



mineral resources

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

# GEMSBOK HORN SALT PROSPECT

**DRAFT**

**BASIC ASSESSMENT REPORT**

**&**

**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).

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Report #: 2793/PR/D-BAR



## 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 the these aspects to determine:
  - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
  - (ii) the degree to which these impacts—
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources; and
    - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
  - (i) identify and motivate a preferred site, activity and technology alternative;
  - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
  - (iii) identify residual risks that need to be managed and monitored.

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## PART A

### SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

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#### 1 Contact Person and correspondence address

##### 1.1 Details of the EAP

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##### 1.2 Expertise of the EAP

**The qualifications of the EAP**  
(with evidence).

Refer Appendix 1.

**Summary of the EAP's past experience.**

(In carrying out the Environmental Impact Assessment Procedure)

Refer Appendix 1.

#### 2 Location of the overall activity

The application takes place on portions of 2 farms as follows:

Farm Name:	Gemsbok Horn 242 Remainder, Gemsbok Horn 242 Portion 1
Application area (Ha)	1622.7362
Magisterial district:	Gordonia
Distance /direction from nearest town	Upington is located 75km south of the prospect
Surveyor General Code	C02800000000024200000 & C02800000000024200001 respectively
Landowner	P M KOCK TRUST

#### 3 Locality map

(show nearest town, scale not smaller than 1:250000).

Refer Figure 1 overleaf.



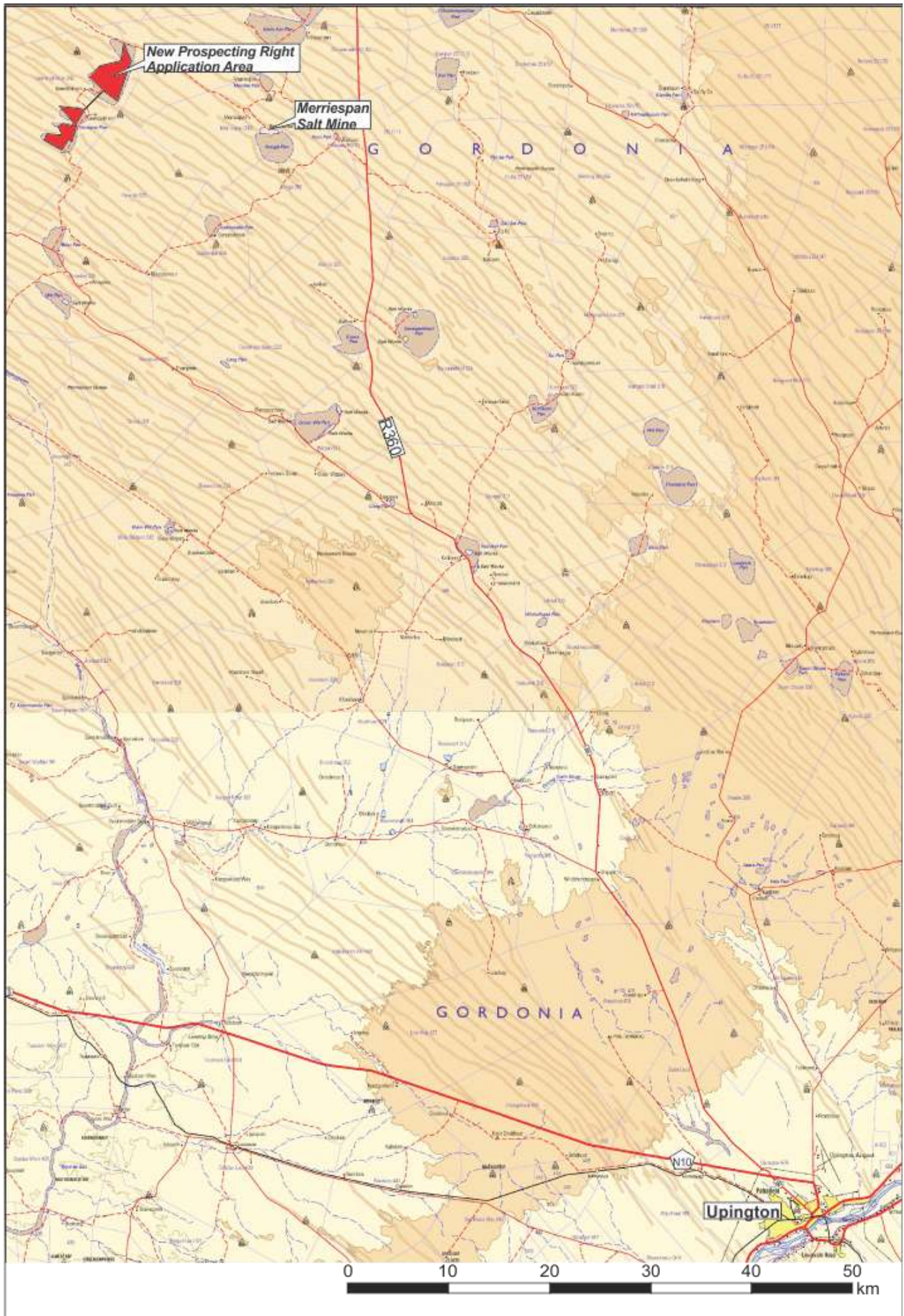


Figure 1: Locality Plan

## 4 Description of the scope of the proposed overall activity

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site

### 4.1 Listed and specified activities

**IMPORTANT:**

- 1) This site is not located within a CBA. The pans are classified as Ecological Support Areas whilst the surrounding vegetation is classified as Other Natural Area in terms of mapping dated 2016 obtained from SANBI GIS website.
- 2) Mucina and Rutherford (2012) classify the veld types as Gordonia Duneveld surrounding the pans, with the salty pans classified as Southern Kalahari Salt Pans. Note, there is no vegetation on the Salt Pan. Neither of these vegetation types is classified as Critically Endangered, Endangered nor Vulnerable in terms of the NEM:BA listed Ecosystems (GNR 32689).
- 3) Zoning of the land parcel cannot be established at present but for the sake of this report it is assumed (although unlikely) that the land is zoned conservation, open space or similar zoning.
- 4) No roads will be developed and the drill rig will merely drive to the location, conduct the drilling, samples taken and the hole backfilled.

NAME OF ACTIVITY	Aerial extent of Activity (Ha or m <sup>2</sup> )	LISTED ACTIVITY (Mark with an X where applicable or affected)	APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985), as amended 2017	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
<b>Application for Prospecting Right</b>	1 623ha	X	GNR983: Activity # 20	
<b>1. POST-APPROVAL ACTIVITIES</b>				
1.1. Mark hole locations (contractor and applicant together)	Using visible poles			
<b>2. ESTABLISHMENT ACTIVITIES</b>				
2.1. Provide chemical toilets for staff <sup>1</sup>	3m <sup>2</sup>			
2.2. Conduct Environmental Induction training to staff	All staff members			
2.3. Access road is already in place. No roads will be developed on the pan. The drill can drive to the proposed drill site.				
<b>3. OPERATIONAL PHASE ACTIVITIES</b>				
3.1. Locate drill rig on site and drill hole.	Assuming 20cm diameter auger hole, to 10m deep, then the volume disturbed per hole = 0.315m <sup>3</sup> material per hole x 5 holes = 1.57m <sup>3</sup> total disturbance			

<sup>1</sup> Chemical toilet if considered.

NAME OF ACTIVITY	Aerial extent of Activity (Ha or m <sup>2</sup> )	LISTED ACTIVITY (Mark with an X where applicable or affected)	APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985), as amended 2017	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
3.2. Take water samples	2 x 10litre samples per hole			
3.3. Backfill drilled hole with removed material	5 hole locations			
<b>4. DECOMMISSIONING PHASE ACTIVITIES</b>		X	GNR983: Activity # 22. Only applies at time of closure/ decommissioning	
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment		X	GNR983: Activity # 22.	
4.2. Ensure the site is free of Hydrocarbon pollution		X	GNR983: Activity # 22.	
4.3. Remove any structures – chemical toilet.		X	GNR983: Activity # 22.	
<b>5. AFTERCARE PERIOD</b>				
5.1. Conduct final performance assessment				
5.2. Lodge closure Application	1 623ha			
5.3. DMR Grant Closure Application				

## 4.2 Description of the activities to be undertaken

(Describe methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

In terms of the prospecting proposed in this application the following non-invasive activities are planned:

### Phase 0 – Application period for Land Use Approval

Prospecting rights require a Land Use approval in terms of LUPA (previously LUPO). Unfortunately this Land Use application requires the use of Environmental Authorisation as motivation for that application. As a result, we have seen several applications for Prospecting Right which have had to be renewed before any work has even progressed because of the absence of the Land Use Right. As a result, based on past experience, we have included a 9 month period in the Prospecting Programme to cover this aspect.

### Phase 1a: Collation of all available information and final planning:

This phase could conceivably already begin and merely consists of collection of all existing information from whichever sources are available. Final planning entails ensuring that all personnel and logistical facilities are in place or will be in place when required.

### Phase 1b: Conclude final agreements with contractors

This could run concurrently with phase 1a provided it is concluded before month 8.

*Phase 2a: Management and driller to select hole locations*

The actual drill set up locations (although identified in this report in figure 3) may need to be slightly adjusted because of micro elements on the ground. As a result it is important that both the driller and management are involved in the actual siting of the drill given that their respective requirements may have an impact on the outcome of the results. Unlikely to be an issue on this level salt pan

*Phase 2b: Applicant undertakes environmental induction training:*

The EMP will contain full details of the extent of environmental training to be provided to all employees and contractor employees. The EMP will describe the issues to be communicated in such training.

*Phase 2c: Invasive* - Drilling by auger drill to probable average depth of 10m. Drilling will be conducted by contractor and only 5 holes will be required as described in Figure 3. Drillers will be accompanied by applicant personnel who will be responsible for measuring and recording depth to brine and taking water samples for laboratory analysis. Refer photo 1 below showing typical auger drill of the scale that would probably be used at this prospect (Source: USGS, 2012).

*Phase 3a: Record and Analyse*

Auger drilling has been chosen as the drilling method. This will allow for depth to groundwater (brine) to be measured (by simple tape measure down the hole) and allow for samples of brine to be withdrawn (through container lowered by rope into the brine). All samples collected will be clearly marked with hole number and dispatched to laboratory for assessment of salt levels.

*Phase 4: Final feasibility and decision on future application*

The applicant may employ the service of econo-geologist to assist in decision making as to the viability of further mining. Decision will be made as to whether to conduct additional prospecting or to apply for full mining right or to apply for closure certificate.



*Drilling layout*

Refer Figure 3. Drill holes will be located at approximately along the deepest points / lines in each of the pans.

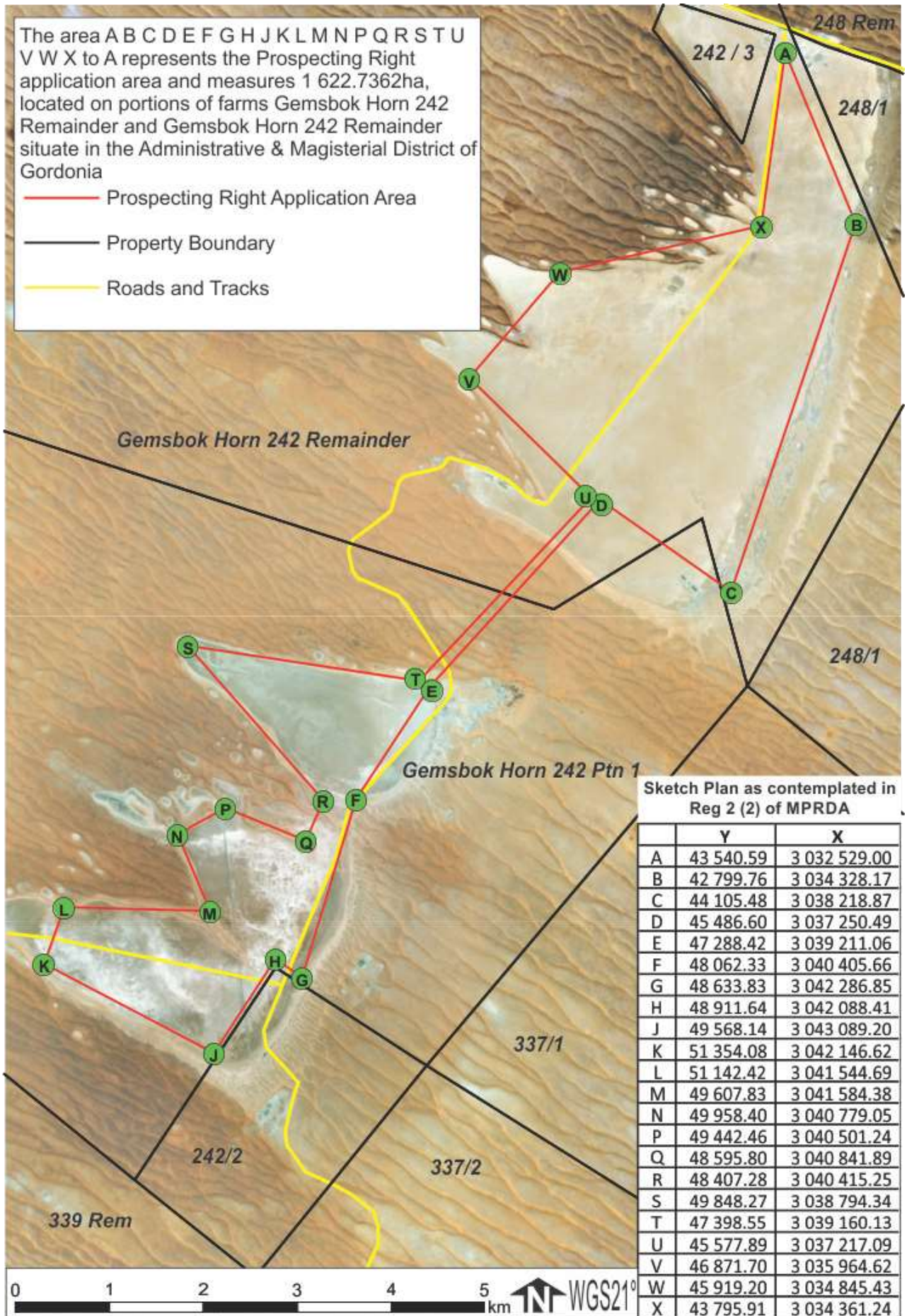


Figure 2: Extent of proposed prospecting right area (Sketch Plan contemplated in terms of Reg 2(2) of MPRDA)

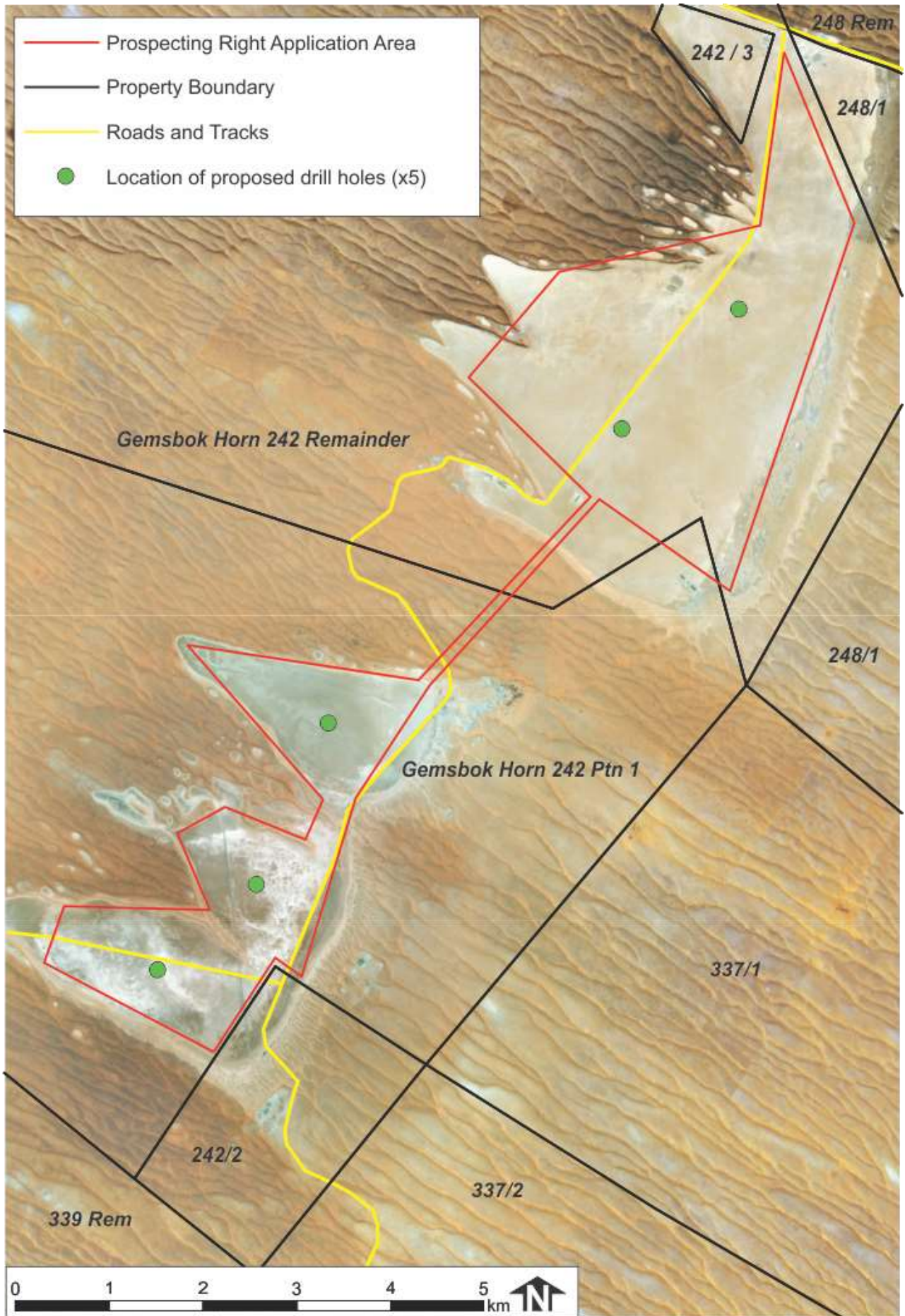


Figure 3: Prospecting Layout Plan

## 5 Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED (i.e. Where in this document has it been explained how the development complies with and responds to the legislation and policy context)	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT (E.g. In terms of the National Water Act: - Water Use License has/has not been applied for).
National Environmental Management Act	Entire document including public participation	Environmental Authorization from DMR as competent authority
Mineral and Petroleum Resources Development Act	Template for BAR	DMR application and process
Municipality's SDF	Need and Desirability (Para 6.2)	End Use informant in the case of larger projects
National Water Act	No water resources will be disturbed	Water Use Licence application if it was required
National Heritage Resources Act	Para 27.1.2	Heritage lodged with SAHRA (on SAHRIS).
EIA Guideline and Information Document Series' "Guideline on Need and Desirability"	Need and Desirability (Para 6.1)	Guideline for information utilized in this document
EIA Guideline 5 Assessing alternatives and impacts	Cumulative Impact Assessment (Para 6.2)	Guideline for information utilized in this document
NEMWA	Not applicable	No application for Waste Licence required

## 6 Need and desirability AND Cumulative Impact of the proposed activities.

### 6.1 Need and Desirability Analysis

The EIA Guideline and Information Document Series' "Guideline on Need and Desirability" dated 2017 has been used to consider this aspect. Important: The need and desirability should not **only** focus on the actual prospecting phase of this site's short prospecting lifespan but also concentrate on the long term / permanent post prospecting land use should mining not go ahead. If mining were to go ahead, then that application would require a need and desirability assessment. The **proposed eventual land use is to simply clear the affected drill site and allow the site to continue its current function as pan floor.**

Need refers to timing of a project whilst desirability refers to the placing of the activity. The first port of call in considering need and desirability is a determination of how the proposed project fits in with the Municipal Integrated Development Plan (IDP), Zoning Plan in this case and the Spatial Development Framework (SDF). The following is noted:

- 1) The site is located in the Dawid Kruiper Local Municipality (which is a recent amalgamation of Mier and //Khara Hais Local Municipalities). The SDF available on the website is a 2017 publication in a draft form and there is no reference / mapping to this area.
- 2) However, it can be reasonably concluded that the area around the pan would, even as a most conservative approach, be designated as "Agriculture" (which is defined as The



breeding of animals on natural veld, land and pasture, stock or auction pens, the processing of products produced on the farm, the cultivation of crops and at most one single residential house and other buildings that is reasonably relevant to the main agricultural activity on the farm, including bona-fide staff housing).

- 3) The actual pan will most likely be classified (as B.b.2) "Rivers or Riverbeds (in terms of NEMA 107 of 1998): All perennial or non-perennial rivers and wetlands (notwithstanding the FEPA classification)".
- 4) The policy/strategies contained in the SDF for the "Rivers or Riverbeds /Wetland" zone is copied below

"The rivers, un-off areas of storm water and riverbeds visible on the aerial photos available, where captured for all the areas within the Urban Edges and Ecological Corridor indicated for the areas surrounding these areas. Since large portions of the DKLM area is covered by these areas, the management of this category is no less important than B.b.1. albeit more relaxed and must be identified in each application and possible development. This SPC has been marked with a colour category where such areas are present within the urban edge of a settlement. Outside of the urban edge, the provisions of this SPC will apply to any visible river or stream where a development is considered, e.g. in the case of renewable energy developments. A generic 32m buffer, as described in in the listing notices of the Environmental Impact Assessment Regulations (2010), will apply to any development considered within the said generic buffer. Should a development proposal be made in such an area, the relevant environmental department should be contacted for inputs and to indicate whether they will require any environmental assessment. Developments should be encouraged to stay clear from these areas or at least consider it in their site layouts"

So, clearly the planners of the SDF recognised that development can occur in these areas but must be subject to sustainable principles and suitable authority engagement. These sustainable principles are contained within the NEMA and MPRDA approval process.

- 5) A second document for consideration is the Mining and Biodiversity Guideline. The published Mining Guide which was compiled by Departments of Environmental Affairs and Mineral Resources; with inputs from: Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines South African, Mining and Biodiversity Forum, South African National Biodiversity Institute, Grasslands Programme - with funding from the United Nations Development, Programme Global Environment Facility, WWF South Africa, Endangered Wildlife Trust, Centre for Sustainability in Mining and Industry, CapeNature, Mpumalanga Parks and Tourism Agency, De Beers, AngloGold Ashanti, Anglo American, Richards Bay Minerals, Centre for Environmental Rights, Centre for Applied Legal Studies, deVilliers Brownlie Associates, Department of Water Affairs, Live4Design, National Union of Mineworkers, Solidarity, UASA. That document does not classify the site as either:
  - a. Legally protected - mining prohibited
  - b. Highest biodiversity importance - highest risk for mining
  - c. High biodiversity importance - high risk to mining
  - d. Moderate biodiversity importance - moderate risk for mining

The following tables are from the published 2017 Guideline on Need and Desirability

**6.1.1 Securing ecological sustainable development and use of natural resources**

1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?		
1.1.	How were the following ecological integrity considerations taken into account:	
1.1.1.	Threatened Ecosystems	1) This site is not located within a CBA. The pans are classified as Ecological Support Areas whilst the surrounding vegetation is classified as Other Natural Area in terms of mapping dated 2016 obtained from SANBI GIS website. 2) Mucina and Rutherford (2012) classify the veld types as Gordonia Duneveld surrounding the pans, with the salty pans classified as Southern Kalahari Salt Pans. Note, there is no vegetation on the Salt Pan. Neither of these vegetation types is classified as Critically Endangered, Endangered nor Vulnerable in terms of the NEM:BA listed Ecosystems (GNR 32689).
1.1.2.	Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure	
1.1.3.	Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”),	
1.1.4.	Conservation targets.	
1.1.5.	Ecological drivers of the ecosystem.	
1.1.6.	Environmental Management Framework	None located but see notes herein in reference to SDF.
1.1.7.	Spatial Development Framework, and	The SDF (currently in draft form) will most likely classify the pan as either Agriculture (grazing) as per the surrounds, or “Rivers or Riverbeds (in terms of NEMA 107 of 1998): All perennial or non-perennial rivers and wetlands <sup>2</sup> (notwithstanding the FEPA classification)”. The SDF recognizes that any development which does take place in these areas must take place in consultation with authorities.
1.1.8.	Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	Not applicable at this small site
1.2.	How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts	The overall impacts are expected to be absolutely insignificant. And no impact will occur in respect of ecosystem functioning.

<sup>2</sup> The pan can be considered a wetland, in that it may hold water on surface during wetter episodes, but it does not contain the vegetation and animal life normally associated with a wetland environment.

1.3.	How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	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 Chapters 35 and 37 respectively.
1.4.	What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Waste volumes will be very low and is restricted to the lunch wrappers and drinks bottles of the 1 or 2 operators on site. The waste will be managed in terms of the applicant's sister company site at Merriespan.
1.5.	How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The draft BAR will be lodged on SAHRIS with request for N Cape Heritage Authority or SAHRA to provide comment. It can however be provisionally stated that there will be absolutely no impact on Heritage or Cultural resources.
1.6.	How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The application is for drilling of five small diameter auger holes and cannot impact on non-renewable resource.  Prospecting does not constitute use of the resource, however the applicant has/ will meet all the legal requirements of the mining charter and in respect of responsible use of the resource, the application is subject to all Mineral and Environmental legislation and the public participation associated therewith. The application is subject to comment and input from several commenting authorities as well as specialist input in aspects of environment determined by public input and / or legislation.
1.7.	How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	Not applicable to this small prospecting application.

1.7.1.	Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)	Not applicable to this small prospecting application.
1.7.2.	Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources against a proposed development alternative?)	Not applicable. This prospecting application, should it be approved, does not result in the use of a resource. It is to test for the presence of such resource.
1.7.3.	Do the proposed location, type and scale of development promote a reduced dependency on resources	No.
1.8.	How were a risk-averse and cautious approach applied in terms of ecological impacts	Yes. Impacts of prospecting (as minute as they are) will be subject to public input from as broad a range of persons and institutions as possible.
1.8.1.	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	None known.
1.8.2.	What is the level of risk associated with the limits of current knowledge?	None.
1.8.3.	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	See line item 1.8. above.
1.9.	How will the ecological impacts resulting from this development impact on people's environmental right in terms following:	
1.9.1.	Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	The impacts of drilling 5 holes on the 2 pans are so small and the site so isolated from surrounding land users that there is absolutely no risk of the impacts resulting in any nuisance or hazard to any surrounding party
1.9.2.	Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	The only positive impact is the knowledge gained through the proposed prospecting (whether the results are positive or not)

1.10.	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socioeconomic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	The impact on Socioeconomic and Heritage profile of the area is provided in Para 27.1. and 27.2 (in the case of Heritage). BUT it is clear that there the drilling of 5 holes on 2 pans cannot result in any impact of any significance
1.11.	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/ targets/ considerations of the area?	It is clear that the impact of proposed prospecting will be non-existent, especially if all management measures are undertaken.
1.12.	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	This is a prospecting right and is in essence a study to determine alternatives. Should the brine prove to be of sufficient quality, then an additional application will be lodged to allow for mining of the site in one form or another. At this stage it may be the location of a pump on surface to pump brine to the existing Merriespan site.
1.13.	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	There will be no cumulative impact as a result of these prospecting activities.

### 6.1.2 Promoting justifiable economic and social development

<b>2. Promoting justifiable economic and social development</b>		
2.1.	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?:	Refer also para 27.1
2.1.1.	The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,	The IDP targets economic growth but makes very little mention of mining in the Municipality. The proposed development meets targets of the IDP in that it does facilitate development as well as creating jobs (albeit very few and temporary of nature).
2.1.2.	Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),	Not applicable
2.1.3.	Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and	The site is at present vacant pan surface and cannot be used by the landowner for grazing of sheep and game. The proposed development will not impact on land use given the small scale of the activity.
2.1.4.	Municipal Economic Development Strategy ("LED Strategy").	The Municipality, along with many others suffers from low employment rates and virtually any economic development has the potential for large multiplier effects.
2.2.	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Refer Para 27.1
2.2.1.	Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	The small scale, simple nature of and temporary nature of the proposed prospecting development does not lead to economic development or skills development in itself (but possible future mining might).

2.3.	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities	Any impact in this regard will be absolutely insignificant.
2.4.	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	Any impact in this regard will be absolutely insignificant.
2.5.	In terms of location, describe how the placement of the proposed development will:	
2.5.1.	result in the creation of residential and employment opportunities in close proximity to or integrated with each other	The site is not located close to any residential area. Employees (very small number) will be brought in as required from their home.
2.5.2.	reduce the need for transport of people and goods	Given that prospecting is located through geological informants, its location cannot be chosen to reduce the need for transport of people or goods.
2.5.3.	result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),	Not applicable
2.5.4.	compliment other uses in the area,	Provided rehabilitation occurs as per the EMP, then there will be no impact
2.5.5.	be in line with the planning for the area,	The site has been designated a Agriculture / Rivers classification in the SDF which document acknowledges that development may take place in that zone (under sustainable principles)
2.5.6.	for urban related development, make use of underutilised land available with the urban edge,	Not applicable
2.5.7.	optimise the use of existing resources and infrastructure	Not applicable.
2.5.8.	opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	Not applicable
2.5.9.	discourage "urban sprawl" and contribute to compaction/densification,	Not applicable
2.5.10.	contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	Not applicable
2.5.11.	encourage environmentally sustainable land development practices and processes	This is prospecting and although prospecting per se cannot encourage such sustainable land development practices and processes, it can be conducted in such a way as to minimise the impact on the environment
2.5.12.	take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	The prospecting right application area has been selected for its location nearby their Merriespan operation. It is possible that if results prove successful, that the brine could be pumped to the existing Merriespan site for evaporation at that site.
2.5.13.	the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),	No income from the pan surface is possible. Prospecting will not generate any socio-economic returns (apart from the minimal cost of prospecting and payment to landowner). This prospecting right does, if results prove successful, can lead to mining which would result in greater investment and returns.
2.5.14.	impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and	Very insignificant, if any impact.

2.5.15.	in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	Not applicable.
2.6.	How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	
2.6.1.	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	None Known. Small scale of activity makes it unlikely that there any gaps in knowledge in respect of socio-economic impacts.
2.6.2.	What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	There is no risk to these socio-economic aspects through the proposed prospecting at the site.
2.6.3.	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Not applicable.
2.7.	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following	
2.7.1.	Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts	There will be no negative impacts in this respect
2.7.2.	Positive impacts. What measures were taken to enhance positive impacts?	There will be no positive impacts in this regard
2.8.	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	The small scale of the prospecting coupled with the isolation of the drill sites precludes any impact in this regard..
2.9.	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations	Not applicable, given the very low negative (if any) impact of socio-economic considerations.
2.10.	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	Not applicable.
2.11.	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	All legislation has been adhered to. And in the case of this application, the application entity meets the requirements of BEE shareholding
2.12.	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	All mines / prospects are subject to Health and Safety legislation (Mine Health and Safety Act 29 of 1996). Such prescriptions are not within the ambit of this document but are strictly monitored by DMR.
2.13.	What measures were taken to:	
2.13.1.	Ensure the participation of all interested and affected parties.	Refer Part 12 for full record of Public Participation

2.13.2.	Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation.	Refer Part 12 for full record of Public Participation
2.13.3.	Ensure participation by vulnerable and disadvantaged persons.	The proposed activities were advertised in free local newspaper and advertised on posters at the gate of the existing mine and on fences in the application area
2.13.4.	Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	None
2.13.5.	Ensure openness and transparency, and access to information in terms of the process.	Refer Part 12 for full record of Public Participation
2.13.6.	Ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and,	Refer Part 12 for full record of Public Participation
2.13.7.	ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted.	Refer Part 12 for full record of Public Participation
2.14.	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Not applicable to this kind of application
2.15.	What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	All mines / prospects are subject to Health and Safety legislation (Mine Health and Safety Act 29 of 1996). Such prescriptions are not within the ambit of this document but are strictly monitored by DMR.
2.16.	Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.16.1.	the number of temporary versus permanent jobs that will be created,	The life of prospect is only 2 years and the only staff positions that will be offered will be for drill operators. These will most likely be filled by contractor to the applicant.
2.16.2.	whether the labour in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),	Yes, but the prospecting right is unlikely to result in any additional job opportunities
2.16.3.	the distance from where labourers will have to travel,	Staff will be brought to site as required
2.16.4.	the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and	Very small scale impacts. Job opportunities are also limited.
2.16.5.	the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	The proposed mining operation will only provide direct employment for 2 (max 3) persons and will not take any jobs away in any other sector.
2.17.	What measures were taken to ensure:	
2.17.1.	that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and	Refer Part 12 for full record of Public Participation which included all relevant State Departments at all levels of governance
2.17.2.	that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures	Not applicable



2.18.	What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Environmental impact has been assessed to be insignificant in all aspects of the environment. The proposed project has been subject to extensive public participation to ensure all public are aware of and have input into the planning and approval process.
2.19.	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The management of operational impact is the responsibility of the applicant with monitoring and auditing largely by independent parties. The Mineral legislation requires that Closure be granted before the applicant can relinquish responsibility for the site (if future mining right is not considered). Such closure process is arduous and requires enforced participation by and satisfaction of relevant State Departments.
2.20.	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	In terms of operational control of environmental impact and pollution, this EMP prescribes measures to be put in place to monitor and then mitigate / manage or avoid any known or unexpected impact.  All Prospecting Right's holders are responsible to determine the costs of Immediate Closure of the site. Such calculation is based on DMR Guideline and the value of the fund must be provided to the DMR either in form of cash or by bank Guarantee. Should the holder "disappear", then the fund is used by the State to rehabilitate the site.
2.21.	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	The only feasible alternative applicable to this application is the no go option. The impacts of the 2 options are in fact very similar because of the small scale of the operation.
2.22.	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	The impact of this development is so small that no detailed cumulative impact assessment is deemed necessary. Such detailed analysis would most certainly show that there is no or negligible cumulative impact arising out of this application. Para 6.2 contains a limited cumulative impact assessment.

## 6.2 Cumulative Impact Assessment

The assessment of cumulative impacts on a site specific basis is often a complex operation. The aim of the impact analysis is ultimately to determine at which point the combined impacts from several operations (similar or dissimilar) in the area will affect the environment or part thereof to such a negative degree that the project should not be allowed to proceed. Always remember that mining / prospecting is a place-bound operation (as opposed to say housing or shopping development which is less dependent on geology or other factors).

The following is an amended procedure sourced from [http://www.eiatoolkit.ewt.org.za/documents/DEAT/guidelines/AT\\_EIA\\_Guideline5\\_Assessing\\_alternatives\\_and\\_impacts.doc](http://www.eiatoolkit.ewt.org.za/documents/DEAT/guidelines/AT_EIA_Guideline5_Assessing_alternatives_and_impacts.doc)

### Types of cumulative impacts

Additive impact: Impacts of the same nature from different operations (e.g. excessive groundwater abstraction from several operations in the same area result in a severe drawdown effect)

Interactive impact: where a cumulative impact is the result of a combination of different impacts to cause a new kind of impact. This kind of impact can be:

- Countervailing – the net adverse effect is less than the sum of the individual impacts (e.g. pumping clear water into a polluted water resource).
- Synergistic – when the impacts work together to develop a sum of different impacts results in an impact which is greater than the individual impacts.

### Methodology used in assessing cumulative impact/s

- Determine extent of cumulative impacts:
  - Identify potentially significant cumulative impacts associated with the proposed activity
  - Establish the geographic scope of the assessment
  - Establish the timeframe of the analysis
  - Identify other activities affecting the environmental resources of the area
- Describe the affected environment:
  - Characterise the resources identified above in terms of their response to change and ability to withstand stress
  - Define a baseline condition that provides a measuring point for the environmental resources that will be acted upon
- Assess the cumulative impacts:
  - Determine the magnitude or significance of cumulative impacts
- Recommend mitigation measures.

So, using the aforementioned procedure as headings, herewith an assessment of the cumulative impacts arising from this operation.

Note that there is no cumulative impact at all, but these have been included to show that the assessment has taken place:

**Determining the extent of the cumulative impacts:****Identification of potentially significant impacts:**

None. There will be no impact on any ecological aspect, nor will any impact occur on socio-economic activity in the area.

**Geographic Scope of assessment:**

Pan and surrounding farms.

**Timeframe of analysis**

The proposed prospecting project will take place over a period of just 2 years, but the actual drilling component on site is unlikely take longer than 2 weeks at the very most.

**Other activities impacting on environmental resources in the area**

The area and surrounds has been impacted on by:

- Agricultural development (Kraals, small dams, feeding stations, etc)
- Farmsteads
- Labourers' cottages
- Unsurfaced roads
- Some disturbances on the pan.

**Resource characterization**

This section aims to characterise the environmental resources in terms of their ability to withstand additional stress. The pan surface upon which activity is planned is devoid of vegetation or animal life and although no biodiversity impact can possibly occur, the applicant is still required to ensure minimal disturbance of the site.

**Magnitude and significance of cumulative impacts**

None.

## **7 Motivation for the overall preferred site, activities and technology alternative.**

### **7.1 Overall Preferred Site Alternative (Motivation)**

In the case of mining (with mining being the eventual aim of prospecting) 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
- Usually, finding a virgin site outside of any CBA designation is virtually impossible. The CBA designation is largely applied precisely because of the non-disturbance of the site.

### **7.2 Activity Alternative (Motivation)**

There is no activity alternative. The only alternative is the no go option.

### **7.3 Technology Alternative selected (Motivation)**

Small diameter auger drilling presents the best opportunity for allowing withdrawal of water / brine sample from the hole.

## **8 Full description of the process followed to reach the proposed preferred alternatives within the site.**

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

\_NOTE that this section is still subject to Public Input in respect of alternative consideration. This version of the document is a draft document.

### **8.1 Details of the development footprint alternatives considered.**

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

#### **8.1.1 The location where it is proposed to undertake the activity**

The location of the development was preceded by a thorough investigation of the western portion of the farm. Surrounding farms are located on rocky and / or shaley substrate which does not allow for development of good sands. As a result, the only possible source of good sands is the broad shallow valley running east west along the north of the N1. The existing unrehabilitated sand mine gave rise to the consideration of this area for such mining.

The first target area was the area west of the mined out area. When visiting the site the trial pits had already been dug as part of the exploration for additional site suitable for cultivation and whilst the most easterly of the holes showed positive results, the sands became shallow and very variable of depth (but never deep enough to be considered viable. The area shaded purple in the map below (east of the mined out area) is located in the broad valley floor and is utilised as farm dams. The extension of these dams were considered but rejected given the shallow and silty nature of the sands.

The area close to the hotel / farmstead was rejected purely on the basis of potential impact on surrounding land users.

The most suitable area is the area shaded red. But even within this area, site selection was compromised in places by shallow material and south flowing stream channels from the mountainous hinterland. Unfortunately, this area is also the most exposed in respect of visual impact from the N1

#### **8.1.2 The type of activity to be undertaken;**

Surface mining is the activity to be undertaken.

#### **8.1.3 The design or layout of the activity**

The design of the excavation in this case was governed by the material location, depth and quality.

The depth of the excavation is bound by geology and in this case it is proposed to retain 300mm mixed gravel sand material above the underlying material as subsoil drainage layer and 200mm topsoil material.

**8.1.4 The technology to be used in the activity**

Soft rock quarrying technology has remained the same for decades and the use of excavators / front end loaders/ dozers will continue.

**8.1.5 The operational aspects of the activity**

None.

**8.1.6 The option of not implementing the activity**

The option of no go project was dismissed given the insignificant impact of the operation (should rehabilitation take place in accordance with the prescriptions of this document).

**8.2 *Details of the Public Participation Process Followed***

The process was initiated with the identification of I&AP's using the list included in the DMR template below as a guide. Windeed and landowner knowledge of surrounding landowners was utilised to obtain surrounding landowners details as well as contact information. Other I&AP's were identified because of their position as State Departments, Local Authorities, NGO's or community representation.

All identified parties were initially contacted by telephone as an introduction, to ensure the correct contact details and preferred method of correspondence, whereupon all parties were sent a copy of the draft BAR/EMP with covering letter (see Appendix 4).

The broader community was alerted through newspaper advert and A2 notices placed at the entrance to the property - Refer Appendix 4 for copies of these. In addition, the local Ward Councillor was specifically consulted and such consultation will continue.

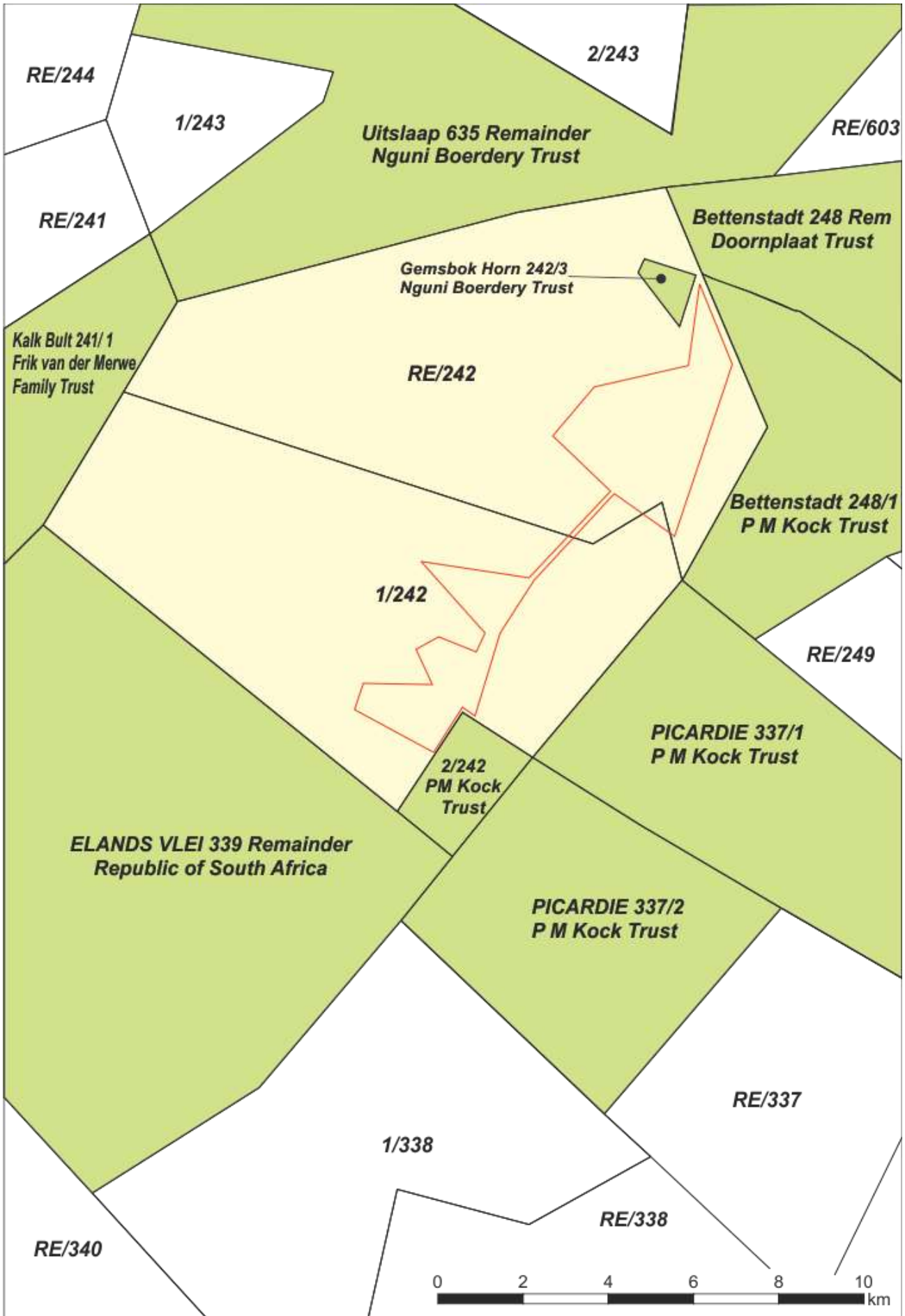


Figure 4: Surrounding Landowners (Windeed Search Results, Sep 2018)

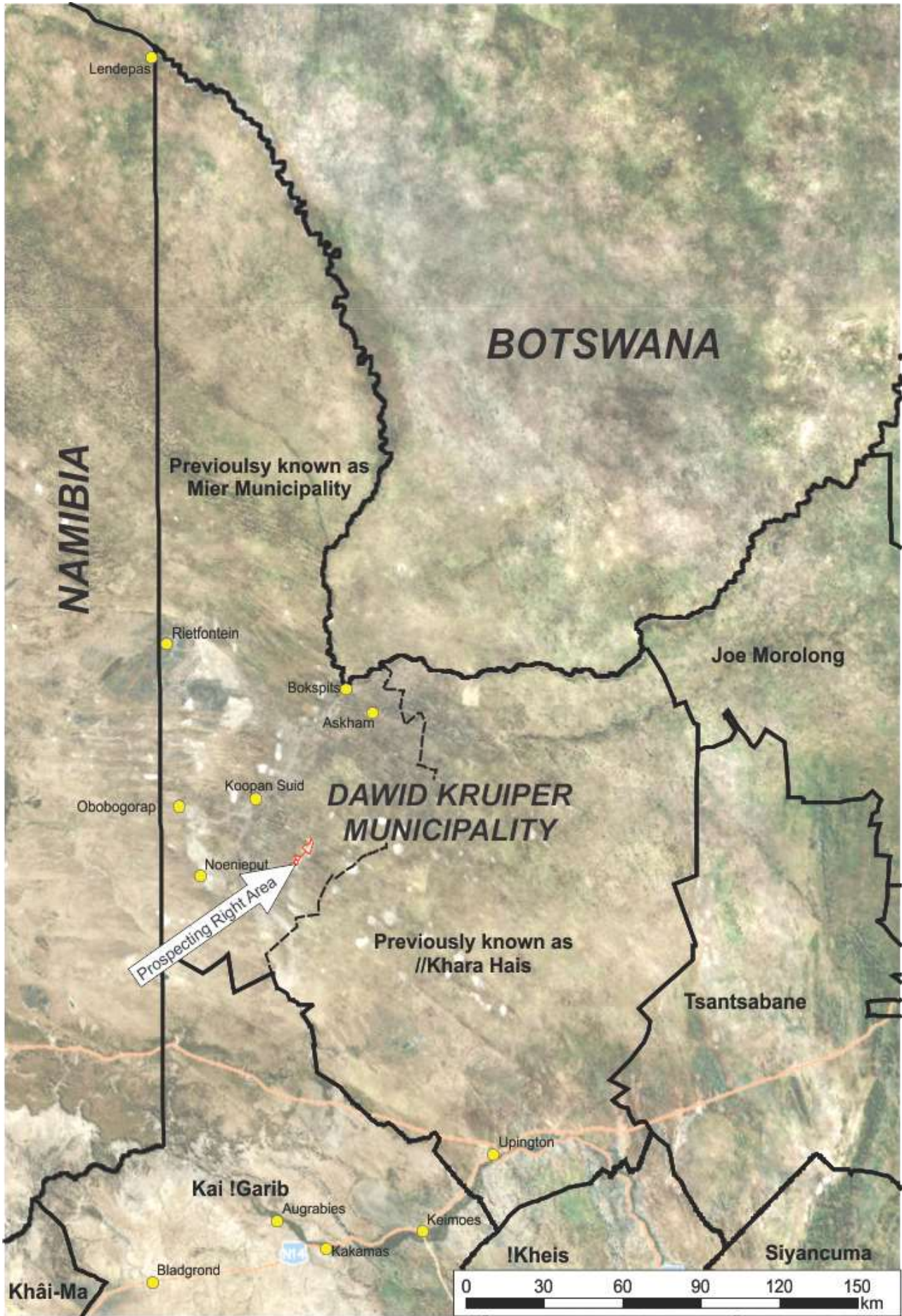


Figure 5: Municipal Context

### 8.3 Summary of issues raised by I&As

Interested and Affected Parties: List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
Landowner: P M Kock Trust (as well as surrounding farms 242/2, 248/1, 337/1, 337/2)	Met with applicant				
Lawful occupier/s of the land	NA				
Landowners or lawful occupiers on adjacent properties – Refer Figure 4 above					
Farms: Uitslaap 635 Remainder and Gemsbok Horn 242 / 3 – Owned by Nguni Boerdery Trust:					
Farm Bettenstadt 248 Remainder: Doornplaat Trust					
Farm Elands Vlei 339 Remainder Republic of South Africa. Department of Public Works	Reg Mail & Email				
Kalk Bult 241/1 Frik van der Merwe Family Trust					
<b>Municipal Representatives</b>					
Dawid Kruiper Municipal Manager: Civic Centre Mtual Street Upington 8801 Name: E Ntoba Tel: 054 338 7001 Email: manager@kharahais.gov.za	Email & Reg Mail				
<b>Organs of state and NGO's (Responsible for infrastructure that may be affected Roads, Eskom, Telkom, DWS etc.)</b>					



Interested and Affected Parties: List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
Department of Environment and Nature Conservation : Northern Cape Private Bag X6120, Kimberley, 8301 Tel 053 807 7300 Head of Department	Reg Mail				
Department of Environment and Nature Conservation : Northern Cape Private Bag X16 Springbok 8240 Tel 053 807 7300 Ms Onwabile Ndzumo	Reg mail				
Department of Water and Sanitation: Mr Abe Abrahams: Chief Director: Northern Cape Private Bag X6101 KIMBERLEY 8300 Tel: (053) 830 8800/6 7600 Cell: 082 883 6741 AbrahamsA@dws.gov.za	Email				
Orange CMA Moses Mahunonyane MahunonyaneM@dws.gov.za Cell: 082 805 7553	Email				
Dept. of Agriculture Forestry and Fisheries: Head of Department Mr Thebe Thebe 072 991 8114 tthebe@ncpg.gov.za	Email				
Department of Public Works Ruwayda Baulackay Private Bag X5002, Kimberley, 8300 Tel: 053 838 5202 Cell: 083 459 7602 Email: ruwayda.baulackay@dpw.gov.za	Reg Mail and Email				
<b>Communities</b>					
Community of Upington (Advertised in Gemsbok)					

Interested and Affected Parties: List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
Commission On Restitution Of Land Rights: Regional Land Claims Commission: Northern Cape. Tel: (053) 807 5700 Ryan.oliver@drdlr.gov.za	Email				
Traditional Leaders					
<b>Other Competent Authorities</b>					
SAHRA/HNC Lodgement on Heritage electronic lodging system: SAHRIS					
DMR:NC Regional Manager	Reg Mail and Email				
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

## 9 Environmental attributes associated with the alternatives.

### 9.1 *Type of environment affected by the proposed activity.*

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

#### 9.1.1 Topography

The proposed drill sites are located on flat the pan floor. The pan is surrounded on all sides by relatively higher lying red sand dunes typical of the Kalahari area.



Photo 1: View from east looking at Northern end of northern pan. Note the high Kalahari sands surrounding the pan

#### 9.1.2 Visual Impact

At present the largest visual impact on the pan is the diggings in the north of the northern pan as seen in phot 1 above. Otherwise the only visible disturbances to the pan surface are:

- The roads across the pans
- Water tank on the northern pan
- Fence on the pan surface at property boundary

#### 9.1.3 Soil

The pan surface is particularly stony and solid enough to drive upon. Refer Photo 2 below. Note that no topsoil will require removal before drilling



Photo 2: Nature of soil cover in proposed mining areas

#### **9.1.4 Land Capability / Agricultural potential**

The surface of the pan cannot be classified as agricultural/ grazing land.

#### **9.1.5 Natural Vegetation**

The salty pan surface is completely devoid of vegetation. Mucina and Rutherford (2012) classify the veld types surrounding the pan as *Gordonia Duneveld*, with the salty pans classified as Southern Kalahari Salt Pans.

Neither of these vegetation types is classified as Critically Endangered, Endangered nor Vulnerable in terms of the NEM:BA listed Ecosystems (GNR 32689).

Note that there will in any event be absolutely no disturbance of the vegetation surrounding the pan.

#### **9.1.6 Animal Life**

Vast expanses of the same vegetation surrounding the site provide a habitat suitable for species typical of the area. These include small buck, rodents (rats, mice, shrews etc.), reptiles (snakes) birds and insects. The large scale of the habitat type when compared to the extent of the proposed activities negates any significance of any impact in this regard.

The proposed drilling of a few holes does not represent any threat to any corridor or connectivity of natural systems.

#### **9.1.7 Surface Water**

The proposed operation is located on the surface of a very large pan which may, very occasionally, be shallowly flooded through rainwater. There are no stream channels or other water courses in the area.

No surface water will be used during the operational phase of this prospecting project.

### 9.1.8 Ground Water

This site is located in Quaternary Basin J12B. The point of the prospecting is to determine the salt content of the brine / groundwater contained within the pan basin.

No groundwater will be abstracted, except for ±20 litres per drill-hole site for the purposes of sampling.

### 9.1.9 Air Quality (Dust)

It is likely that dust generation off the pan and surrounding denuded landscapes can be particularly high during dry windy periods.

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 mg m<sup>2</sup> day<sup>-1</sup> 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	DUSTFALL RATE (D) (mg /m <sup>2</sup> /day <sup>1</sup> 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) (mg/ m <sup>2</sup> /day <sup>1</sup> 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”

Existing dust sources in this area results from:

- Vehicles on unsurfaced roadways
- Occasional dust from the pan and dry denuded areas under strong wind conditions

Potential dust sources at this site will be:

- Vehicles on unsurfaced roadways. There will be very few trips generated through this prospecting application.
- The drilling could conceivably generate dust, but highly unlikely.

#### **9.1.10 Noise**

Existing noise sources in this area results from:

- Very occasional traffic on surrounding roads
- General farm noise (very limited)

Potential noise sources arising from this operation:

- Vehicle generated noise.
- Limited noise resulting from the prospecting drill rig.

## **9.2 Description of the current land uses.**

The 1 623ha prospecting right area is located entirely on two pans (Bettastadt (northern) and Tsonga (southern) pans. The pans are extremely isolated and non-natural land uses are sparse.

Figure 6 below shows:

- The extent of the 2 pans
- The location of the main unsurfaced roads to the north of pan and running south from that road through the 2 pans.
- There are several on pan roads and tracks which although seldom used may be used by the applicant.
- There are several on pan pits. Their use is unknown but possibly as stock watering. The water in them will be salty
- There are fences and pipelines on the pan which are not shown
- The closest farmsteads are the 2 Gemsbok Horn farmsteads, as indicated on figure 6 below.

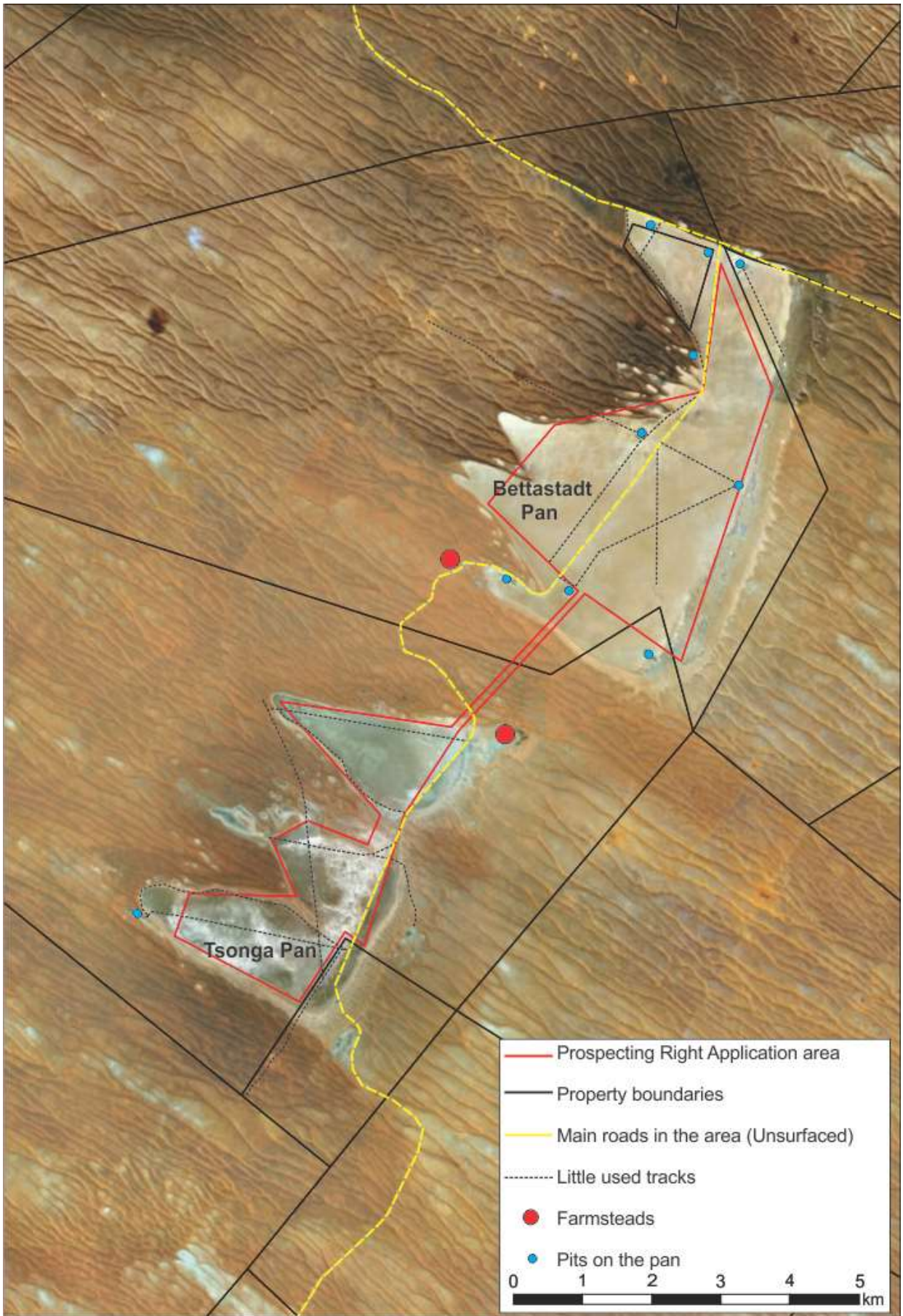


Figure 6: On site and surrounding land use

**9.3 Description of specific environmental features and infrastructure on the site.**

In terms of infrastructure, there is no municipal infrastructure on site. There is farm infrastructure in terms of tracks, watering pits indicated in figure 6, pipelines from watering pits, feeding stations. None of these will be disturbed by the proposed activities.

In terms of environmental features, refer Part 9.1 for description per aspect of the environment.

**9.4 Environmental and current land use map.**

(Show all environmental and current land use features)

Refer Figure 6 and Para 9.4 above

**10 Impacts & risks identified (Nature, significance, consequence, extent, duration and probability of the impacts)**

Note that in this draft Report, only the potential impacts identified are the typical impacts known for such activities. This will be subject to further public participation to identify additional / different impacts. Step one is to identify applicable impacts, as per table below. Second step is to ascribe significance and details as per table thereafter.

**10.1 Impact Identification**

Activity. This table identifies potential negative impacts	Geology	Topography	Soil/ Topsoil	Visual	Land Capability	Vegetation	Surface Water	Ground Water	Animal Life	Noise	Air Quality (Dust)	Social/ Economic	Archaeology/ Cultural	Hydrocarbon	Traffic /Access
<b>Application for Prospecting Right</b>															
<b>1. POST-APPROVAL ACTIVITIES</b>															
1.1. Mark hole locations (contractor and applicant together)															
<b>2. ESTABLISHMENT ACTIVITIES</b>															
2.1. Provide chemical toilets for staff <sup>3</sup>															
2.2. Conduct Environmental Induction training to staff															
2.3. Access road is already in place. No roads will be developed on the pan. The drill can drive to the proposed drill site.															
<b>3. OPERATIONAL PHASE ACTIVITIES</b>															
3.1. Locate drill rig on site and drill hole.															
3.2. Take water samples															
3.3. Backfill drilled hole with removed material															

<sup>3</sup> Chemical toilet if considered.



Activity. This table identifies potential negative impacts	Geology	Topography	Soil/ Topsoil	Visual	Land Capability	Vegetation	Surface Water	Ground Water	Animal Life	Noise	Air Quality (Dust)	Social/ Economic	Archaeology/ Cultural	Hydrocarbon	Traffic /Access
<b>4. DECOMMISSIONING PHASE ACTIVITIES</b>															
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment															
4.2. Ensure the site is free of Hydrocarbon pollution															
4.3. Remove any structures –chemical toilet.															
<b>5. AFTERCARE PERIOD</b>															
5.1. Conduct final performance assessment															
5.2. Lodge closure Application															
5.3. DMR Grant Closure Application															

### 10.2 Impact rating

The table below does not include description of the beneficial impact of operational monitoring or decommissioning rehabilitation measures (as these should be fairly clear to the reader). The inclusion of these aspects results in an unnecessarily long report.

Activity	Nature of Impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						Reversed	Irreplaceable loss of resource	Avoided, managed or mitigated
<b>Application for Prospecting Right</b>								
<b>1. POST-APPROVAL ACTIVITIES</b>								
1.1. Mark hole locations (contractor and applicant together)								
<b>2. ESTABLISHMENT ACTIVITIES</b>								
2.1. Provide chemical toilets for staff <sup>4</sup>								
2.2. Conduct Environmental Induction training to staff								
2.3. Access road is already in place. No roads will be developed on the pan. The drill can drive to the proposed drill site.								
2.3.1. Air Quality	Dust generated by equipment / vehicles on roadways during development	Local	During Drill Establishment Phase	Possible	Insignificant	No	No	Managed
2.3.2. Hydrocarbon	Potential impact through oil/fuel leaks	Very Local	Whilst travelling to site / transporting the drill to site	Possible / Unlikely	Insignificant	Yes	No	Managed
<b>3. OPERATIONAL PHASE ACTIVITIES</b>								
3.1. Locate drill rig on site and drill hole.								

<sup>4</sup> Chemical toilet if considered.

Activity	Nature of Impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						Reversed	Irreplaceable loss of resource	Avoided, managed or mitigated
3.1.1. Air Quality	Dust generated by drilling equipment	Local	During Drilling	Unlikely considering use of auger drill	Insignificant	No	No	Managed
3.1.2. Noise	Noise generated by drilling equipment	Very Local	During Drilling	Definitely	Insignificant	No	No	Managed
3.1.3. Hydrocarbon	Potential impact through oil/fuel leaks	Site specific	During Drilling	Possible	Insignificant	Yes	No	Managed
3.2. Take water samples								
3.3. Backfill drilled hole with removed material								
<b>4. DECOMMISSIONING PHASE ACTIVITIES</b>								
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment								
4.2. Ensure the site is free of Hydrocarbon pollution								
4.3. Remove any structures – chemical toilet.								
<b>5. AFTERCARE PERIOD</b>								
5.1. Conduct final performance assessment								
5.2. Lodge closure Application								
5.3. DMR Grant Closure Application								

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

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

An initial table was compiled which described each activity (whether listed or not in terms of NEMA), potential impact, significance and duration. Such table is included in the draft reporting, made available to all identified Interested and Affected Parties.

Any relevant responses received would then inform a revision of the site layout plan. Although there have been no revisions required as yet, it is possible that the site layout require revision through continued input by I&AP's.

The impacts are rated according to nature, extent, duration, probability of occurring and significance.

a) The significance level is based on the following criteria:

<i>Significance</i>		<i>Criteria</i>
Negative	Significant (S)	<ul style="list-style-type: none"> <li>Recommended level always exceeded with associated widespread community action</li> <li>Disturbance to areas that are pristine, have conservation value, are important resource to humans and will be lost forever</li> <li>Complete loss of land capability</li> <li>Destruction of rare or endangered specimens</li> <li>May affect the viability of the project</li> </ul>
	Moderate (M)	<ul style="list-style-type: none"> <li>Moderate measurable deterioration and discomfort</li> <li>Recommended level occasionally violated – still widespread complaints</li> <li>Partial loss of land capability</li> <li>Complete change in species variety or prevalence</li> <li>May be managed</li> <li>Is insignificant if managed according to EMP provisions</li> </ul>
	Minor/ (I) Insignificant	<ul style="list-style-type: none"> <li>Minor deterioration. Change not measurable</li> <li>Recommended level will rarely if ever be violated</li> <li>Sporadic community complaints</li> <li>Minor deterioration in land capability</li> <li>Minor changes in species variety or prevalence</li> </ul>
	Negligible	<ul style="list-style-type: none"> <li>An impact will occur but it is barely discernible and not worthy of further investigation</li> </ul>
Positive	Minor	<ul style="list-style-type: none"> <li>Improvements in local socio-economics</li> </ul>
	Significant	<ul style="list-style-type: none"> <li>Major improvements in local socio-economics with some regional benefits</li> </ul>

b) The **duration** is classified as:

- Permanent (post-closure)
- Life of Mine (LOM)
- Temporary

c) The **probability** is ranked as:

- Definite/Certain
- Possible
- Unlikely

**12 The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.**

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

Not yet applicable. This will be amended in final documentation if any concerns are raised by affected parties.

**13 The possible mitigation measures that could be applied and the level of risk.**

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

Not yet applicable.

**14 Motivation where no alternative sites were considered.**

The applicants do operate in the area and know the area well. These pans were specifically selected because of their proximity to the Merriespan operation. The proposal is that if prospecting proves successful, then the brine will merely be pumped for this site to the existing Merriespan operation to supplement their brine supply. This would clearly be better than initiating a full salt mine at a pan further afield.

**15 Statement motivating the alternative development location within the overall site.**

(Provide a statement motivating the final site layout that is proposed)

The main aim of the prospecting is to determine the depth to the surface of and the quality of the brine. So, the drill sites were selected based on what would logically generate the most representative sampling and analysis of the pan condition, and the holes were selected to be as close to the centre of the pan as possible as well as being located close to existing roads and tracks so that access is easy without having to generate additional tracks onto the pan .

**16 Full description of process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site through the life of the activity.**

Refer para 10.2.

## 17 Assessment of each identified potentially significant impact and risk

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

The supporting impact assessment conducted by the EAP must be attached as an appendix. Refer also table in para 10.2 which lists each impact associated with the proposed activities.

## 18 Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT.	REFERENCE WHERE SPECIALIST REQUIREMENTS HAVE BEEN INCLUDED.
None required			

## 19 Environmental impact statement

### 19.1 Summary of the key findings of the environmental impact assessment

The findings are that the proposed prospecting of this site in terms of this plan will result in insignificant impact in all aspects of the environment. Very low impact in terms of dust and noise may arise out the drilling. There is also a slight risk of insignificant impact in terms of Hydrocarbon pollution due to leakage from equipment.

### 19.2 Final Site Map

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

Refer Figure 3 and 6.

### 19.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.

Given that no feasible alternatives have been identified at this stage, the positive and negative impacts of the proposed activity as described in this document is described below:

Negative impacts / risk to the environment:

- 1) Dust and noise impact from equipment on site. Impact will be negligible if any
- 2) Potential for Hydrocarbon pollution is low and easily managed

Positive impacts include:

- 1) Employment for staff (although limited)
- 2) Confirmation as to the quality of the brine in the pan (at depth).

## 20 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

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

### Impact Management Objectives<sup>5</sup>:

The overall objective is to limit the impact of prospecting in the short and long term, particularly given that the site is located on a pan in the generally pristine Kalahari surroundings.

The objective is to return the site so that it can form part of the surrounding wilderness / pan area. In addition, it is an objective that the disturbance area is kept to an absolute minimum and no access to areas outside of the proposed disturbance areas / drill sites will be permitted.

A further objective is to limit the dust and noise impact.

The impact management outcomes to be included in the EMP, therefore:

- Full rehabilitation of each drill site prior to the applicants leaving the site
- Limit noise and dust (even though there is no risk of these impacting on surrounding land users and uses).
- No evidence of hydrocarbon pollution
- Access to no go areas must be prevented through environmental education of all staff members.

## 21 Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

- 1) All prescriptions of the EMP must be adhered to by the applicant

## 22 Description of any assumptions, uncertainties & gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

None known.

## 23 Reasoned opinion as to whether the proposed activity should or should not be authorised

### **23.1 Reasons why the activity should be authorized or not.**

The site is not located in any CBA and does not form any corridor or connectedness between biomes.

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<sup>5</sup> Something that one's efforts or actions are intended to attain or accomplish; refers to purpose, goals and targets. In the strategy "objectives" are used referring to wider objectives while "targets" are used when more detailed information is available to set more specific detailed targets based on identified indicators. The strategy proposes a progression from objectives to indicators, and indicators to detailed targets as more detailed information becomes available.

The proposed prospecting will temporarily disturb the smallest area upon the surface of the pan and will be rehabilitated to match surrounding pan status.

The impacts of noise and dust are so minor as to be negligible. As with hydrocarbon pollution, should it even occur.

As such this EAP does not believe there is any reason why the activity should not be authorised, provided strict controls in terms of rehabilitation are put in place.

### **23.2 Conditions that must be included in the authorisation**

- 1) All prescriptions of the EMP must be adhered to by the applicant

## **24 Period for which the Environmental Authorisation is required.**

2 years excluding decommissioning and aftercare phase (but Mining Permit is only allowed for 2 years).

## **25 Undertaking**

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

## **26 Financial Provision**

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation. Operational rehabilitation has been catered for in the Budget lodged with the application in the Prospecting Work Programme. In terms of decommissioning rehabilitation (or the so called Rehabilitation Quantum) the amount to be provided by Bank Guarantee or cash deposit is R40 000.

### **26.1 Explain how the aforesaid amount was derived.**

It is estimated that a sum of R8 000 per drill site would be required if absolutely no rehabilitation took place at the drill site. Now in order to cater for the 5 drill sites, the calculated quantum is R40 000.

### **26.2 Confirm this amount can be provided for from operating expenditure.**

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

The Budget has been prepared by the applicant as part of the Prospecting Work Programme and that includes a provision for Rehabilitation in the prospecting budget. The applicant confirms herewith that the amount can be (and will be) provided from operating expenditure.



## 27 Specific Information required by the competent Authority

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

#### 27.1.1 **Impact on the socio-economic conditions of any directly affected person.**

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

There is no socio economic impact as a result of the proposed prospecting activities, except for possible remuneration to the landowner for the right to access the surface.

The other impacts are in respect of payment by the applicant to sub-contractors and to the State for Prospecting fees.

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

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

None expected. Copy of the draft BAR will be dispatched to Heritage authorities via the SAHRIS system.

## 28 **Other matters required in terms of sections 24(4)(a) & (b) of the Act.**

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

Not Applicable. The applicants do operate in the area and know the area well. These pans were specifically selected because of their proximity to the Merriespan operation. The proposal is that if prospecting proves successful, then the brine will merely be pumped for this site to the existing Merriespan operation to supplement their brine supply. This would clearly be better than initiating a full salt mine at a pan further afield.

# PART B

## ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

### 29 Draft environmental management programme.

#### 29.1 *Details of the EAP,*

Yes. Refer Para 1.1.

#### 29.2 *Description of the Aspects of the Activity*

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

Yes. Refer Para 4.1 and 4.2.

#### 29.3 *Composite Map*

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

There is no composite map given all the environmental variables considered. The following maps in this text do however apply:

- Figure 1: Locality Plan
- Figure 2: Extent of proposed prospecting right area (Sketch Plan contemplated in terms of Reg 2(2) of MPRDA)
- Figure 3: Prospecting Layout Plan
- Figure 4: Surrounding Landowners (Windeed Search Results, Sep 2018)
- Figure 5: Municipal Context
- Figure 6: On site and surrounding land use

#### 29.4 *Description of impact management objectives including management statements*

##### 29.4.1 **Determination of closure objectives.**

(ensure that the closure objectives are informed by the type of environment described)

The overall closure objective is to return each of the drill sites so that it can form part of the surrounding pan environment without impediment. In addition, it is an objective that the disturbance area is kept to an absolute minimum and no access to areas outside of the disturbance area will be permitted.

##### 29.4.2 **Volumes and rate of water use required for the operation.**

No water is to be used with the exception of small volumes of bottled water for the operational staff.

##### 29.4.3 **Has a water use licence has been applied for?**

None required.

### 30 Impacts to be mitigated in their respective phases

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

ACTIVITIES (as listed in 4.1)	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<b>Application for Prospecting Right</b>				
<b>1. POST-APPROVAL ACTIVITIES</b>				
1.1. Mark hole locations (contractor and applicant together)		Keep hole locations as close as possible to existing roads and tracks to limit impact on pan surface through access		
<b>2. ESTABLISHMENT ACTIVITIES</b>				
2.1. Provide chemical toilets for staff <sup>6</sup>				
2.2. Conduct Environmental Induction training to staff		Refer Appendix 4 for copy of Induction training minimum content		
2.3. Access road is already in place. No roads will be developed on the pan. The drill can drive to the proposed drill site.				
2.3.1. Air Quality	Local	None required	DUST FALL STANDARDS: SANS 1929:2004 & MHSA in respect of Personnel Exposure	During access to each site
2.3.2. Hydrocarbon	Very Local	As per Monitoring and Hydrocarbon Management Protocols in para 32.5	EMP prescriptions	Access by vehicles
<b>3. OPERATIONAL PHASE ACTIVITIES</b>				
<b>3.1. Locate drill rig on site and drill hole.</b>				
3.1.1. Air Quality	Local	None required	DUST FALL STANDARDS: SANS 1929:2004 & MHSA in respect of Personnel Exposure	Drilling
3.1.2. Noise	Very Local	The only feasible noise reduction measure is to ensure that all vehicle silencers are operational	NOISE: SANS 0103-1983 & MHSA in respect of Personnel Exposure	Drilling
3.1.3. Hydrocarbon	Very Local	As per Monitoring and Hydrocarbon Management Protocols in para 32.5	EMP prescriptions	Drilling

<sup>6</sup> Chemical toilet if considered.

ACTIVITIES (as listed in 4.1)	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
3.2. Take water samples	Approximately 2 x 10 litre samples per hole			
3.3. Backfill drilled hole with removed material				
<b>4. DECOMMISSIONING PHASE ACTIVITIES</b>				
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment				
4.2. Ensure the site is free of Hydrocarbon pollution				
4.3. Remove any structures –chemical toilet.				
<b>5. AFTERCARE PERIOD</b>				
5.1. Conduct final performance assessment				
5.2. Lodge closure Application				
5.3. DMR Grant Closure Application				

## 31 Impact Management Outcomes

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

ACTIVITY whether listed or not listed and Potential Impact	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm- water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Application for Prospecting Right		
<b>1. POST-APPROVAL ACTIVITIES</b>		
1.1. Mark hole locations (contractor and applicant together)	This is a mitigation measure to limit / prevent the unnecessary disturbance to surrounding pan	Impact avoided
<b>2. ESTABLISHMENT ACTIVITIES</b>		
2.1. Provide chemical toilets for staff <sup>7</sup>	This is a mitigation measure to prevent use of pan / veld as toilet	Impact avoided
2.2. Conduct Environmental Induction training to staff	This is a measure to train staff / sub-contractors on the applicable environmental impact alleviation measures	

<sup>7</sup> Chemical toilet if considered.

ACTIVITY whether listed or not listed and Potential Impact	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
2.3. Access road is already in place. No roads will be developed on the pan. The drill can drive to the proposed drill site.	Limiting of access is done to limit impact on the pan surface. Use same track to and from drill site	
2.3.1. Air Quality	Monitor and control through dust control measures if required	Dust level standards not breached
2.3.2. Hydrocarbon	Monitor and control through hydrocarbon management protocol	Impact avoided, but cleared if required
<b>3. OPERATIONAL PHASE ACTIVITIES</b>		
3.1. Locate drill rig on site and drill hole.		
3.1.1. Air Quality	Monitor and control through dust control measures if required	Dust level standards not breached
3.1.2. Noise	Remedy through noise control measures- unlikely to be required	Noise level standards not breached
3.1.3. Hydrocarbon	Monitor and control through hydrocarbon management protocol	Impact avoided, but cleared if required
3.2. Take water samples	None required	
3.3. Backfill drilled hole with removed material	This is a mitigation measure as part of meeting closure objectives	Closure objective
<b>4. DECOMMISSIONING PHASE ACTIVITIES</b>		
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment	This is a mitigation measure as part of meeting closure objectives	Closure objective
4.2. Ensure the site is free of Hydrocarbon pollution	Monitor and control through hydrocarbon management protocol	Impact avoided, but cleared if required
4.3. Remove any structures –chemical toilet.		
<b>5. AFTERCARE PERIOD</b>		
5.1. Conduct final performance assessment		
5.2. Lodge closure Application		
5.3. DMR Grant Closure Application		

## 32 Impact Management Actions

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

The management of environmental damage as a result of this undertaking consists of the following with detail description below:

- 1) General site establishment and rehabilitation as per para 32.1 below
- 2) Hydrocarbon pollution prevention must take place in accordance with the Hydrocarbon pollution prevention protocol in para 32.2 below.

### 32.1 *General site establishment and rehabilitation*

The closure objective is to return the drill sites so that they function as part of the pan and to not be discernible from the pan surrounds. In order to achieve this, the following actions are required:

- 1) Note that the locations of the proposed drill holes as indicated in Figure 3 serve as a guide to the prospecting applicant and sub-contractor. They must, prior to drilling, meet on site and select each of the 5 drill sites based on location close to existing tracks where possible. The aim is to limit movement on the virgin pan as much as possible whilst still achieving the desired results of representative prospecting.
- 2) Once the drill arrives at the pan, such drill must only use existing roads until the closest point to the drill hole. Access to and from existing road to the drill must occur on the same track back to the existing track/ road.
- 3) Drill holes tailings are to be kept in as small a heap as possible and must be used to backfill the hole after successful drilling (using a hand spade).
- 4) After the drill rig has left the site, the site must be checked for Hydrocarbon leaks (as discussed below) and treated if required, then raked by hand rake to mimic surrounding natural pan area as close as possible.

### 32.2 *Domestic and Industrial Waste and Hydrocarbon Management Protocol*

Note that there will be minimal volumes of domestic and industrial waste emanating from this drilling operation; however the following must to be implemented.

The waste streams that could potentially emanate from this site:

Domestic Waste: Only small quantities of domestic waste will emanate from this site and this will typically be in the form of lunch wrapper, cool-drink bottles, etc. The waste will be retained in the cab of the vehicle and disposed of at the Merriespan facility at the end of the working day.

Industrial Waste: Although no servicing of any vehicles is permitted in the proposed permit area, it is possible that emergency repairs may be required. If so, then adequate drip trays and funnels must be utilised to catch dirty oils from draining or from leaks – see para entitled Emergency Repairs on site below.

So, the Hydrocarbon Management protocol for the site:

#### Fuel receipt, storage and dispensing:

There will be no fuel storage facility on this site (for diesel). Diesel (**Unlikely but if required, then it**) will be brought in using small towed bowser and refuelling will take place in field. It is required that suitable funnels connections and drip trays are in place to limit the potential for leaks during such refuelling. The fuel delivery bowser driver must be cautioned to adhere to safe driving speeds and drive cautiously along the access roads.

#### Emergency repairs on site:

In the event of a breakdown with repair being required in the field, the staff should be trained in use of drip trays and suitable funnels (not to drain oil into the sand) for filling and draining of lubricants and the staff shall be provided with such equipment to prevent oil contamination. In addition:

- Used/replaced filters, hoses, belts, cloths, etc. are to be placed in a black bag or plastic drum for return to the contractor's facility for disposal in terms of their company regional industrial waste handling methodology. Used filters are not to be buried at the site of repair (nor discarded in the drill hole to be backfilled).
- In the event of soil contamination, the oil and contaminated soils are to be placed in black disposal bags and transported to suitable facility.

#### Staff Training and Awareness

All staff involved in mobile plant operation and maintenance must be made aware of these oil and lubricant procedures. Staff will require instruction in the:

- Deleterious effects of oil / fuel on the environment
- Handling method and reporting procedure (also in terms of emergency plan readiness in case of large oil spill)

#### General Provisions

- All operators are to check their equipment for leaks and report such leaks on a daily basis. All equipment and vehicles will be maintained in good working order.
- If spills do occur on the pan, absorbent material such as Drizit or wood shavings are to be placed on top of the spill and removed to waste drums and then to the Merriespan site; this must be disposed of at a suitable hazardous waste facility.
- All contaminated soil/material must also be removed and disposed of or treated with a suitable treatment process.
- Protective gear must be used during clean-up of spills.
- There will be an incident management system, including procedures and training, for dealing with incidents.

## **33 Financial Provision**

### ***33.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.***

There is one closure objective: To return the site so that it can be used successfully integrated into the surrounding pan.

**33.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and I&AP's.**

This draft document will be consulted.

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

Refer para 32.1.

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

Successful rehabilitation of the drill sites will result in the area being virtually indistinguishable from the surrounding pan surface.

**33.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment.**

Operational rehabilitation has been catered for in the Budget lodged with the application in the Prospecting Work Programme. In terms of decommissioning rehabilitation (or the so called Rehabilitation Quantum) the amount to be provided by Bank Guarantee or cash deposit is R40 000.

It is estimated that a sum of R8 000 per drill site would be required if absolutely no rehabilitation took place at the drill site. Now in order to cater for the 5 drill sites, the calculated quantum is R40 000.

**33.6 Confirm that the financial provision will be provided as determined.**

The Budget has been prepared by the applicant as part of the Prospecting Work Programme and that includes a provision for Rehabilitation in the prospecting budget. The applicant confirms herewith that the amount can be (and will be) provided from operating expenditure. The quantum must be approved by the DMR after which the applicant will provide for the quantum by way of bank guarantee.



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

Monitoring of Impact Management Actions, Monitoring and reporting frequency, Responsible persons, Time period for implementing impact management actions, Mechanism for monitoring compliance

Source activity and aspect requiring monitoring	Functional requirements for monitoring	Roles and responsibilities for the execution of the monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
<b>Application for Prospecting Right</b>			
<b>1. POST-APPROVAL ACTIVITIES</b>			
1.1. Mark hole locations (contractor and applicant together)			
<b>2. ESTABLISHMENT ACTIVITIES</b>			
2.1. Provide chemical toilets for staff <sup>8</sup>			
2.2. Conduct Environmental Induction training to staff			
2.3. Access road is already in place. No roads will be developed on the pan. The drill can simply drive to the proposed drill site.	Ensure same route in and out is used	Operator/ Prospecting supervisor	Prior to accessing each hole, the route must be determined
2.3.1. Air Quality	1) Visual monitoring of dust direction (and volume) 2) If complaint is received from any quarter, then operations must cease until weather conditions become favourable ( complaint unlikely)	1) Operator. To report to prospect manager.	Continuously whilst on site.
2.3.2. Hydrocarbon	Ensure no vehicle or equipment leaks. Ensure that all fuel transfer equipment is correct and present.	Equipment operators	Daily. Implement specification in Para 32.2 if shortcomings identified.
<b>3. OPERATIONAL PHASE ACTIVITIES</b>			

<sup>8</sup> Chemical toilet if considered.

Source activity and aspect requiring monitoring	Functional requirements for monitoring	Roles and responsibilities for the execution of the monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
3.1. Locate drill rig on site and drill hole.			
3.1.1. Air Quality	1) Visual monitoring of dust direction (and volume) 2) If complaint is received from any quarter, then operations must cease until weather conditions become favourable ( complaint unlikely)	2) Operator. To report to prospect manager.	Continuously whilst on site.
3.1.2. Noise	Ensure vehicle silencers are in place. No work or heavy vehicle movement after working hours and on weekends	Manager, Operator	Continuously. If shortcomings are noted, then operators and supervisors to be informed and appropriate action to be taken immediately.
3.1.3. Hydrocarbon	Ensure no vehicle or equipment leaks. Ensure that all fuel transfer equipment is correct and present.	Equipment operators	Daily. Implement specification in Para 32.2 if shortcomings identified.
3.2. Take water samples			
3.3. Backfill drilled hole with removed material			
<b>4. DECOMMISSIONING PHASE ACTIVITIES</b>			
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment	Ensure holes are backfilled and site raked after drill has left site	Prospecting supervisor	At end of drilling. Rectify any shortcomings
4.2. Ensure the site is free of Hydrocarbon pollution			
4.3. Remove any structures – chemical toilet.			
<b>5. AFTERCARE PERIOD</b>			
5.1. Conduct final performance assessment			
5.2. Lodge closure Application			
5.3. DMR Grant Closure Application			

### **35 Indicate the frequency of the submission of the performance assessment/ environmental audit report.**

Environmental audit report to be submitted on following milestones:

- As part of closure application

### **36 Environmental Awareness Plan**

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

The Applicant will develop an Environmental Awareness “course” as part of the Environmental Management System to be presented to staff prior to drilling. Provisional course content is included in Appendix 4.

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

Refer proposed course documentation in Appendix 4.

### **37 Specific information required by the Competent Authority**

- 1) Performance Assessment Report / Environmental Audit as part of closure application.

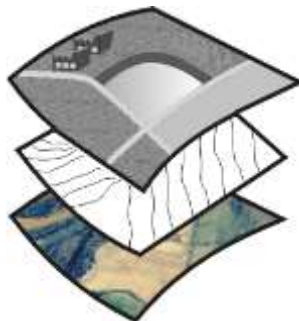
## 38 UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports
- b) the inclusion of comments and inputs from stakeholders and I&APs
- c) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.



Signature of the environmental assessment practitioner



**SITE PLAN CONSULTING**

Name of company

12 September 2018

Date

## **Appendix 1:**

### **CV of EAP and Declaration**

**Name:** CRAIG DONALD

**Date of Birth:** 26 February 1967

**Parent Firm:** Site Plan Consulting

**Position in Firm:** Member

**Years with the Firm:** Since 1989

**Nationality:** South African

**Qualifications:**

Year	Qualification	Institution
1984	Senior Certificate Matriculation	Plumstead High School
1992	National Higher Diploma: Town & Regional Planning ( <i>cum Laude</i> )	Cape Technikon
1995	Minerals and Metals Extraction short course	Continuing Engineering Education, University of Witwatersrand
1997	National Diploma: Surface Mine Management	Technikon SA
1999	Principles for Environmental Management short course	Environmental Evaluation Unit of University of Cape Town
2003	Masters of Business Administration	University of Cape Town

**Languages :** English (first language)  
Afrikaans (second language)

**Key Qualifications:**

I have many years practical experience in diverse spatial and mine planning projects after completing a National Higher Diploma in Town and Regional Planning.

After joining Setplan (in 1989), my main involvement was the preparation of environmental management programmes (mainly in surface mining related field) and geographic information systems. In order to obtain a deeper understanding of the relevant issues, I completed a

Surface Mine Management course as well as short courses such as the Environmental Evaluation course run by the EEU of UCT. I completed a part-time MBA at UCT in 2003 and became a member of Site Plan Consulting CC in 2006.

In that time I have developed experience in use of Word, Excel, CorelDraw and ArcView GIS and expanded my tasks as follows.

**Main tasks:**

The main focus of work experience has been in the licencing, physical and environmental planning, monitoring and closure of surface mining operations. The mines have varied in:

- Size from small sand mines to the largest aggregate or diamond producers,
- Products from clay to diamonds,
- Location from the Alexander Bay to East London/KZN coastal areas as well as inland in Free State and Limpopo
- Scale and type of environmental impact.

In respect of the licencing and physical planning of surface mines, the work entails *inter alia* the compilation of:

- Mining and Prospecting Work Programmes: a detailed mine / prospect plan and project description including cash flow forecast / budget to determine mine's economic viability and cost of prospecting
- Social and Labour Plan: Legislated document required to describe how the mine will maximise its socio-economic impact through enforced education, training and corporate social responsibility programmes for the staff and surrounding community.

In respect of the environmental planning, the work has entailed the compilation of Environmental Management Plans and Programmes in accordance with the requirements of the Mineral and Petroleum Resources Development Act with due regard for National Environmental Management Act (before the amalgamation of these 2 pieces of legislation in December 2014). Such EMP's have been conducted with full public participation and liaison with and full input from specialists as required. Such documents also required the calculation of the financial quantum required for closure / decommissioning activities. This quantum is recalculated on an annual basis once the project is operational.

In respect of monitoring the work involves conducting of environmental audits to measure the level of compliance of actual site conditions against the prescriptions of the EMP. The auditing task also served to highlight any shortcomings in the EMP.

Closure of surface mining operations has entailed the conducting of all public participation and the lodging of all documentation required.

In addition, the work also entails annual updates of Rehabilitation Quantum calculations for almost all of the approved Mining Rights in the list below. These calculations were conducted using both the Guideline of the DMR and as Itemised costs in certain relevant operations.

**Relevant Project Experience:**

Prospecting Rights (including public participation and compilation of EMPlans (inclusive of EIAs)):

- For Salt on Papendorp Pan as community initiative
- EMPs only for 7 Heavy Mineral Prospects of the West Coast
- Firlands (Gordons Bay) for aggregate
- Zoet and Zuur Diamond pipe (Boshof, Free State)
- Several Alluvial Diamond prospects on West Coast and inland West Coast (Western and Northern Cape)
- Phosphate prospect (Saldanha)
- Aggregate prospect near Oyster Bay in Eastern Cape
- Cobalt, Copper, Molybdenum, Nickel, Lead, Zinc, Silver, Gold & Platinum Group Minerals on 13 farms in the Kenhardt Magisterial District
- Nickel and related minerals on 8 farms near Kliprand
- Kaolin at Langklip (near Saldanha)
- Base minerals around Oena Mine in Northern Cape
- 6 sites for Uranium in the Karoo
- Nickel prospect at Oup near Pofadder
- Commissioners Pan Salt Prospect
- Gypsum prospects near Kimberley, Vanrhysdorp and in the Bushmanland
- Sand sources for Atlantis Foundries (Western Cape)

Mining Permits and Rights (including full Public Participation and compilation of EMPs inclusive of EIAs)

- Caledon Manganese Mining Permit
- Pentlands Granite Quarry Mining Right near Empangeni (KZN)
- Gamohaan Aggregate Quarry near Kuruman
- Cawood Salt Mine at Sout River mouth (Amendment of existing Right)
- Kuipersbult Aggregate Mining Right near Lephalale (Limpopo) as source for Medupi Power station construction
- Dikpens Gypsum Mine Extension (Bushmanland)
- Yserfontein Pan Gypsum mine - update of EMP
- Gypsum Mine for PPC near Vanrhynsdorp
- Transand Aggregate mine near Hartenbosch
- Aggregate and sand mine on municipal owned land in Gansbaai (Permit and Right)
- Sand mining permit near Salmonsdam Nature Reserve, Stanford
- Limestone Mining Right north of Klawer
- Sand Mining permits near Gouritz River / Vlees Bay
- Gecko Fert Phosphate Mining Right near Langebaanweg
- Oyster Bay Mining Right application for Aggregate
- Moddergat Sand Mining Right (between Worcester and Villiersdorp)
- Mining Right for Manganese near Swellendam
- Involvement to a greater or lesser degree in at least 50 other Mining Permit and Mining Right applications
- EMP updates / amendments (some of which did not require public participation) for several operations (at least 20).



Environmental Performance /Audit Assessments (monitoring) of the following sites on one off or regular basis. First compiled in terms of MPRDA prescriptions and since December 2014 guided by NEMA requirements:

- Crammix Clay Mine (Brakenfel)
- Botriver Sand mine (Steyns)
- Cawood Salt Mine (Sout River)
- Swellendam Manganese Mine
- Buffelsbank Diamond Mine
- Gecko Fert Phosphate Prospects
- Cape Lime Limestone Mine near Vredendal
- Denron operations (Sand and Aggregate) Knysna / Plettenberg Bay area
- Dimension Stone Mines of Verde Bitterfontein (Namaqualand)
- Limestone quarries in Bredasdorp and Vredendal
- Cawood Salt Mine on West Coast
- 3 x Salt Mines north of Upington
- PPC Gypsum Mine near Vanrhynsdorp
- Lafarge Western Cape operations including Tygerberg, Dorstberg, Peak and Saldanha Quarries
- Various Afrimat aggregate operations throughout the country

Closure Applications (for mining and prospecting operations):

- Gecko Fert Phosphate Prospecting Rights and Mining Permit
- Knysna Whitebridge Quarry
- Denron Funda and Helderwater Quarry – Plettenberg Bay
- Crammix Clay Mine
- Vaale Valley Sand Mine (Mossel Bay)
- Various Dimension Stone bulk samples for Verde Bitterfontein (Namaqualand)
- Bergsig / Farm 292 Closure (Hartenbos)
- Klipfontein Sand Mine (Vlees Bay)
- Welbedagt Gravel Permit (Herbertsdale / Mossel Bay)

“One Environmental System” applications (Post 8 December 2014) all conducted in terms of NEMA process:

- Cape Lime Sand Mine (Schaap Kraal operation) – Afrimat
- Atlantis Foundries Sand Mine – ZLLD Sand Mining (Pty) Ltd
- De Hoek Sand Mining Right – Buy-Line Trading (Pty) Ltd
- Denver Quarry Section 102 (MPRDA)– Afrimat
- Desert Rose Dimension Stone Mine – Application only
- Naroogna Pan Salt Mine – United Salt (Pty) Ltd
- Stanford Quarry Extension – Afrimat
- Bester Calcrete Mining Permit – West Coast Calcrete
- Commissioner Pan Salt Mine – Dwaggas Salt Works (Pty) Ltd
- Lezmin Sand Mine (Gouritz Area) – Lezmin 2021 CC
- Yzerfontein Gypsum Mine (Section 102) – St Gobain Construction Materials (SA)
- Skietkuil Quarry Mining Permit – Skietkuil Quarries CC
- Honingklip Gravel Mining Permit – Western Cape Construction Materials (Pty) Ltd

- Johnsons Clay Brick (Section 102)
- Okiep Dumps Reprocessing Application – O’okiep Copper Company Ltd
- Karoo One / Bo Plaas Sand and Gravel Mining Permit
- Bosluispan Diamond Mine (Section 102 Application) – Kori Diamonds (Pty) Ltd
- Oena Diamond Mine (Section 102 Application) – African Star Minerals

Section 24G Applications:

- Makulu Quarry – Denron
- Swellendam Manganese Mine – Sikhova Environmentally Friendly Building Solutions
- Illegal Waste Disposal Site – Die Kop – Plettenberg Bay

**DECLARATION OF THE EAP**

I, CRAIG DONALD declare that —

General declaration:

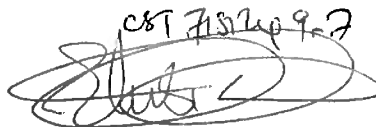
- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the Regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

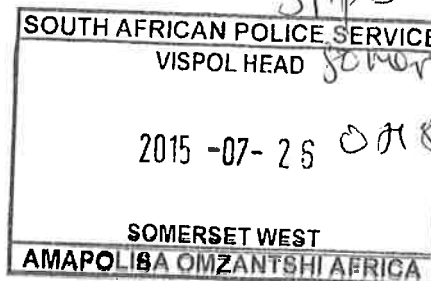
Signature of the environmental assessment practitioner:



*EST 7151249-7*  


Name of company: Site Plan Consulting

Date: 26 / 07 / 2015



**Appendix 2:  
Copy of Correspondence Sent (Including  
Newspaper Advert, Poster)**

**Appendix 3:  
Copy of Correspondence Received**

**To be populated after completion of public participation**

## **Appendix 4:**

### **Copy of recommended course content for Environmental Awareness Training**

## **GEMSBOK HORN PROSPECT: INDUCTION TRAINING**

Environmental management is a team effort. All management and staff are responsible for avoiding environmental damage and ensuring good environment management. The keys to achieving this are:

- Being aware of the environment and the need to protect it
- Understanding and recognising the things to protect and the do's and don'ts
- Knowing the reporting procedure
- Taking pride in good environmental housekeeping

### ***Legal Requirements***

- Requirement of the MPRDA (the Minerals and Petroleum Resources Development Act) and NEMA (National Environmental Management Act) to have an EMP (Environmental Management Plan) as part of the Basic Assessment report

(show the document to all staff in the induction and briefly note the items it covers)

- Additional laws                      National Water Act
  - use of water
  - discharge of sewage
  - control of Surface water
  - avoidance of groundwater contamination by oils, sewage or other

The target is a good result in Environmental Performance Assessments which must be conducted and reported to the Department of Mineral Resources

### ***Why do you need Environmental Management?***

It is an integral part of normal good management (Good Housekeeping) on the prospecting site, together with

- Safety
- Efficiency (Productivity)
- Planning (specific activities in specific areas)

The site is part of the larger pan environment:

- Care in the use of chemicals, poisons and / or Hydrocarbons
- The farm/s which is/are the owner's source of income

Vegetation surrounding the pan. Despite not having a sensitive classification by the Botanical Institute your attention is drawn to the importance of not disturbing areas which will not be impacted by the prospecting.

Integration of the prospecting with surrounding land uses and the need to limit :

- Overall disturbance to a minimum (this is a most critical factor)
- Poaching or hunting : Do not steal sheep or hunt animals as this will be reported to the police as a criminal offence
- Dust
- No access to no-go areas
- Must rehabilitate to pre- disturbed quality

### **Who does the damage to the Environment?**

**a) Management does damage:**

- (i) by not being fully informed themselves of the content of the EMP and other decisions/controls
- (ii) by not informing the staff of proper procedure and the environmental consequences of incorrect activities
- (iii) by not conducting regular monitoring
- (iv) by not developing their own personal sensitivity to environmental impact

**b) Equipment Operators do damage :**

- (i) by driving equipment or moving items like pipes or cables outside of demarcated roadways, movement areas. **NB: Always stay in roadways !!!**
- (ii) by dumping material in veld (outside of demarcated areas)
- (iii) by beginning to move material or dump other material before topsoil has been removed
- (iv) By not reacting and immediately reporting fuel or oil or hydraulic fluid leaks

**c) General Staff:**

- (i) Use of the veld as a toilet (NOT ALLOWED)
- (ii) Littering with lunch wrappings, bottles, cigarette packets etc
- (iii) Short-cut walking paths through veld which we want to keep natural

**What the Staff should be aware of to look out for:**

- Allocated storage or dump areas
  - Don't dump anywhere else!!
  - If in doubt ask first!!
- No-go areas:
  - Don't enter these areas and don't drive into them
- Recognise natural veld areas and
  - Don't disturb them
  - Don't drive into them
  - Don't walk through them
  - Don't use them as toilet areas
  - Do not dig plants out of the veld to take home or sell
- Oil, fuel or hydraulic leaks
  - As soon as you see these, report them to the operator or the foreman/manager
- Report littering
- Recognise (know the difference between) domestic waste and industrial waste and use procedure for disposal of each
- Know the refuelling and oil change procedure if you are involved in it to know how to avoid pollution

**Penalties for Environmental Damage**

- Fines
- Conditions of employment contract

## **Appendix 5:**

### **Closure Plan**





**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

## **CLOSURE PLAN**

# **GEMSBOK HORN PROSPECT**

SUBMITTED IN TERMS OF APPENDIX 5 of the NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (AS AMENDED).

NAME OF APPLICANT:	<b>Transalt (Pty) Ltd</b>
CONTACT PERSON:	<b>Wilmot Prusent</b>
TEL NO:	<b>011 864 4900</b>
FAX NO:	<b>011 864 5493</b>
POSTAL ADDRESS:	<b>PO Box 17224, Randhart 1457</b>
PHYSICAL ADDRESS:	<b>7 Clarke Street South Alrode, Alberton 1451.</b>
FILE REFERENCE NUMBER SAMRAD:	<b>NC30/5/1/1/2/12226PR</b>

**Report #:2793/GH/C**  
**October 2018**

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1.2	The expertise of the EAP. ....	1
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3	Closure objectives. ....	4
4	Proposed mechanisms for monitoring compliance with & performance assessment against the closure plan and reporting thereon. ....	4
5	Measures to rehabilitate the environment affected by activities and associated closure to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development (including a handover report). ....	4
6	Information on any proposed avoidance, management and mitigation measures that will be taken to address the environmental impacts resulting from the undertaking of the closure activity. .	5
7	Description of the manner in which it intends to-.....	6
7.1	Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation during closure; .....	6
7.2	Remedy the cause of pollution or degradation and migration of pollutants during [after] closure;....	7
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## 1 Details of -

### 1.1 The EAP who prepared the closure plan.

Name of the Practitioner: Craig Donald – Site Plan Consulting

Tel No: 021 854 4260

Fax No: 021 854 4321

E-mail address: craig@siteplan.co.za

### 1.2 The expertise of the EAP.

Date of Birth: 26 February 1967

Parent Firm: Site Plan Consulting

Position in Firm: Member

Years with the Firm: Since 1989

Nationality: South African

#### Qualifications:

Year	Qualification	Institution
1984	Senior Certificate Matriculation	Plumstead High School
1992	National Higher Diploma: Town & Regional Planning ( <i>cum Laude</i> )	Cape Technikon
1995	Minerals and Metals Extraction short course	Continuing Engineering Education, University of Witwatersrand
1997	National Diploma: Surface Mine Management	Technikon SA
1999	Principles for Environmental Management short course	Environmental Evaluation Unit of University of Cape Town
2003	Masters of Business Administration	University of Cape Town

**Languages :** English (first language)  
Afrikaans (second language)

#### Key Qualifications:

I have many years practical experience in diverse spatial and mine planning projects after completing a National Higher Diploma in Town and Regional Planning.

After joining Setplan (in 1989), my main involvement was the preparation of environmental management programmes (mainly in surface mining related field) and geographic information systems. In order to obtain a deeper understanding of the relevant issues, I completed a Surface Mine Management course as well as short courses such as the Environmental Evaluation course run by the EEU of UCT. I completed a part-time MBA at UCT in 2003 and became a member of Site Plan Consulting CC in 2006.

In that time I have developed experience in use of Word, Excel, CorelDraw and ArcView GIS and expanded my tasks as follows.

**Main tasks:**

The main focus of work experience has been in the licencing, physical and environmental planning, monitoring and closure of surface mining operations. The mines have varied in:

- Size from small sand mines to the largest aggregate or diamond producers,
- Products from clay to diamonds,
- Location from the Alexander Bay to East London/KZN coastal areas as well as inland in Free State and Limpopo
- Scale and type of environmental impact.

In respect of the licencing and physical planning of surface mines, the work entails *inter alia* the compilation of:

- Mining and Prospecting Work Programmes: a detailed mine / prospect plan and project description including cash flow forecast / budget to determine mine's economic viability and cost of prospecting
- Social and Labour Plan: Legislated document required to describe how the mine will maximise its socio-economic impact through enforced education, training and corporate social responsibility programmes for the staff and surrounding community.

In respect of the environmental planning, the work has entailed the compilation of Environmental Management Plans and Programmes in accordance with the requirements of the Mineral and Petroleum Resources Development Act with due regard for National Environmental Management Act (before the amalgamation of these 2 pieces of legislation in December 2014). Such EMP's have been conducted with full public participation and liaison with and full input from specialists as required. Such documents also required the calculation of the financial quantum required for closure / decommissioning activities. This quantum is recalculated on an annual basis once the project is operational.

In respect of monitoring the work involves conducting of environmental audits to measure the level of compliance of actual site conditions against the prescriptions of the EMP. The auditing task also served to highlight any shortcomings in the EMP.

Closure of surface mining operations has entailed the conducting of all public participation and the lodging of all documentation required.

**Relevant Project Experience:****Prospecting Rights (including public participation and compilation of EMPlans (inclusive of EIAs)):**

- For Salt on Papendorp Pan as community initiative
- EMPs only for 7 Heavy Mineral Prospects of the West Coast
- Firlands (Gordons Bay) for aggregate
- Zoet and Zuur Diamond pipe (Boshof, Free State)
- Several Alluvial Diamond prospects on West Coast and inland West Coast (Western and Northern Cape)
- Phosphate prospect (Saldanha)
- Aggregate prospect near Oyster Bay in Eastern Cape
- Cobalt, Copper, Molybdenum, Nickel, Lead, Zinc, Silver, Gold & Platinum Group Minerals on 13 farms in the Kenhardt Magisterial District
- Nickel and related minerals on 8 farms near Kliprand
- Kaolin at Langklip (near Saldanha)
- Base minerals around Oena Mine in Northern Cape
- 6 sites for Uranium in the Karoo
- Nickel prospect at Oup near Pofadder
- Commissioners Pan Salt Prospect
- Gypsum prospects near Kimberley, Vanrhysdorp and in the Bushmanland
- Sand sources for Atlantis Foundries (Western Cape)

Mining Permits and Rights (including full Public Participation and compilation of EMPs inclusive of EIAs)

- Caledon Manganese Mining Permit
- Pentlands Granite Quarry Mining Right near Empangeni (KZN)
- Gamohaan Aggregate Quarry near Kuruman
- Cawood Salt Mine at Sout River mouth (Amendment of existing Right)
- Kuipersbult Aggregate Mining Right near Lephalale (Limpopo) as source for Medupi Power station construction
- Dikpens Gypsum Mine Extension (Bushmanland)
- Yserfontein Pan Gypsum mine - update of EMP
- Gypsum Mine for PPC near Vanrhynsdorp
- Transand Aggregate mine near Hartenbosch
- Aggregate and sand mine on municipal owned land in Gansbaai (Permit and Right)
- Sand mining permit near Salmonsdam Nature Reserve, Stanford
- Limestone Mining Right north of Klawer
- Sand Mining permits near Gouritz River / Vlees Bay
- Gecko Fert Phosphate Mining Right near Langebaanweg
- Oyster Bay Mining Right application for Aggregate
- Moddergat Sand Mining Right (between Worcester and Villiersdorp)
- Mining Right for Manganese near Swellendam
- Involvement to a greater or lesser degree in at least 50 other Mining Permit and Mining Right applications
- EMP updates / amendments (some of which did not require public participation) for several operations (at least 20).

Environmental Performance Assessments (monitoring) of the following sites on one off or regular basis:

- Crammix Clay Mine (Brakenfel)
- Botriver Sand mine (Steyns)
- Cawood Salt Mine (Sout River)
- Swellendam Manganese Mine
- Gecko Fert Phosphate Prospects
- Cape Lime Limestone Mine near Vredendal
- Denron operations (Sand and Aggregate) Knysna / Plettenberg Bay area
- Dimension Stone Mines of Verde Bitterfontein (Namaqualand)
- Limestone quarries in Bredasdorp and Vredendal
- Cawood Salt Mine on West Coast
- 3 x Salt Mines north of Upington
- Various Afrimat aggregate operations throughout the country

Closure Applications (for mining and prospecting operations):

- Gecko Fert Phosphate Prospecting Rights and Mining Permit
- Knysna Whitebridge Quarry
- Denron Funda and Helderwater Quarry – Plettenberg Bay
- Crammix Clay Mine
- Vaale Valley Sand Mine (Mossel Bay)
- Various Dimension Stone bulk samples for Verde Bitterfontein (Namaqualand)

“One Environmental System” applications (Post 8 December 2014):

- Cape Lime Sand Mine (Schaap Kraal operation) – Afrimat
- Atlantis Foundries Sand Mine – ZLLD Sand Mining (Pty) Ltd
- De Hoek Sand Mining Right – Buy-Line Trading (Pty) Ltd
- Denver Quarry – Afrimat
- Desert Rose Dimension Stone Mine – Application only
- Narogna Pan Salt Mine – United Salt (Pty) Ltd
- Stanford Quarry Extension – Afrimat
- Bester Calcrete (Saldanha) – Imminent lodging

## **2 Introduction**

This Closure Plan has been compiled using the stipulated content as per Appendix 5 of NEMA. It has been compiled in terms of the requirements for the {Prospecting Right application on the farm Gemsbok Horn 242 Portion 1 and Remainder.

## **3 Closure objectives.**

The overall closure objective is to return each of the drill sites so that it can form part of the surrounding pan environment without impediment. In addition, it is an objective that the disturbance area is kept to an absolute minimum and no access to areas outside of the disturbance area will be permitted.

## **4 Proposed mechanisms for monitoring compliance with & performance assessment against the closure plan and reporting thereon.**

Decommissioning rehabilitation will take place at each site as soon as drilling has been completed. The following is required in terms of monitoring, actions taken and reporting of the decommissioning rehabilitation toward closure:

- 1) Decommissioning rehabilitation is conducted at each of the sites post drilling
- 2) Post decommissioning *Draft* Environmental Audit is then undertaken. Any shortcomings must be rectified, and the *Final* Environmental Audit is then compiled.
- 3) Such Final document is included as part of the Closure Application as lodged.

## **5 Measures to rehabilitate the environment affected by activities and associated closure to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development (including a handover report).**

The closure objective is to return the drill sites so that they function as part of the pan and to not be discernible from the pan surrounds. In order to achieve this, the following actions are required:

1. The prospecting applicant and sub-contractor must, prior to drilling, meet on site and select each of the 5 drill sites based on location close to existing tracks where possible. The aim is to limit movement on the virgin pan as much as possible whilst still achieving the desired results of representative prospecting.
2. Once the drill arrives at the pan, such drill must only use existing roads until the closest point to the drill hole. Access to and from existing road to the drill must occur on the same track back to the existing track/ road.
3. Drill holes tailings are to be kept in as small a heap as possible and must be used to backfill the hole after successful drilling (using a hand spade).
4. After the drill rig has left the site, the site must be checked for Hydrocarbon leaks and treated if required, then raked by hand rake to mimic surrounding natural pan area as close as possible.

**6 Information on any proposed avoidance, management and mitigation measures that will be taken to address the environmental impacts resulting from the undertaking of the closure activity.**

The impacts (and proposed mitigation measures required) that will arise out the undertaking of the closure activities are as follows:

<b>Activity</b>	<b>Impact</b>	<b>Scale of impact</b>	<b>Avoidance, Management or Mitigation</b>	<b>Proposed Management / Mitigation Measures</b>	<b>Significance with mitigation, Probability &amp; Duration of Impact</b>
<b>Drill holes tailings are to be kept in as small a heap as possible and must be used to backfill the hole after successful drilling (using a hand spade).</b>	Hydrocarbon (Oil/ fuel leaks)	Local pan	Management required on occurrence	Hydrocarbon management as per para 7	Insignificant. Possible. Until cleanup.
	Land Capability (Return to pre-prospecting land capability)	Pan	NA	This is the rehabilitation measure	Negligible. Definite. Positive. Permanent
<b>After the drill rig has left the site, the site must be checked for Hydrocarbon leaks and treated if required, then raked by hand rake to mimic surrounding natural pan area as close as possible</b>	Land Capability (Return to pre-mining land capability)	Pan Surrounds	NA	This is the aim of the rehabilitation measure	Negligible. Definite. Positive. Permanent
	Topography	Pan surrounds (but only previously disturbed areas)	NA	This is the aim of the rehabilitation measure	Negligible. Definite. Positive. Permanent

## 7 Description of the manner in which it intends to-

### 7.1 **Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation during closure;**

The proposed rehabilitation measures as prescribed in para 5 above are aimed at returning the site to pre-mining condition. The only potential aspect which could lead to pollution or environmental degradation during closure will be the mistreatment of hydrocarbons through leakage of oils and fuels.

Hydrocarbon management during closure must include the following aspects:

Note that there will be minimal volumes of domestic and industrial waste emanating from this drilling operation; however the following must to be implemented.

The waste streams that could potentially emanate from this site:

*Domestic Waste:* Only small quantities of domestic waste will emanate from this site and this will typically be in the form of lunch wrapper, cool-drink bottles, etc. The waste will be retained in the cab of the vehicle and disposed of at the Merriespan facility at the end of the working day.

*Industrial Waste:* Although no servicing of any vehicles is permitted in the proposed permit area, it is possible that emergency repairs may be required. If so, then adequate drip trays and funnels must be utilised to catch dirty oils from draining or from leaks – see para entitled Emergency Repairs on site below.

So, the Hydrocarbon Management protocol for the site:

*Fuel receipt, storage and dispensing:*

There will be no fuel storage facility on this site (for diesel). Diesel (**Unlikely but if required, then it**) will be brought in using small towed bowser and refuelling will take place in field. It is required that suitable funnels connections and drip trays are in place to limit the potential for leaks during such refuelling. The fuel delivery bowser driver must be cautioned to adhere to safe driving speeds and drive cautiously along the access roads.

*Emergency repairs on site:*

In the event of a breakdown with repair being required in the field, the staff should be trained in use of drip trays and suitable funnels (not to drain oil into the sand) for filling and draining of lubricants and the staff shall be provided with such equipment to prevent oil contamination. In addition:

- Used/replaced filters, hoses, belts, cloths, etc. are to be placed in a black bag or plastic drum for return to the contractor's facility for disposal in terms of



their company regional industrial waste handling methodology. Used filters are not to be buried at the site of repair (nor discarded in the drill hole to be backfilled).

- In the event of soil contamination, the oil and contaminated soils are to be placed in black disposal bags and transported to suitable facility.

#### Staff Training and Awareness

All staff involved in mobile plant operation and maintenance must be made aware of these oil and lubricant procedures. Staff will require instruction in the:

- Deleterious effects of oil / fuel on the environment
- Handling method and reporting procedure (also in terms of emergency plan readiness in case of large oil spill)

#### General Provisions

- All operators are to check their equipment for leaks and report such leaks on a daily basis. All equipment and vehicles will be maintained in good working order.
- If spills do occur on the pan, absorbent material such as Drizit or wood shavings are to be placed on top of the spill and removed to waste drums and then to the Merriespan site; this must be disposed of at a suitable hazardous waste facility.
- All contaminated soil/material must also be removed and disposed of or treated with a suitable treatment process.
- Protective gear must be used during clean-up of spills.
- There will be an incident management system, including procedures and training, for dealing with incidents.

### **7.2 Remedy the cause of pollution or degradation and migration of pollutants during [after] closure;**

There will be none at this site provided all measures as proposed in this closure plan and EMP are implemented.

### **7.3 Comply with any prescribed environmental management standards or practices; and**

As described in part 4, the holder is bound by a sequence of environmental; audits during and after closure which will ensure compliance with this closure plan and EMP.

### **7.4 Comply with any applicable provisions of the Act regarding closure;**

The holder will comply with all aspects of the legislation in respect of closure.

## **8 Time periods within which the measures contemplated in the closure plan must be implemented;**

The closure plan will be implemented in a period of 3-6months from the date upon which decommissioning is proposed to be initiated. Remember that the activities required in closure should be absolutely minimal.

**9 The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of closure**

Not applicable.

**10 Details of all public participation processes conducted in terms of regulation 41 of the Regulations:**

*This document was distributed as part of the Draft BAR.*

**10.1 Copies of any representations and comments received from registered interested and affected parties;**

Not applicable

**10.2 A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments;**

Not applicable

**10.3 The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants;**

Not applicable

**10.4 Where applicable, an indication of the amendments made to the plan as a result of public participation processes conducted in terms of regulation 41 of these Regulations**

Not applicable

**10.5 Where applicable, details of any financial provisions for the rehabilitation, closure and on-going post decommissioning management of negative environmental impacts**

Not applicable