taken is that it is preferable to avoid significant negative environmental impacts, wherever possible.
- The site is located in a Freshwater Ecosystem Priority Area (FEPA). It is the opinion of the EAP that the underlying biodiversity objectives and ecological functioning will not be compromised, subject to the strict adherence to the EMPr and Closure Plan.
- No negative impacts have been identified that are so severe as to prevent the proposed mining activity from taking place. The activity has been assessed to have a positive socio-

economic impact, especially in terms of the creation of employment at a local and district level.

- Provided the recommended mitigation measures are implemented and mining activities are managed in accordance with the stipulations of the EMPr, and Rehabilitation, Decommissioning and Mine Closure Plan (Annexure 1), in an environmentally sound manner, the potential negative impacts associated with the implementation of the preferred alternative can be reduced to acceptable levels.

11.6.2 Conditions that must be included in the authorisation

- All mining and rehabilitation to be conducted as per the approved EMPr, and Rehabilitation, Decommissioning and Closure Plan (Annexure 1).
- Concurrent mining and rehabilitation must be done according to the annual rehabilitation plan.
- The proposed mining area must be clearly demarcated with semi-permanent markers.
- Eradicate all alien vegetation in the area regularly during and after mining.
- The mining operator must appoint a suitably qualified ECO who will be responsible for ensuring compliance with the requirements of the EMPr during the mine operation and decommissioning.
- Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and SAHRA must be contacted.
- The mine operation must follow an Integrated Waste Management approach. Control measures must be implemented to prevent pollution of any water resource or soil surface by oil, grease, fuel or chemicals. Appropriate pollution prevention measures must be implemented to prevent dust.
- A speed limit of 40km/hour will be displayed and enforced through a fining system. All vehicle drivers will be informed of the speed limit applicable where after the national speed limits will be applicable for hauling trucks. The access road will be maintained during operational activities.

11.6.3 Period for which the Environmental Authorisation is required

The authorisation is required for the duration of the mining permit which is an initial 2 years plus a potential to extend the permit by an additional 3 years. Normally there is also a time delay in the granting of applications for renewal therefore a total period of 10 years may be required.

11.6.4 Undertaking

It is confirmed 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 (BAR) and the Environmental Management Programme report (EMPr).

12. Financial Provision

12.1 Legal Framework

Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations under section 44, read with sections 24 of the National Environmental Management Act, 1998 (Act No.107 of 1998) were issued in 2015.

According to the Financial Provisioning regulations, 2015 as amended (Reg. 7) the applicant or holder of a right or permit must ensure that the financial provision is, at any given time, equal to the sum of the actual costs of implementing the plans and report contemplated in regulation 6 and regulation 11.

In terms of regulation 11(1) the holder of a right or permit must ensure that a review is undertaken of the requirements for (a) annual rehabilitation, as reflected in an annual rehabilitation plan; (b) final rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations as reflected in a final rehabilitation, decommissioning and mine closure plan; and (c) remediation of latent or residual environmental impacts which may become known in the future, as reflected in an environmental risk assessment report.

12.2 Calculation

Financial provision in terms of Regulation 6 of the Financial Provisioning Regulations, 2015 as amended, is covered by the requirements for the actual costs of implementation of the measures required for final rehabilitation, decommissioning and closure of the mining operations at the end of the life of operations as reflected in the final rehabilitation, decommissioning and mine closure plan attached as Annexure 1.

12.3 Explain how the aforesaid amount was derived.

According to regulation 6 an applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for— (a) annual rehabilitation, as reflected in an annual rehabilitation plan; (b) final rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations, as reflected in a final rehabilitation, decommissioning and mine closure plan; and (c) remediation of latent or residual environmental impacts which may become known in the future, as reflected in an environmental risk assessment report (Refer Annexure 1).

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

The amount needed for the implementation of the final rehabilitation, decommissioning and closure plan will be provided to DMR in the form of a bank guarantee and the plan will be revised on an annual basis in terms of regulation 11(1) of the Nema Financial Provisioning Regulations 2015 as amended.

Provision for implementation of annual rehabilitation plan to be provided as part of the environmental audit report in terms of Regulation 34 (1)(b) of the NEMA EIA Regulations (2014) will be provided as part of the operational budget and proof of access to the necessary fund were provided as part of the PWP together with proof of access to the necessary financial resources.

13. Specific Information required by the competent Authority

13.1 Compliance with sections 24(4)(a) and (b) of NEMA

According to the National Environmental Management Act (Act 107 of 1998). the EIA report must include the impact on:

The socio-economic conditions of any directly affected person

A full consultation process was implemented during the environmental authorisation process. The purpose of the consultation is to provide affected persons the opportunity to raise any potential concerns. Concerns raised have been captured and addressed within the public participation section of this report to inform the decision-making process.

Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act

The potential impact on heritage resources is unlikely due to the nature of the mining activity in a salt pan, as confirmed by the Heritage Impact Assessment attached at annexure 3.

13.2 Other matters required in terms of sections 24(4)(a) and (b) of the Act.
A motivation for not investigating reasonable and feasible alternatives is provided in Section 9.4 above.

14. Environmental Management Program

14.1 Details of the EAP,

This has already been covered. Refer Section 1 of this document.

14.2 Description of the Aspects of the Activity

This has already been covered. Refer Section 9 & 10 of this document.

14.3 Composite Map

This has already been covered. Refer Figure 1 to 3.

14.4 Description of Impact management objectives including management statements

This has already been covered. Refer Section 10 of this document.

14.5 Determination of closure objectives.

This has already been covered. Refer Annexure 1 and Section 15 of this document.

14.6 Volumes and rate of water use required for the operation.

Although groundwater is used it cannot be seen as process water. Salt mining involves the pumping of brine from boreholes for the production of salt by means of solar evaporation. Annual abstraction required approximately 163840 m³. Most of this is abstracted when the pans are filled (8000m³ five times per year) and relatively little groundwater is abstracted to top up the pans (16 m³/day)

14.7 Has a water use license been applied for?

A general authorisation for section 21a is required for abstraction of brine and the competent authority will have to confirm if a section 21c & 21i water use of the NWA (36, 1998) needs to be obtained for Impeding or diverting the flow of water in a watercourse (21c) and Altering the Bed, Banks, Course or Characteristics of a Watercourse (21i) as a pan is not included in the definition of a watercourse.

14.8 Impacts to be mitigated in their respective phases

This has already been covered. Refer Section 9.6 of this document and Table 14 for the impact assessment and the key measures to mitigate the potential impacts.

14.9 Impact Management Outcomes

Table 15: Impact Management Outcomes

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE In which impact is anticipated	MITIGATION TYPE	STANDARD TO BE ACHIEVED
Site access	Disturbance of pan bank at access points	Water resources functionality in a FEPA	Construction	Remedy through restriction and rehabilitation	Impacts minimised and mitigated. End use objectives achieved through rehabilitation.
	Disturbance of fauna and flora	Biodiversity in an ESA		Remedy through restriction and rehabilitation	
	Soil compaction and erosion	Soil resource		Control through monitoring and management	
Site establishment, including waste generation and management	Visibility	Visual intrusion	Construction	Control through monitoring and management	Impacts minimised and mitigated. End use objectives achieved through rehabilitation.
	Emissions (dust, noise & vehicles)	Noise & Air quality		Control through monitoring and management	
	Disturbance of fauna and flora	Biodiversity in an ESA		Remedy through restriction and rehabilitation	
	Soil contamination, soil compaction and disturbance	Soil resource		Remedy through restriction and rehabilitation & control through monitoring and management	
	Destruction or loss of Heritage resources	Cultural and Heritage		Avoidance by relocation of activity if required. Refer to Appendix 3 – no mitigation required for project site assessed	Impact avoided
Abstraction of brine Removal of salt, loading and hauling, waste generation and management	Visibility	Visual	Operation	Control through monitoring and management	Impacts minimised and mitigated. End use objectives achieved through rehabilitation.
	Emissions (dust, noise & vehicles)	Noise & Air quality		Control through monitoring and management	
	Disturbance of fauna and flora	Biodiversity in an ESA		Remedy through restriction and rehabilitation	
	Soil contamination, soil compaction and disturbance	Soil resource		Remedy through restriction and rehabilitation & control through monitoring and management	
	Disturbance of pan floor water extraction	Water resources functionality in a FEPA			

	Destruction or loss of Heritage resources	Cultural and Heritage		Refer to Appendix 3 – no mitigation required for project site investigated.	Impact avoided
Removal of temporary infrastructure and site rehabilitation	Dust emissions (vehicle entrained dust)	Soil resource	Decommissioning	Control through monitoring and management	Impacts minimised and mitigated. End use objectives achieved through rehabilitation.
	Soil erosion due to slow recovery of vegetation	Soil resource & biodiversity		Remedy through restriction and rehabilitation & control through monitoring and management	
	Pan floor profile	Water resources functionality in a FEPA			

14.10 Impact Management Actions

Table 16: Impact Management Actions

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Site access	Disturbance of pan bank at access points	Remedy through restriction and rehabilitation	Concurrently with site access activities Upon cessation of activity	Remain within the ambit of the Mining Permit and Environmental Authorisation
	Disturbance of fauna and flora	Control through monitoring and management		
	Soil compaction and erosion			
Site establishment, including waste generation and management	Visibility	Control through monitoring and management		
	Emissions (dust, noise & vehicles)			
	Disturbance of fauna and flora	Remedy through restriction and rehabilitation		
	Soil contamination, soil compaction and disturbance	Remedy through restriction and rehabilitation & control through monitoring and management		
	Destruction or loss of Heritage resources	Avoidance by relocation of activity if required		
Abstraction of brine Removal of salt, loading and hauling, waste generation and management	Visibility	Control through monitoring and management	Concurrently with site access activities	Remain within the ambit of the Mining Permit, General authorisation and Environmental Authorisation
	Emissions (dust, noise & vehicles)	Control through monitoring and management		
	Disturbance of fauna and flora	Remedy through restriction and rehabilitation	Upon cessation of activity	
	Soil contamination, soil compaction and disturbance	Remedy through restriction and rehabilitation & control through monitoring and management		
	Disturbance of pan floor; brine extraction	management		

	Destruction or loss of Heritage resources	Avoidance by relocation of activity if required.		
Removal of temporary infrastructure and site rehabilitation	Dust emissions (vehicle entrained dust)	Control through monitoring and management	Upon cessation of activity	Remain within the ambit of the Mining Permit Programme and Environmental Authorisation
	Soil erosion due to slow recovery of vegetation	Remedy through restriction and rehabilitation & control through monitoring and management		
	Pan floor profile			

15. Financial Provision

15.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment.

The closure objectives are listed below and fully discussed in the Final Rehabilitation, decommissioning and mine closure plan Annexure 1.

Objective 1 - To create a safe and rehabilitated post-mining environment

Objective 2 - To create a stable, free draining post mining landform, which is compatible with the surrounding landscape and which is capable of a productive land use that achieves a land capability equal to that of pre-mining conditions

Prevent long term changes in land use: revert back to mainly small stock farming (grazing).

Topsoil must be removed from virgin areas to be disturbed and vegetation cleared, keeping disturbance to the native vegetation to an absolute minimum.

Objective 3 – To provide optimal post-mining social opportunities

Optimised benefits for the social environment

Maintain positive and transparent relationships with stakeholders and maintaining communication channels.

Provide stakeholders including government authorities with relevant information as per legislative requirements.

Undertaking environmental management in accordance with the approved EMP and Closure Plan.

The legal framework within which all the above lies entails:

- Defining and meeting closure standards.
- Complying with legislation.
- Sufficient financial provision for mine closure activities.
- Monitoring and plan for latent environmental impact.

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

The closure objectives were reported in the Draft BAR as well as the Draft Final Rehabilitation, decommissioning and mine closure plan Including Environmental Risk Assessment and was made available to all registered interested and affected parties.

15.3 Rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities

Refer Final Rehabilitation, decommissioning and mine closure plan Including Environmental Risk Assessment Annexure 1.

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

The closure objectives are to return the land disturbed by salt mining activities back to its original condition. The rehabilitation plan provides the detail on how this will be achieved as detailed in Annexure 1.

15.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline

As per Paragraph 11 of this report and Annexure 1.

15.6 Confirm that the financial provision will be provided as determined.

As per Paragraph 11 of this report and Annexure 1.

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

Table 17: Mechanisms for Monitoring Compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
All mining activities	All commitments contained in the BA Report and accompanying EMP.	Ensure commitments made within the approved BAR and EMP are being adhered to.	Site Manager and EAP.	Annual Undertake and submit an environmental performance audit to DMR
Site access and site establishment	Visual inspection of soil erosion and/or compaction	All exposed areas, access roads and soil stockpiles must be monitored for erosion on a regular basis, specifically after rainfall events.	Site Manager and Independent EAP	Weekly, and after rain-fall events Weekly monitoring reports to be signed-off by the Site Manager Corrective action to be confirmed and signed-off by the Site Manager. Consolidated monthly monitoring reports (including confirmation of corrective action taken, with photographic evidence) to be submitted to the Site Manager.
Salt Mining	Visual inspection of biodiversity impacts	Visual inspection of mining activities and other possible secondary impacts <ul style="list-style-type: none"> Control and prevent the development of new access tracks. Control and prevent growth of alien vegetation in cleared areas and on stockpiles. Standard waste management practices must be implemented to prevent contamination and littering. All spill incidents will be reported and corrective action taken in accordance with an established spill response procedure. 	Site Manager & Contractor (or sub-contractors)	Daily Weekly monitoring reports to be signed-off by the Site Manager. Corrective action to be confirmed and signed-off by the Project Site Manager. Consolidated monthly monitoring reports (including confirmation of corrective action taken, with photographic evidence) to be submitted. Report incidents in terms of the relevant legislation, including the MPRDA, NWA and NEMA.
	Visual inspection of water resource functionality			
	Visual inspection of waste management, housekeeping and maintenance.			
Closure & Rehabilitation	Revegetation; Stability; Pan floor profile; Soil erosion; Alien invasive species	Inspection of all rehabilitated areas to assess whether soil erosion is occurring and to implement corrective action where required.	Site Manager	Annual A final audit report for site closure must be submitted to the DMR for approval.

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

An external environmental performance audit shall be conducted annually by an independent environmental assessment practitioner that include an annual rehabilitation plan for implementation during the next reporting period. A review of the Final decommissioning, rehabilitation and mine closure Plan will also be done on an annual basis together with an update of the quantum calculations for financial provision for rehabilitation.

16. Environmental Awareness Plan

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

Training is part of its Induction process and environmental Management System (EMS). The induction includes:

- Awareness training for contractors and employees;
- Job specific training – training for personnel performing tasks which could cause potentially significant environmental impacts;
- EMS training;
- Comprehensive training – on emergency response, spill management, etc;
- Specialised skills; and
- Training verification and record keeping

Before commencement of the mining activities all employees and contractors who are involved with such activities should attend relevant induction and training. It is standard practice for employees and the employees of contractors that will be working on a new project or at a new site to attend an induction course where the nature and characteristics of the project and the site are explained.

The training course should include key information abstracted from the EMP pertaining to the potential environmental impacts, the mitigation measures that will be applied, the monitoring activities that will be undertaken and the roles and responsibilities of contractors' and personnel.

The full EMP document is also made available to attendees.

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

Environmental risks and how to manage them are dealt with in the induction course referred to in section (m) (i) above. If an incident of environmental pollution or damage does occur it is analysed and appropriate prevention and/or mitigation measures are developed. These measures are added to the EMP and conveyed to the relevant personnel.

All unplanned incidents with the potential to cause pollution or environmental degradation or conflict with local residents will be reported to the Mineral Resources Manager within 24 hours.

Hydrocarbon Spills

Hydrocarbon spills that are considered to be emergency incidents are large-scale spills (cover a surface area >1m²), resulting from situations such as; a leaking diesel bowser, an oil drum that is knocked over, large spillages from equipment, etc.

Activities that are involved in the clean-up of such instances include:

- The containment of the spill,
- The removal of all contaminated material, and
- The disposal (at a licenced hazardous disposal facility) or bioremediation (at a licenced facility) of this material.

Fire

There is the potential for fire to occur in the following locations of the drill site:

- Veld fires across vegetated areas; and
- Vehicles and equipment.

Veld fires: Any person who observes the fire must report it to the fire brigade immediately and then to their supervisor. If possible, additional personnel may be sent to contain the fire, but only if the lives of the personnel will not be endangered.

Vehicles and Equipment: Fire extinguishers will be available at the site where drilling activities will take place and in the vehicles. All staff members will be trained in the use of fire-fighting equipment.

16.3 Specific information required by the Competent Authority

Not applicable at this stage

17. Undertaking

The EAP herewith confirms

the correctness of the information provided in the reports

the inclusion of comments and inputs from stakeholders and I&APs

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

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

Signature of the environmental assessment practitioner:



N.J. van Zyl

Reg. EAP (EAPASA 2019/2034)

January 2022

-END-

Annexure 1: Final Rehabilitation, decommissioning and mine closure plan

Including Environmental Risk Assessment and quantum calculations

~~Annexure 2: PPP summary~~

Annexure 3a: Desktop HIA

Annexure 3b: Desktop PIA