mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

VILANDER PANS 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).

NAME OF APPLICANT:	**Transalt (Pty) Ltd**
TEL NO:	**(011) 8644900 ext.221**
FAX NO:	**(011) 864 5493**
POSTAL ADDRESS:	**PO Box 17224, Randhart 1457**
PHYSICAL ADDRESS:	**7 Clarke Street South Alrode, Alberton 1451.**
FILE REFERENCE NUMBER SAMRAD:	**NC30/5/1/1/2/13638PR**

July 2023
Report #: 2859/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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Abbreviations

AIA	Archaeological Impact Assessment
Amsl	Above mean sea level
BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
dB	Decibel
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme Report
ESA	Ecological Support Area
GA	General Authorisation (in terms of NWA)
Ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
LED	Local Economic Development
LM	Local Municipality
LN	Listing Notice
MAP	Mean Annual Precipitation
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
NCHRA	Northern Cape Heritage Resources Authority
NEMA	National Environmental Management Act 107 of 1998 as amended
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NEM:WA	National Environmental Management: Waste Act 59 of 1998
NFEPA	National Freshwater Ecosystem Priority Area
NHRA	National Heritage Resources Act 25 of 1999
NWA	National Water Act 36 of 1998
ONA	Other Natural Area (in terms of CBA Mapping)
PIA	Paleontological Impact Assessment
SAHRA	South African National Heritage Resources Agency
SPC	Spatial Planning Category
SDF	Spatial Development Framework
SLP	Social and Labour Plan
StatsSA	Statistics South Africa
WMA	Water Management Area
WML	Waste Management License
WULA	Water Use License Application

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1 Contact Person and correspondence address

1.1 Details of the EAP

Name of the Practitioner: Craig Donald

Tel No.: 021 854 4260

Fax No. : 021 854 4321

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

1.2 Expertise of the EAP

The qualifications of the EAP

Refer Appendix 1.

Summary of the EAP's past experience.

Refer Appendix 1.

2 Location of the overall activity

The application takes place on portions of the following farms:

The total Prospecting Right Application area is located in two non-contiguous sections on portions of the following farms:		
Section	*Farm Name*	*21 Digit SG Code*
Section 1	Remainder of Farm Vilander No. 318	C02800000000031800000
Section 1	Portion 1 of Farm Vilander No. 318	C02800000000031800001
Section 2	Portion 112 of farm Kalahari-Wes No 251	C02800000000025100112
Section 2	Portion 158 of farm Kalahari-Wes No 251	C02800000000025100158
Application area (Ha)	**Section 1 measures 2 353.3471ha** **Section 2 measures 980.5299ha.** **Total Prospecting Right area measures 3 333.8770ha**	
Magisterial district:	**Gordonia**	
Distance and direction from nearest town:	**The site is located approximately 70km north of Upington**	

3 Locality map

Refer Figure 1 overleaf.

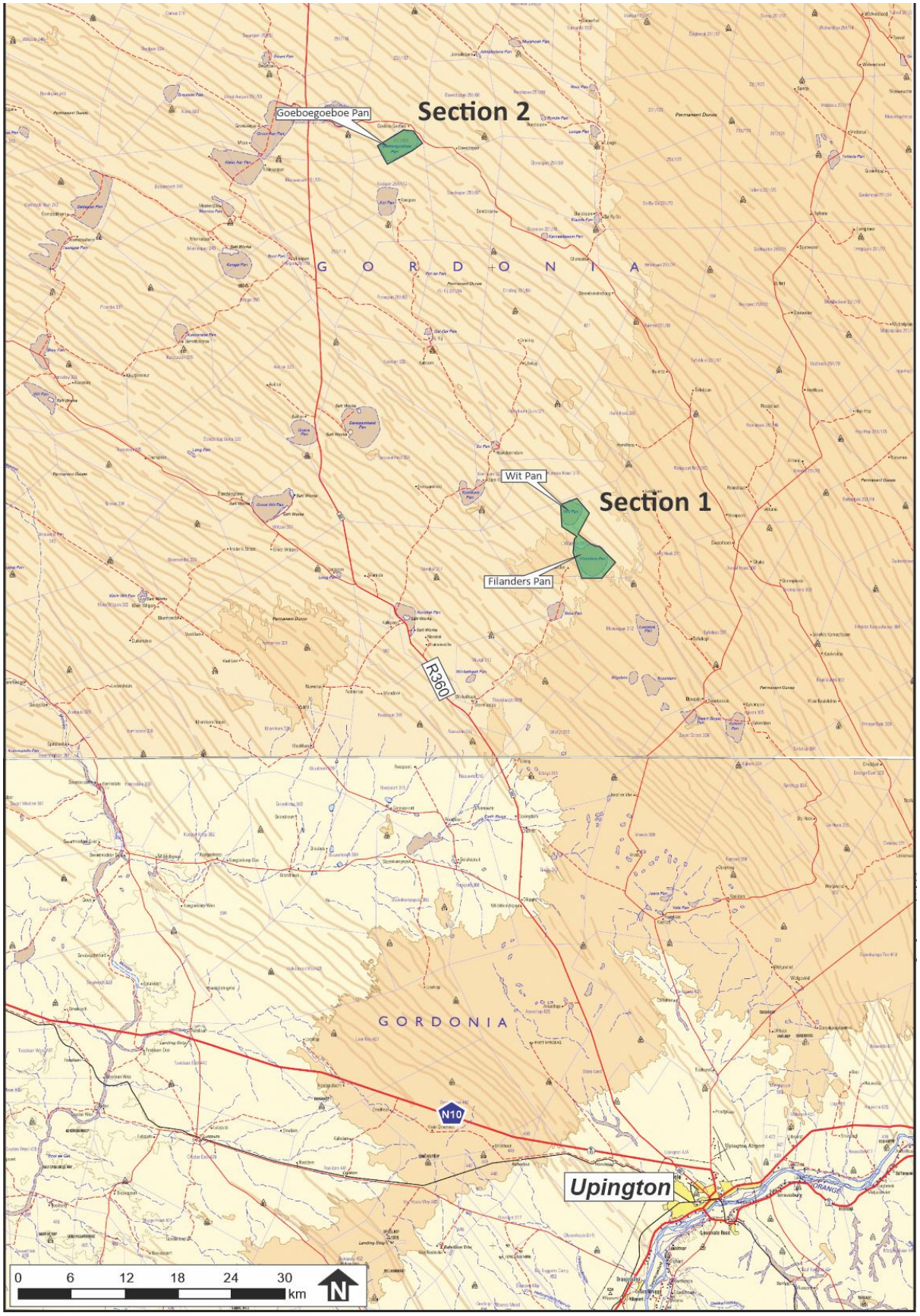
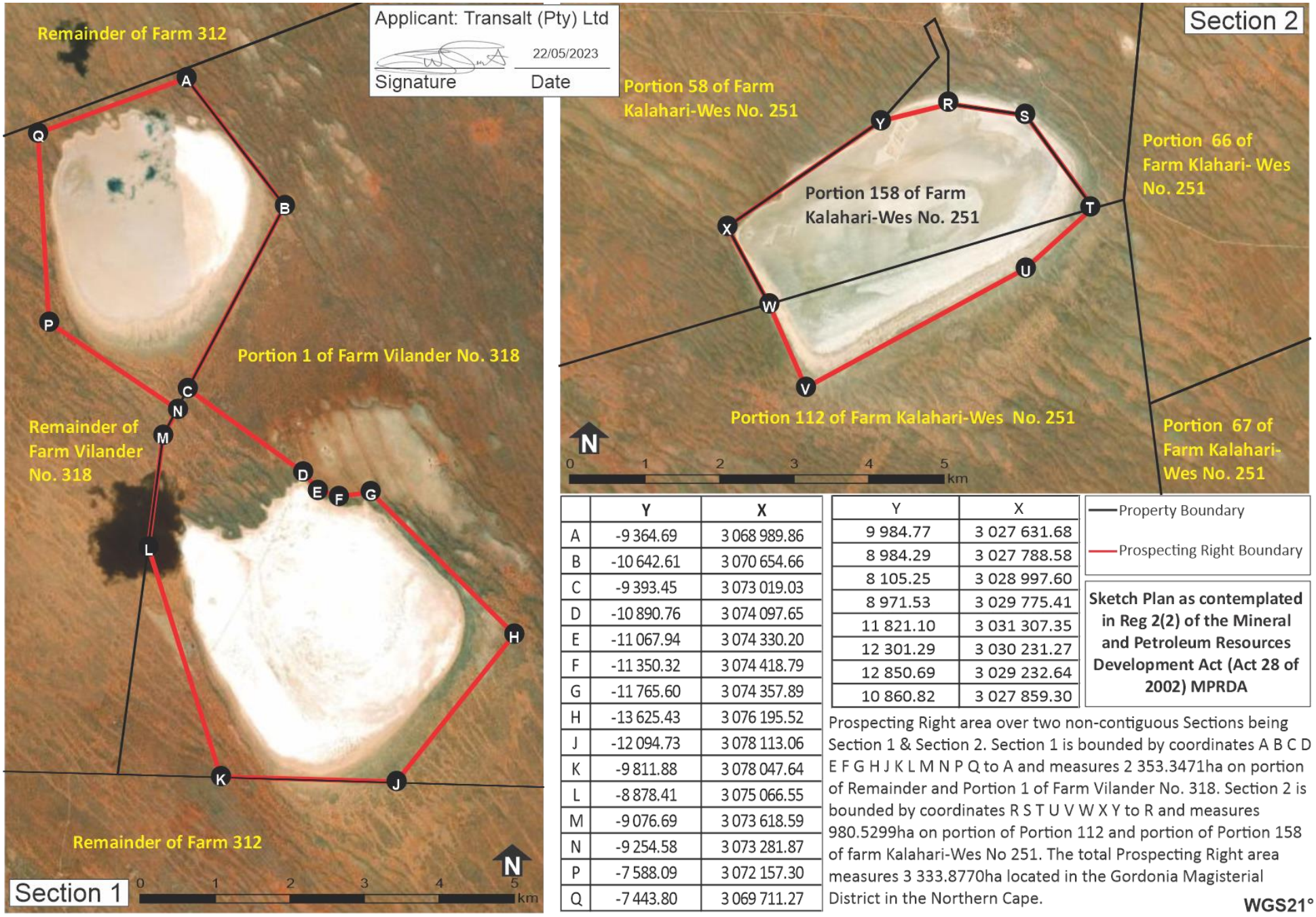


Figure 1: Locality Plan



	Y	X
A	-9 364.69	3 068 989.86
B	-10 642.61	3 070 654.66
C	-9 393.45	3 073 019.03
D	-10 890.76	3 074 097.65
E	-11 067.94	3 074 330.20
F	-11 350.32	3 074 418.79
G	-11 765.60	3 074 357.89
H	-13 625.43	3 076 195.52
J	-12 094.73	3 078 113.06
K	-9 811.88	3 078 047.64
L	-8 878.41	3 075 066.55
M	-9 076.69	3 073 618.59
N	-9 254.58	3 073 281.87
P	-7 588.09	3 072 157.30
Q	-7 443.80	3 069 711.27

Y	X
9 984.77	3 027 631.68
8 984.29	3 027 788.58
8 105.25	3 028 997.60
8 971.53	3 029 775.41
11 821.10	3 031 307.35
12 301.29	3 030 231.27
12 850.69	3 029 232.64
10 860.82	3 027 859.30

Property Boundary

Prospecting Right Boundary

Sketch Plan as contemplated in Reg 2(2) of the Mineral and Petroleum Resources Development Act (Act 28 of 2002) MPRDA

Prospecting Right area over two non-contiguous Sections being Section 1 & Section 2. Section 1 is bounded by coordinates A B C D E F G H J K L M N P Q to A and measures 2 353.3471ha on portion of Remainder and Portion 1 of Farm Vilander No. 318. Section 2 is bounded by coordinates R S T U V W X Y to R and measures 980.5299ha on portion of Portion 112 and portion of Portion 158 of farm Kalahari-Wes No 251. The total Prospecting Right area measures 3 333.8770ha located in the Gordonia Magisterial District in the Northern Cape.

WGS21°

Figure 2: Extent of proposed prospecting areas (Reg 2(2) Plan as contemplated in MPRDA)

4 Description of the scope of the proposed overall activity

4.1 Listed and specified activities

Cognisance must be taken of location of National Parks and/or formally protected areas, CBA's, Endangered Vegetation Types:

- The site is not located within a National Park or formally protected area. The closest formally protected area is located more than 80km away in all directions.
- In respect of vegetation, the prospecting area is located in the vegetation classified by Mucina and Rutherford (2018) as Gordonia Duneveld. Such vegetation is not classified as Critically Endangered, Endangered or Vulnerable in terms of NEMBA (2022). Note however that the proposed prospecting takes place on pan surfaces devoid of any vegetation.
- In terms of CBA classification, the Prospecting Right authorisation area **does not** intersect with CBA. The pans are classified as ESA and the area surrounding the pan are classified as Other Natural Area (ONA).

General Prospect Description:

The following general description is important in contextualizing the listed activities described in the table below. It is proposed the area of land applied for will be evaluated through prospecting activities in phases as described in list form and more detail below:

1) Review of historical data
2) Geophysical Work
3) Site establishment
4) Auger drilling (of 9 holes)
5) Pre-feasibility study and mineral resource estimation

List of Activities to be undertaken (whether listed or not):

NAME OF ACTIVITY	Aerial extent of Activity (Ha or m^2)	LISTED ACTIVITY (Mark with an X)	APPLICABLE LISTING NOTICE *(GNR 983, 984* or *985)*	WASTE MANAGEMENT AUTHORISATION
Application for Prospecting Right	3 333.8770ha	X	GNR983: Activity # 20	
1. POST-APPROVAL ACTIVITIES				
1.1. Mark hole locations (contractor and applicant together)	Using visible poles			
2. ESTABLISHMENT ACTIVITIES				
2.1. Provide chemical toilets for staff[1]	3m²			
2.2. Conduct Environmental Induction training to staff	All staff members			
2.3. Access to pans is already in place. No roads will be developed on the pan. The drill can drive to the proposed drill site.				

[1] Chemical toilet if considered.

NAME OF ACTIVITY	Aerial extent of Activity (Ha or m^2)	LISTED ACTIVITY (Mark with an X)	APPLICABLE LISTING NOTICE *(GNR 983, 984 or 985)*	WASTE MANAGEMENT AUTHORISATION
3. OPERATIONAL PHASE ACTIVITIES				
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^3 material per hole x 9 holes = 2.83m^3 total disturbance			
3.2. Take water samples	2 x 10litre samples per hole			
3.3. Backfill hole drilled hole with removed material	9 hole locations			
4. DECOMMISSIONING PHASE ACTIVITIES				
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.				
5. AFTERCARE PERIOD				
5.1. Conduct final performance assessment				
5.2. Lodge closure Application	3 333.8770ha			
5.3. DMR Grant Closure Application				

* The activities trigger several listed activities but the way we understand the 2021 amendment of the listed activities is that these are all included in the amended Listing Notice 1: Activity 20.

Listed activities in words:

GNR983: Activity 20: Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this listing notice of Listing Notice 3 of 2014, required to exercise the prospecting right.

4.2 Description of the activities to be undertaken

4.2.1 Planned activities

In terms of the prospecting proposed in this application the following 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 9 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.

Photo 1: Typical Auger Drill of the scale required for this prospecting operation (Source: USGS, 2012)

4.2.2 Site / Drilling Layout Plan

Refer Figure 3 & 4. Drill holes will be located at approximately along the deepest points / lines in each of the pans.

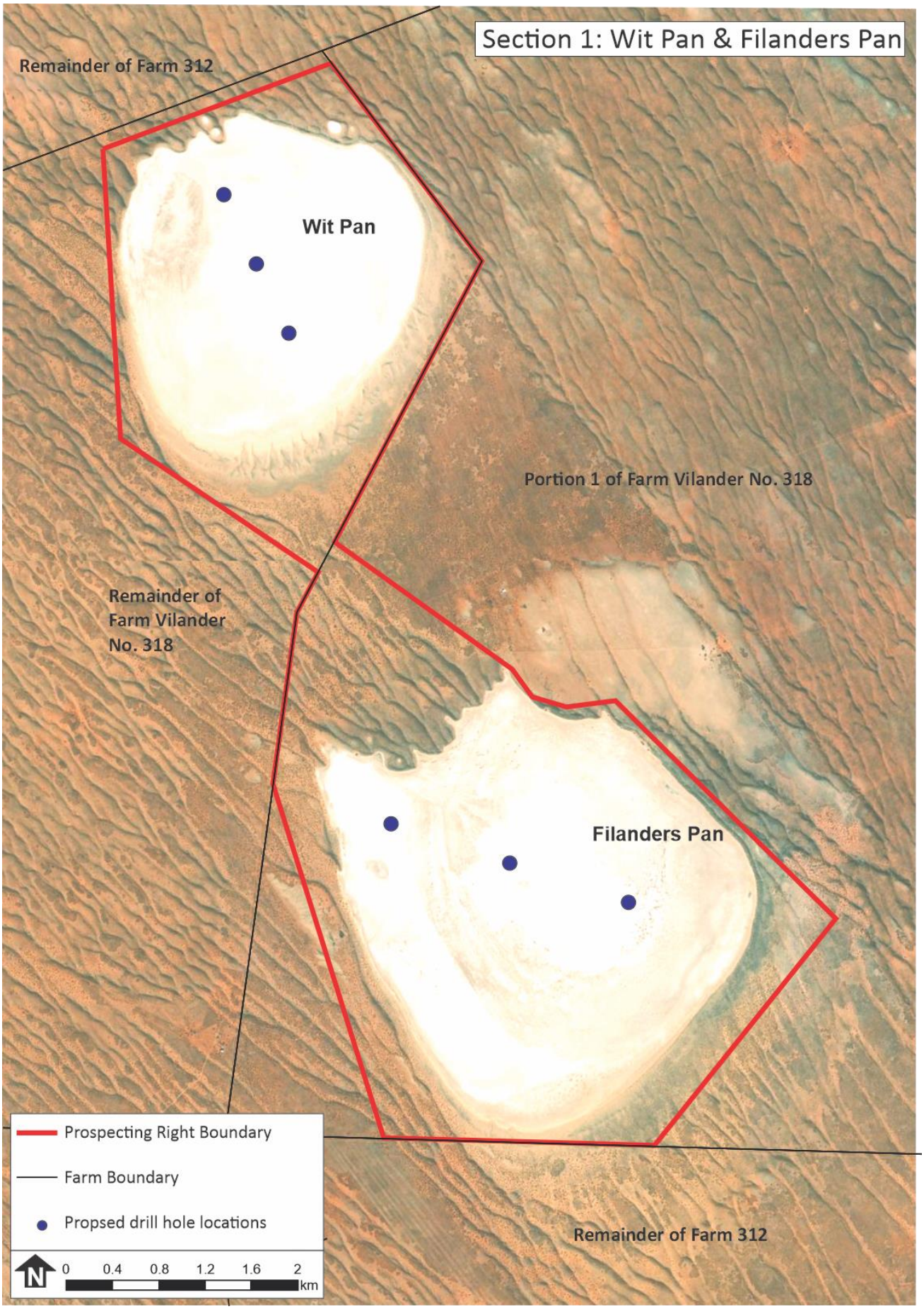


Figure 3: Proposed Site Layout Plan (Approximate) in Section 1 (Wit and Filanders Pan).

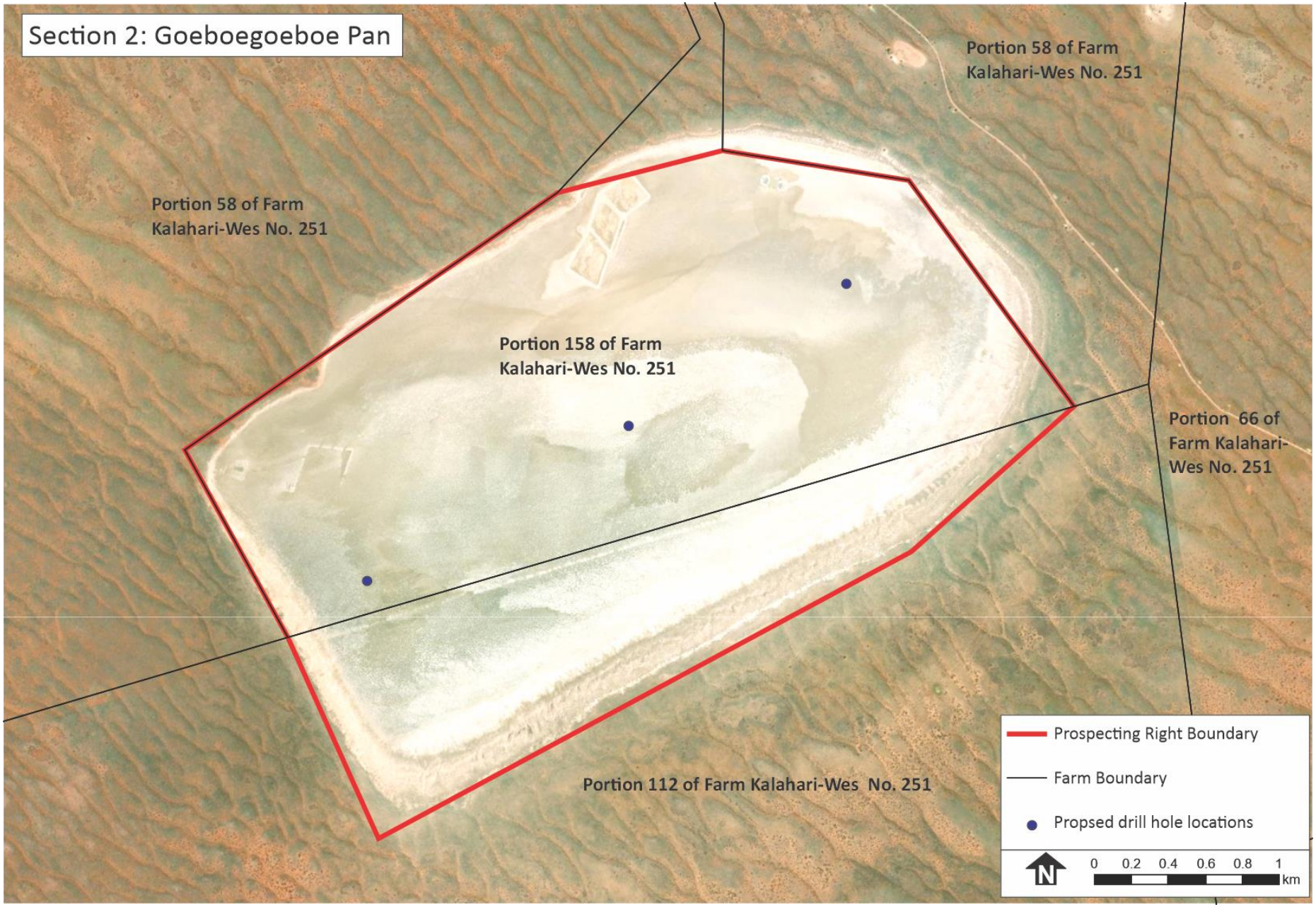


Figure 4: Proposed Site Layout Plan (Approximate) in Section 2 (Goeboegoeboe Pan)

4.2.3 Programme and Lifespan of the Operation

Phase	Activity	Skill(s) required	**Timeframe** (in months) for the activity)	Outcome	**Timeframe for outcome** (deadline for the expected outcome to be delivered)	**What technical expert will sign off on the outcome**?
0	Application period for Land Use approval[2]	Consultant	9	Land Use Approval	9	Municipality
1a	Collation of all available information (Historical information (if available))	Applicant Management[3]	2	Background information	2	Applicant
1b	Conclude final agreements with contractors	Applicant Management	1	Agreement	3	Applicant
2a	Management and driller to select borehole locations (based on Figure 3 and 4 layout)	Management & contractor	1	Positions marked in filed and recorded by GPS	4	Applicant
2b	Applicant undertakes induction training (to be specified in upcoming EMP)	Management or Env Consultant	1	Environmental management system	9	Applicant / contractor
2c	Auger borehole drilling (to expected average 10m deep) on the 3 pans	Contractor	18	Drilling	27	Applicant
3a	Record and Analysis: Depth to brine recorded and sample taken of brine for testing at Lab	Site Manager and Laboratory	6	Analytical report & Geological reporting	33	Applicant
4	Consider results and decide on course of action	Management	3	Analytical report Feasibility study	36	Applicant

See diagrammatic Programme overleaf.

[2] Prospecting rights require a Land Use approval in terms of LUPA (previously LUPO). Unfortunately this Land Use application requires the use of Environemntal 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 minimum 9 month period in the Prospecting Programme to cover this aspect.

[3] Note that management has been involved in Salt Mining for several years and is well versed in technical and other requirements. The company (and sister companies) have in house personnel to complete these tasks.

		Months																																	
Phase	**Activity**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
0	Application period for Land Use approval																																				
1a	Collation of all available information (Historical information (if available))																																				
1b	Conclude final agreements with contractors																																				
2a	Management and driller to select borehole locations (based on Figure 3 layout)																																				
2b	Applicant undertakes induction training (to be specified in upcoming EMP)																																				
2c	Auger borehole drilling (to expected average 10m deep) on the 3 pans																																				
3a	Record and Analysis: Depth to brine recorded and sample taken of brine for testing at Lab																																				
4	Consider results and decide on course of action																																				

Note: While the auger drilling activity will not take 18 months, such 18 month period has been set aside to arrange for the augering on the 3 pans. Such augering may or may not take place in the same time period on the 3 pans and there may be months in between each augering exercise.

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)	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
National Environmental Management Act	Entire document including public participation	Environmental Authorization from DMRE as competent authority
NEMA Regulations	Application	Governs listed activities and content of reports
Mineral and Petroleum Resources Development Act	Template for documentation	Prospecting Right: DMRE application and process
Mapping of NCBSP (from SANBI website)	Vegetation / Biodiversity	Informs whether specialist study will be required
Municipality's SDF and IDP	Need and Desirability (Para 9.1)	End Use informant
National Water Act	Any NWA Section 21 application or general authorisation	Water Use Licence application or general authorisation
National Heritage Resources Act	Para 27.1.2	Relevant applications to Heritage Authority
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	Alternative and Cumulative Impact Assessment (Para 8.1.1)	Guideline for information utilized in this document
NEMWA	Not applicable to this application	Not applicable
Hazardous Substances Act, 1973 (Act 15 of 1973)	Hazardous Materials Handling	The measures proposed must take the Act into account.
Noise and dust regulations and recommendations	Noise and dust reduction measures	The mitigation measures proposed take the requirements into account.
NEM: Biodiversity Act, 2004 (Act No. 10 of 2004) NEM:BA: List of terrestrial species and freshwater species that are threatened or protected, restricted activities that are prohibited, and restricted activities that are exempt, 2023	Assessment of the biophysical environment (particularly Fauna and Flora)	Not applicable
NEM: Protected Areas Act, 2003 (Act No. 57 of 2003).	Not applicable	Not Applicable
NEM: AQA	Not applicable to this application	Not applicable.
Land Use Planning Act, 2014 (Act No. 13 of 2014)	Not applicable until after EA has been (if) granted.	A land use application will be required
National Dust Control Regulations (Government Notice No. R. 827 of 1/11/2013)	Dust control	Dust control measures to be implemented and monitoring required
List of waste management activities promulgated in GN No. 921 of 29 November 2013 (as amended);	Waste Management	Application for waste licence NOT required
National Waste Information Regulations promulgated in GN No. R. 625 of 13 August 2012	Waste Management	Waste handling protocol to be described in EMP.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (A description of the policy and legislative context within which the development is proposed)	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
Waste Classification and Management Regulations promulgated in GN No. R. 634 of 23 August 2013	Waste Management	Waste handling protocol to be described in EMP.
National Norms and Standards for the Storage of Waste promulgated in GN No. 926 of 29 November 2013	Waste Management	Waste handling protocol to be described in EMP.
Regulations Regarding the Planning and Management of Residue Stockpiles and Residue Deposits From a Prospecting, Mining, Exploration or Production Operation. Govt Notice R632 2015	Mine residue handling	No residue will result from this prospecting operation.
Regulation 16(1)(b)(v) of the EIA Regulations, 2014 (as amended)	Requires that application for EA must be go together with web based Screening Tool	2 x Screening tools have been lodged with the application. Refer Appendix 6.

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 its own need and desirability assessment. The **proposed eventual land use is to simply backfill the drill hole, 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:

The SDF

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 2022/23 publication.
2) The proposed Prospecting areas are located in the following designations in terms of that plan (Refer Figure 5 below):
    a. The area surrounding the pans is classified as Other Natural Area in terms of the Biodiversity Mapping which requires that land be managed to optimise sustainable utilization of natural areas.

b. In addition the immediately surrounding area is also classified as Land Reform Farm Projects. This requires that potential land reform recipients be properly consulted and that the Department for Land Reform be consulted.

c. The mapping is not very clear but it appears that there is an overlay on the pan areas that is classified as a Sub-Protein Region. There is no definition of such in the SDF nor on the Municipal Website, nor on any website for that matter. It is assumed that the area is to be utilised for extensive agriculture (Grazing) although such land definition largely coincides with the pan extent.

d. Lastly, the entire Municipality forms part of the Northwestern National Spatial Transformation & Economic Transition Region. Transformation corridors are identified in the National SDF as "(1) large, youthful populations, (2) shared histories of deep deprivation and neglect as former Apartheid Bantustans, (3) high levels of poverty and unemployment, and (4) dense and sprawling rural settlement forms". However, when consulting the 2019 National SDF, such Regions cannot be located in the area described in the Municipal SDF.

Development can occur in these categories of the SDF but must be subject to sustainable principles and suitable authority engagement. These sustainable principles are contained within the NEMA and MPRDA approval process.

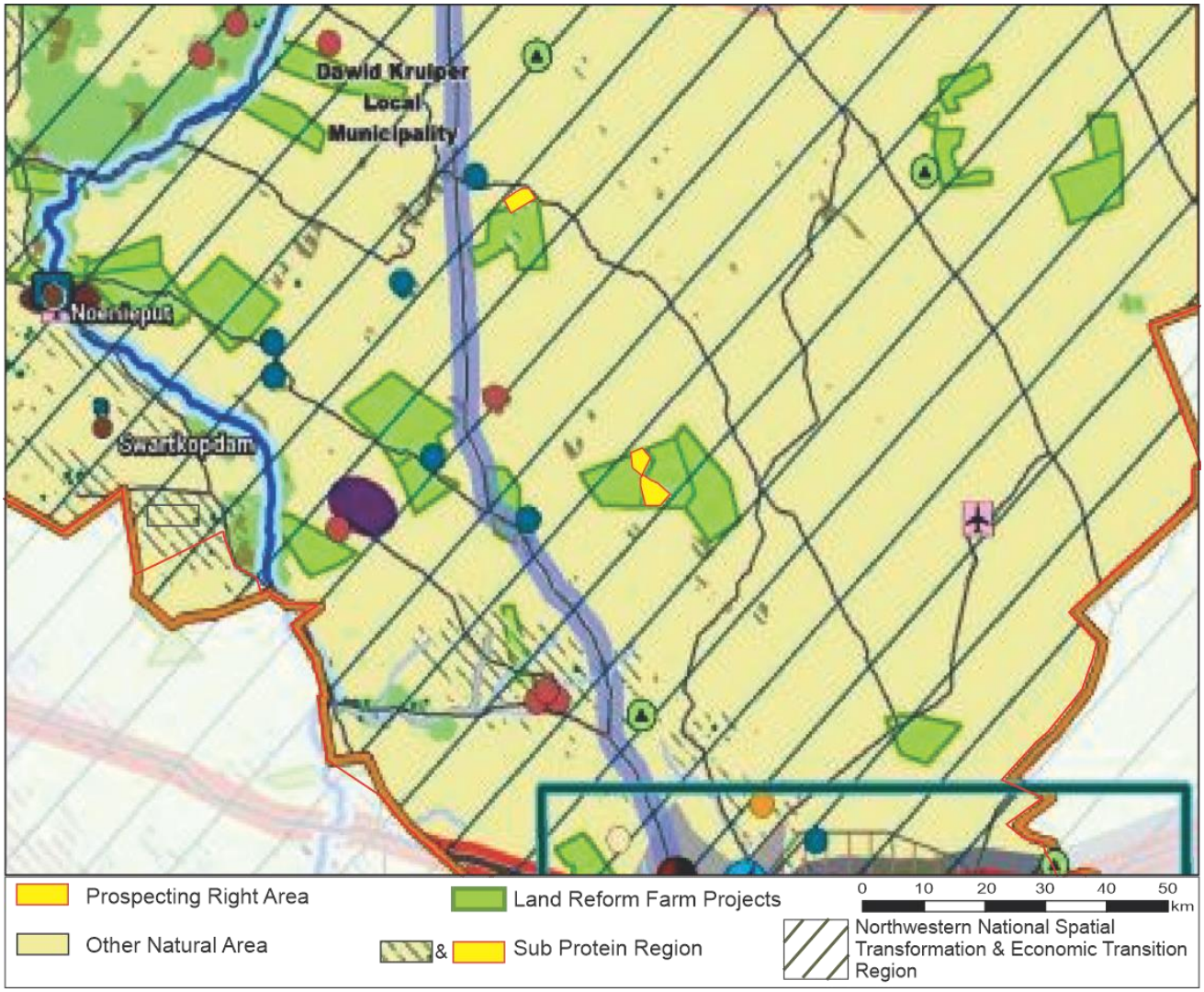


Figure 5: Excerpt of the 2022 SDF

Mining and Biodiversity Guideline

A further 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:

e. Legally protected - mining prohibited
f. Highest biodiversity importance - highest risk for mining
g. High biodiversity importance - high risk to mining
h. 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 (2018) classify the veld type as Gordonia Duneveld surrounding the pans. In other areas 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 47526 of 2022).
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.	The proposed temporary disturbance by 9 drill hole sites on the 3 pans will not in any way impact on Conservation targets.
1.1.5.	Ecological drivers of the ecosystem.	Although the proposed drill sites are located in a pan, the absolute small scale in terms of disturbance and time, precludes any possible hindrance of the ecological drivers of this system. Remember that the pan surface has no/ very low significance in biodiversity terms as it is devoid of plant and animal life.
1.1.6.	Environmental Management Framework	The Siyanda EMF Report of 2008 has reference. The EMF recognises that the Siyanda District is rich in minerals which has historically been the mainstay of the area's economy. The general locations of significant mineral deposit areas in Siyanda are depicted in a map (Map 6) of the EMF and the EMF notes that a more detailed information layer that indicates mines, mined-out areas and unexploited deposits is included in the EMF's GIS. The EMF notes the following issues and desired actions in regard to new and existing mining: • The need to rehabilitate old mines properly • the use of the landscape as a positively contributing asset in tourism related activities. • Mines need to be rehabilitated to the extent that their negative impact on the visual environment does not affect the tourism potential of the area negatively; and • the landscape should be used as a positively contributing asset in tourism related activities, especially in the planning of tourism routes and destinations

1.1.7.	Spatial Development Framework, and	The SDF classifies the pan as either Agriculture (grazing) as per the surrounds (as part of a "Sub-Protein Area"), or "Rivers or Riverbeds (in terms of NEMA 107 of 1998): All perennial or non-perennial rivers and wetlands[4] (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.
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 32 and 34 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 Merries Pan and / or Grootwit Pan.
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?	This draft BAR was lodged on SAHRIS with request for N Cape Heritage Authority or SAHRA to provide comment. The applicant will abide by the requirements of the Heritage Authority.

[4] 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.

1.6.	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 nine small-diameter auger holes and cannot impact on non-renewable resource. Prospecting does not constitute use of the resource, however the applicant has/ will met 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 9 holes on the 3 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 Socio economic and Heritage profile of the area is provided in Para 27.1.1 and 27.1.2 (in the case of Heritage). BUT it is clear that there the drilling of 9 holes on 3 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.
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

2.	**Promoting justifiable economic and social development**	
2.1.	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?:	Refer also para 27.1.1

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 pan surface cannot be used for grazing by sheep and / or 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 27.1.1
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.
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 potential salt containing brine.
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, 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 DMRE.
2.13.	What measures were taken to:	
2.13.1.	Ensure the participation of all interested and affected parties.	Refer Part 8.2 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 8.2 for full record of Public Participation
2.13.3.	Ensure participation by vulnerable and disadvantaged persons.	The proposed activities were advertised in local newspaper and advertised on posters at the gate 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 8.2 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 8.2 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 8.2 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 DMRE.
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 3 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 prospecting 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 8.2 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 he 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 DMRE 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. 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

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:

Pans and surrounding farms.

Timeframe of analysis

The proposed prospecting authorisation is planned to be valid for a period of 3 years, but the actual drilling component on site is unlikely take longer than 3-4 weeks at the very most, in the 18 month window assigned to that aspect of the prospect.

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)

Prospecting is in essence the determination of an area for future mining through elimination of alternatives. This Prospecting Right contains the proposed testing of material in 3 different pans to assess the material's viability.

In the case 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 location of a 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.

_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.

8.1.1 The location where it is proposed to undertake the activity

The location of the drill sites within the selected site alternative is governed by the requirement to maximise the representatively of the samples taken across the entire pan by having at least one drill hole in the centre of the pan and one each about halfway from the centre of the pan to the pan edge along the length of the pan if the pan exhibits a longitudinal shape .

8.1.2 The type of activity to be undertaken;

Prospecting could be in the form of trial pits or drill holes. The drill holes were selected as suitable method given the very small scale of impacts and the requirement to get deeper than the trial pit by excavator could allow (and having the added advantage of significantly less disturbance than excavator dug trial pit would result in).

8.1.3 The design or layout of the activity

The layout of the drill holes was selected across the “strike” of the deepest portion of the pan and should present the most optimal and representative brine content.

8.1.4 The technology to be used in the activity

Small diameter auger drills represent the best available technology for this type of prospecting.

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 absolute insignificant impact of the operation (even if rehabilitation does not 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

DMRE 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.

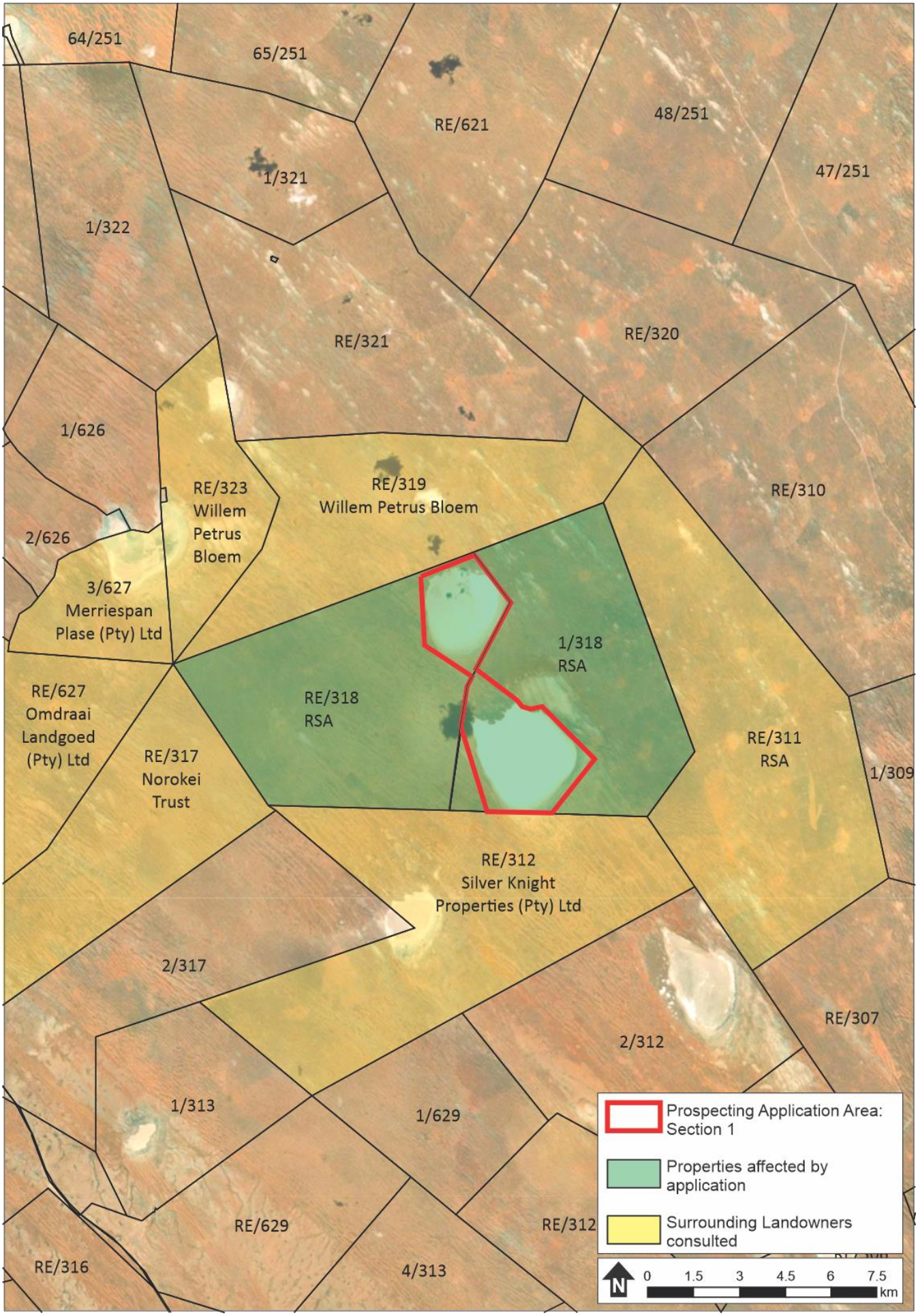


Figure 6: Surrounding Landowners: Section 1 (Windeed Search Results, June 2023)

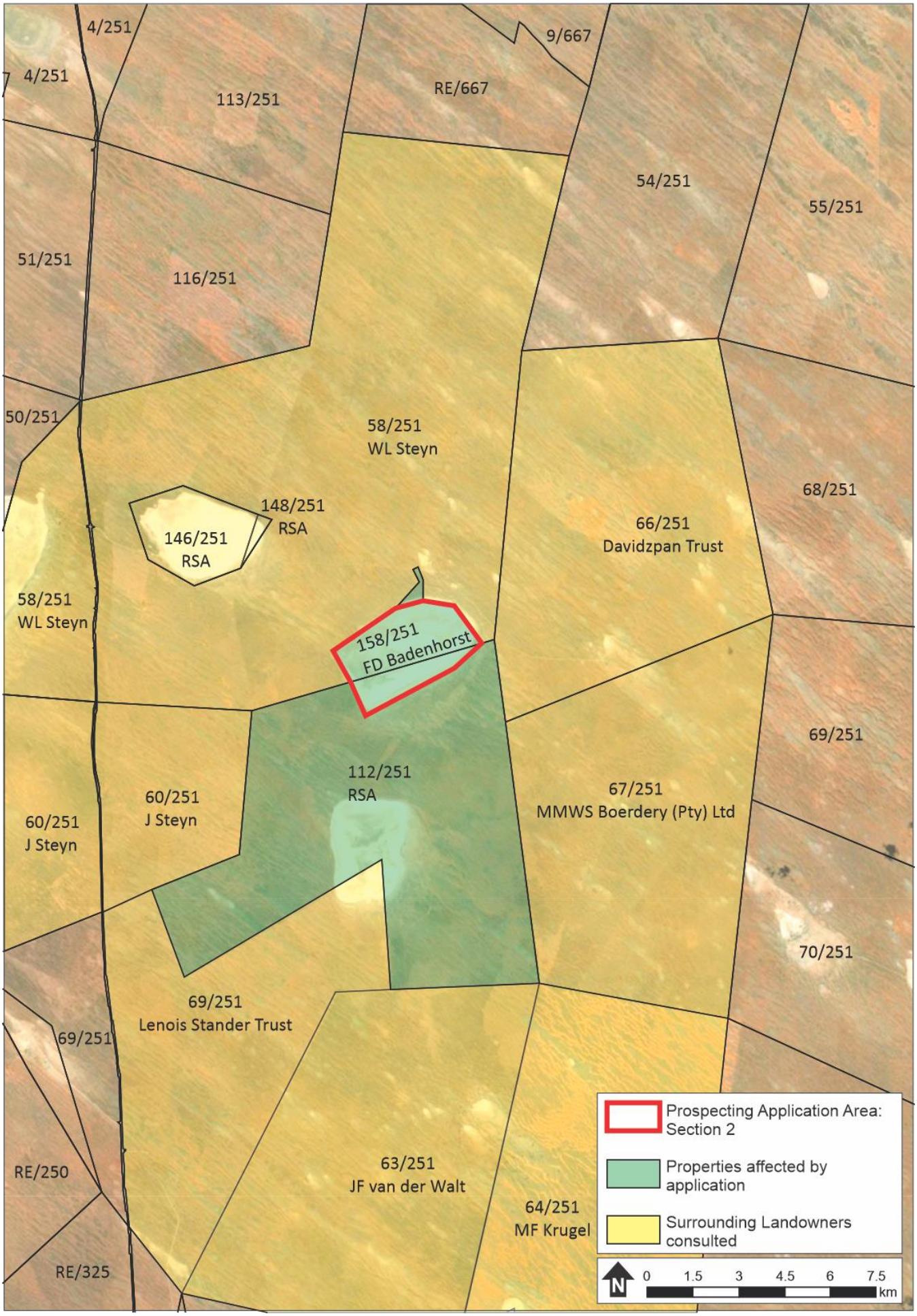


Figure 7: Surrounding Landowners: Section 2 (Windeed Search Results, June 2023)

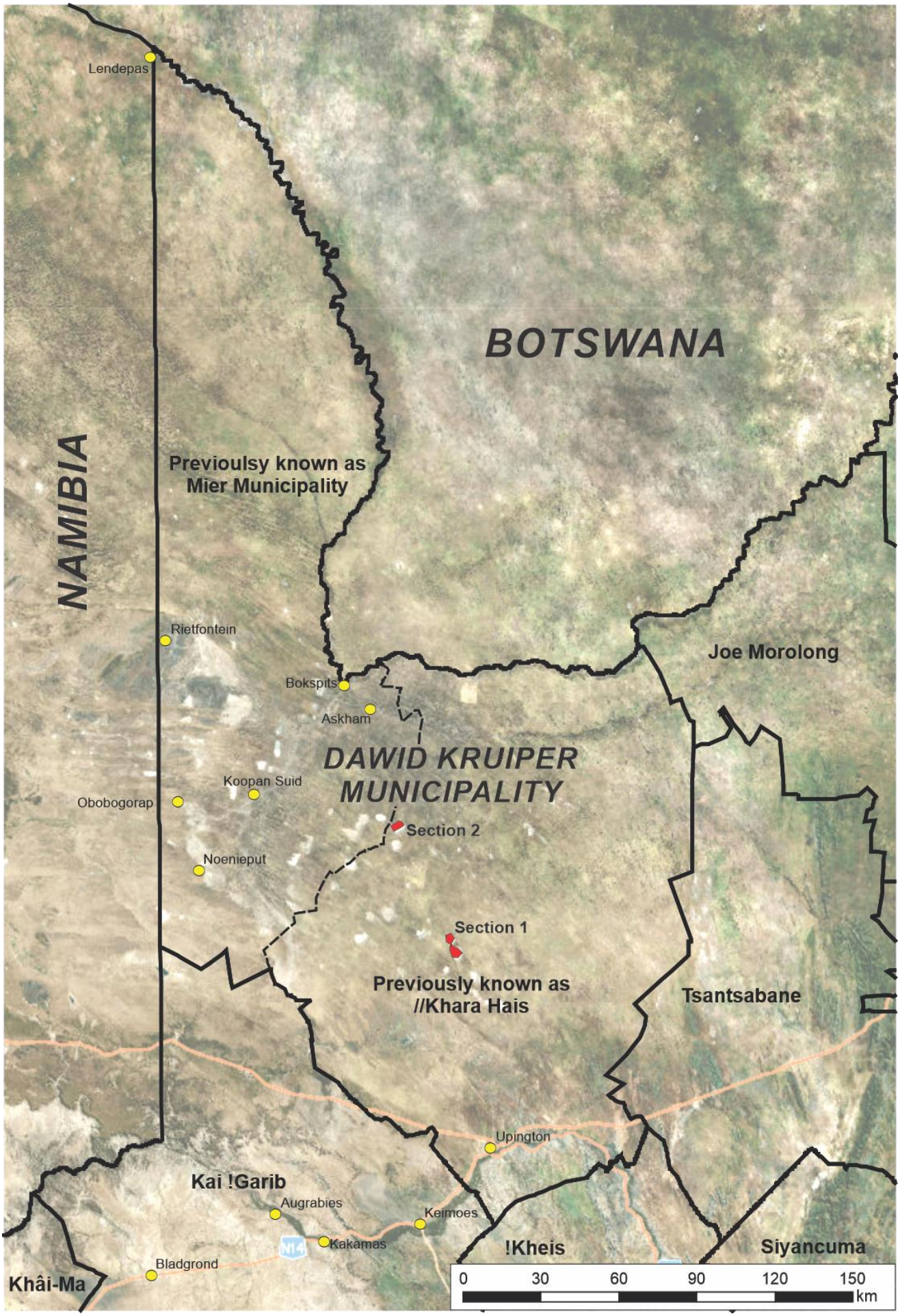


Figure 8: Municipal Context

8.3 Summary of issues raised by I&Aps

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: Section 1					
Farm 318 Remainder Republic of South Africa					
Farm 318 Portion 8 Republic of South Africa					
Landowners: Section 2					
Farm 258 Portion 158					
Farm 251 Portion 112 Republic of South Africa					
Adjacent Landowners or lawful occupiers: Section 1 – Refer Figure 6 above.					
Farm 319 Rem and Farm 323 Rem					
Farm 311 Remainder Republic of South Africa					
Farm 312 Remainder					
Farm 317 Remainder					
Farm 627 Remainder					
Farm 627 Portion 3					
Adjacent Landowners or lawful occupiers: Section 2 – Refer Figure 7 above					
Farm 251 Portion 148 and Farm 251 Portion 146 Republic of South Africa					
Farm 251 Portion 66					
Farm 251 Portion 67					
Farm 251 Portion 64					
Farm 251 Portion 63					
Farm 251 Portion 69					
Farm 251 Portion 60					
Farm 251 Portion 58					
Municipal Representatives					

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.
Dawid Kruiper Municipal Manager: Civic Centre, Mutual Street Upington 8801 Name: E Ntoba Tel: 054 338 7001 Email: manager@kharahais.gov.za					
Organs of state and NGO's (Responsible for infrastructure that may be affected Roads, Eskom, Telkom, DWS etc.)					
Department of Mineral Resources: Kimberley – 053 807 1700 Ms RR Serakalala Refilwe.Serakalala@dmre.gov.za					
Department Agriculture, Environmental Affairs, Rural Development and Land Reform: Northern Cape.					
DWS Northern Cape Region					
Orange Proto CMA					
Dept. of Agriculture Forestry and Fisheries(Springbok):					
Department of Public Works					
Communities					
Community of Upington (Advertised in Gemsbok)					
Commission On Restitution Of Land Rights: Regional Land Claims Commission: Northern Cape.					
Traditional Leaders					
Other Competent Authorities					
SAHRA/HNC Lodgement on Heritage electronic lodging system: SAHRIS					
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

9 Environmental attributes associated with the alternatives.

9.1 Type of environment affected by the proposed activity.

9.1.1 Topography

The site is located in the Kalahari Basin, a flat, sand covered, semi-desert area, on average between 900m to 1200m above sea-level. It is characterised by a number of large pans to the north of Upington.

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

Photo 2: View from the west looking over Filander Pan . Note the high Kalahari sands surrounding the pan (as well as the existing salt layer on the pan)

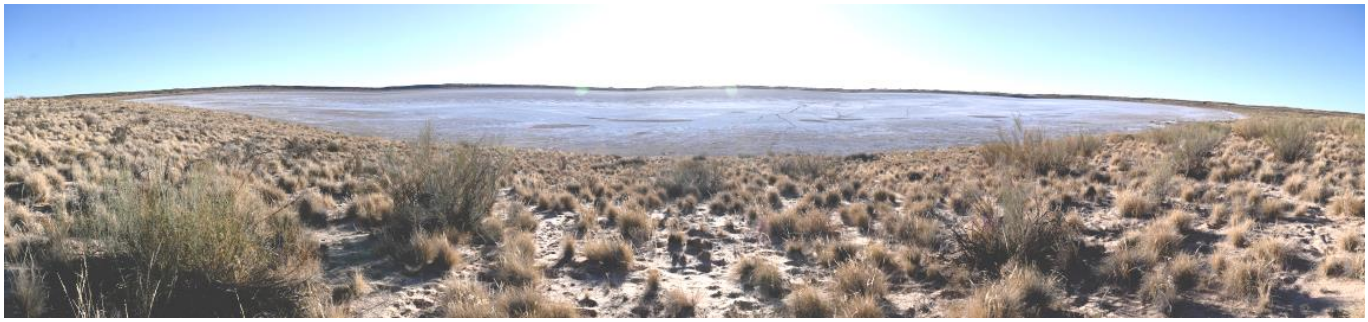


Photo 3: View of the Witpan from the east looking west. Apologies for the poor photo quality looking directly into teh sun. Although it does appear as if the pan is flooded, it is in fact a white salty layer on the pan surface.

9.1.2 Visual Impact

The sites are exceptionally isolated and access is particularly difficult. Be that as it may, the only visual impact which will occur is the view from the farmstead looking south at Filanders Pan. The view from such farmstead is as per photo below:

Photo 4: View of Filanders Pan looking south from the farmstead on Farm 318 Portion 1

9.1.3 Soil

The pan surface is solid enough to drive upon. Refer Photo 5 below which shows the interface of the pan surface with surrounding hinterland. Note that no topsoil will require removal before drilling

Photo 5: Nature of soil cover in proposed prospect drilling area

9.1.4 Land Capability / Agricultural potential

The surface of the pan cannot be classified as agricultural/ grazing land. Despite that the Screening tool denotes portions of the pan surface as medium agricultural sensitivity in respect of the Filander and Wit Pan to the south (Section 1) and the entire Pan in the case of the Goeboegoeboe Pan in the North (Section 2).

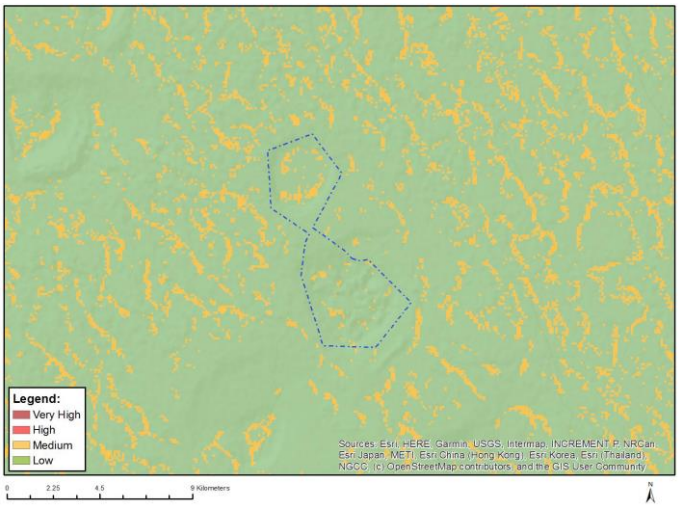


Figure 9: Agricultural Sensitivity Theme map from Screening Tool showing medium Sensitivity (Section 1)

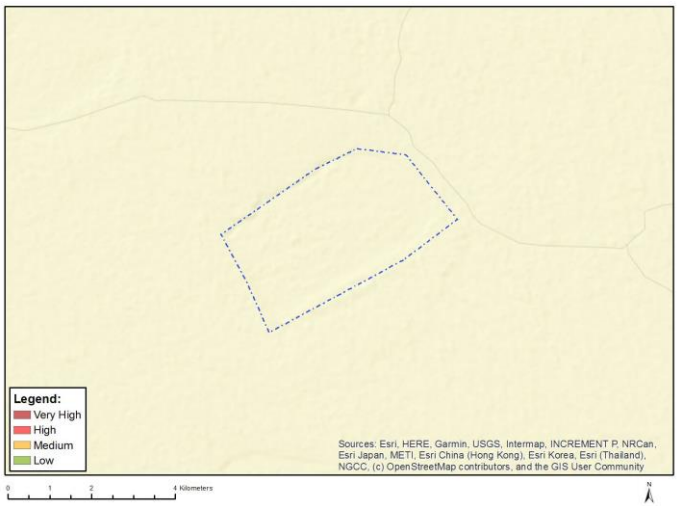


Figure 10: Agricultural Sensitivity Theme map from Screening Tool showing Medium sensitivity (Section 2)

9.1.5 Natural Vegetation

The salty pan surface is completely devoid of vegetation. Mucina and Rutherford (2018) classify the veld types surrounding the pan as Gordonia Duneveld, with the salty pans

classified as Southern Kalahari Salt Pans. The pans are classified as Ecological Support areas (because of their perceived Aquatic Biodiversity).

Neither of these vegetation types is classified as Critically Endangered, Endangered nor Vulnerable in terms of the 2022 NEM:BA listed Ecosystems (GNR 47526). In addition, the Screening Tools for both sections classify the Plant Species Theme Sensitivity as LOW.

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.

It is noted that the Screening Tool for Section 1 does denote the Animal Specie Theme sensitivity as medium along the edge of the Filander Pan only for the presence of the Tawny Eagle (*Aquila rapax*).

The Section 2 mapping was not available in the Screening tool, but it is assumed that the pan surrounds are ascribed the High Sensitivity because of the possible presence opf the Tawney Eagle (*Aquila rapax*), Lanner Falcon (*Falco biarmicus)* and Lappet-Faced Vulture (*Torgos tracheliotos*)

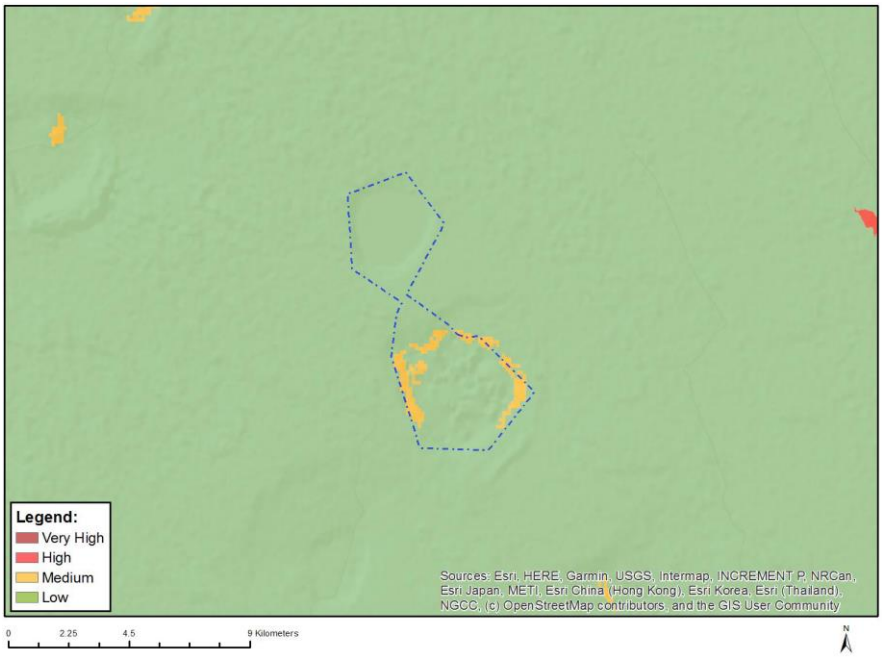


Figure 11: Animal Specie Theme map from Screening Tool showing medium Sensitivity (Section 1). Section 2 mapping not available

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

9.1.7 Overall Terrestrial Biodiversity

The Screening Tool denotes the Terrestrial Biodiversity Theme as very high for all pans based purely on the fact that the pan surfaces are prescribed the Ecological Support Area classification in the BSP mapping for the Northern Cape (2016).

Figure 12: Terrestrial Biodiversity Sensitivity Theme map from Screening Tool showing Very High Sensitivity (Section 1). Note Mapping not available for Section 2 in the Screening Tool.

9.1.8 Surface Water

The proposed operation is located on the surface of 3 very large pans 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.

It is however likely that WULA/General Authorisation will be required, given the disturbances proposed being located on a pan surface. This will be tested with Aquatic Specialist.

Figure 13: Aquatic Biodiversity Sensitivity Theme map from Screening Tool showing medium Sensitivity (Section 1)

Figure 14: Aquatic Biodiversity Theme map from Screening Tool showing Medium sensitivity (Section 2)

9.1.9 Ground Water

This site is located in Quaternary Basin D42D. 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 ±10-20 litres per drill-hole site for the purposes of sampling.

9.1.10 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^2 day-1 over a 30-day averaging period. Dust deposition shall be evaluated against a four-band scale as presented in Table 9.

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

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

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

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

Level	DUSTFALL RATE (D) (mg/ m² /day [1] 30-day average)	Averaging period	Permitted frequency of exceedances
Target	300	Annual	
Action residential	500	30 days	Three within any year, no two sequential months
Action industrial	1 200	30 days	Three within any year, no two sequential months.
Alert threshold	2 400	30 days	None. First exceedance requires remediation and compulsory report to authorities.

4.8.4 Margin of Tolerance

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

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

4.8.5 Exceptions

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

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.

9.1.11 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 3 333.8770ha prospecting right area is located on three pans in 2 Sections (the so called Filander Pan and Wit Pan in the south (Section 1) and the Goeboegoeboe Pan in the North (Section2). The pans are extremely isolated and non-natural land uses are sparse with isolated farmsteads and stock collection and watering points (Kraal).

On-site / On-pan land uses: None with the exception of a road which crosses the Filander Pan and some fence lines on all pans

Figure 15 below show the surrounding land uses:

- The extent of the prospecting right area in the 2 sections
- The location of the unsurfaced roads and tracks providing access to and surrounding the pans. Note that not every farm track is shown and there are several more (particularly along farm fences)
- Note that the northern portion of Goeboegoeboe pan (Section 2) forms part of a private game farm and the access from the main road to the west to Filander and Wit Pans (Section 1) passes through another private game farm and hunting lodge. This access will not be possible for use should full scale mining ever be contemplated here and alternative access route may have be located (should full mining ever go ahead).
- There are several on pan roads and tracks which although seldom used may be used by the applicant.
- There are fences on the pans which are not shown
- There is an existing Salt Works on the Vrysout Pan, located some 5km NW of the Section 2's Goeboegoe Pan
- The closest farmsteads to the Section 1 pans are :
    1) 1.6km east of the Filander Pan (on Remainder Farm 318)
    2) 1km north of Filander Pan (on Portion 1 of Farm 318)
    3) There are several stock collection / stock watering points surrounding the pans
- The closest farmstead to Section 2 Pan is about 1.5km north of the pans northern edge on Portion 58 of Farm 251.

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 /kraals, 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.

Refer Figure 15 & 16 below and Para 9.2 above.

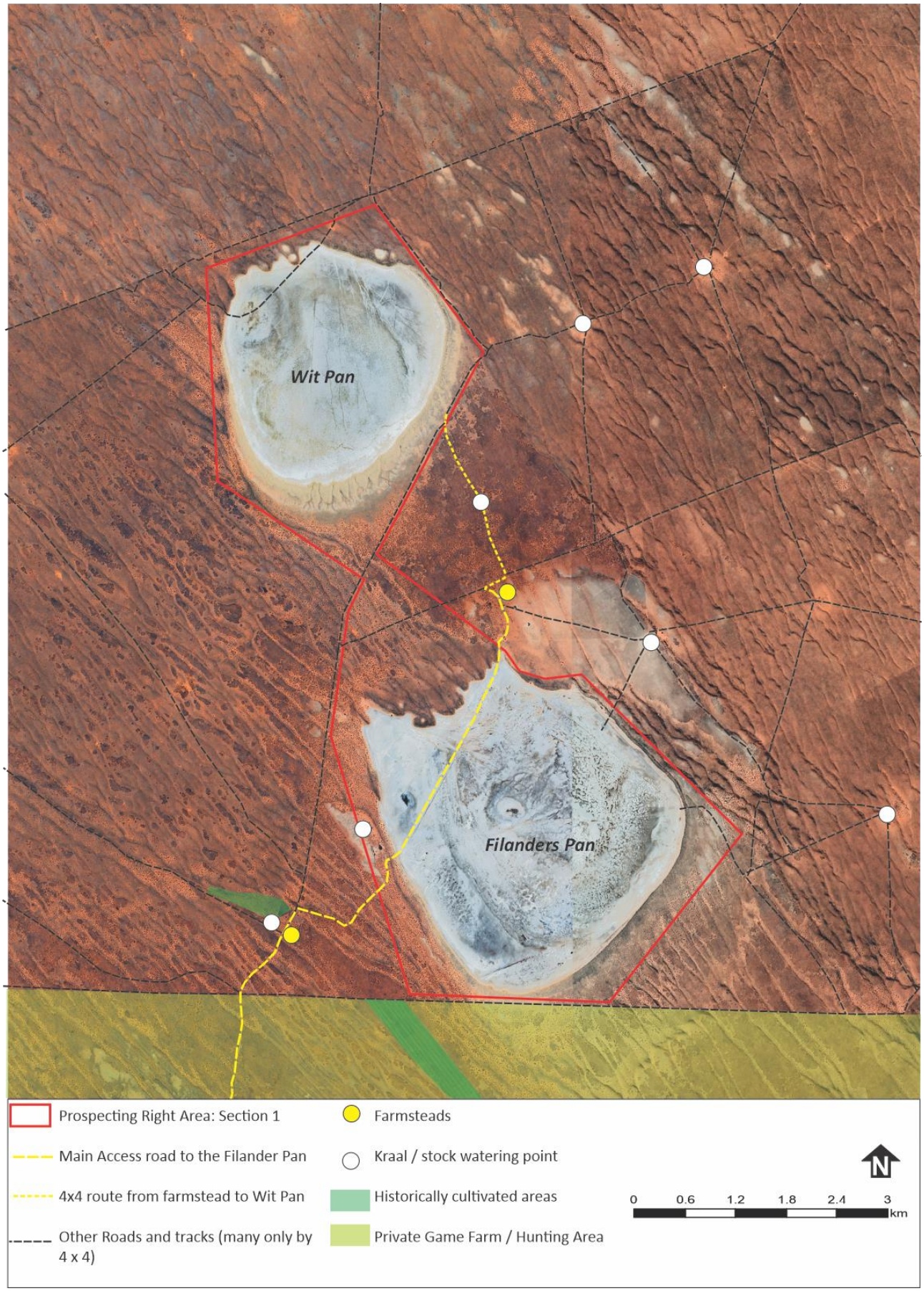


Figure 15: On site and surrounding land use: Section 1

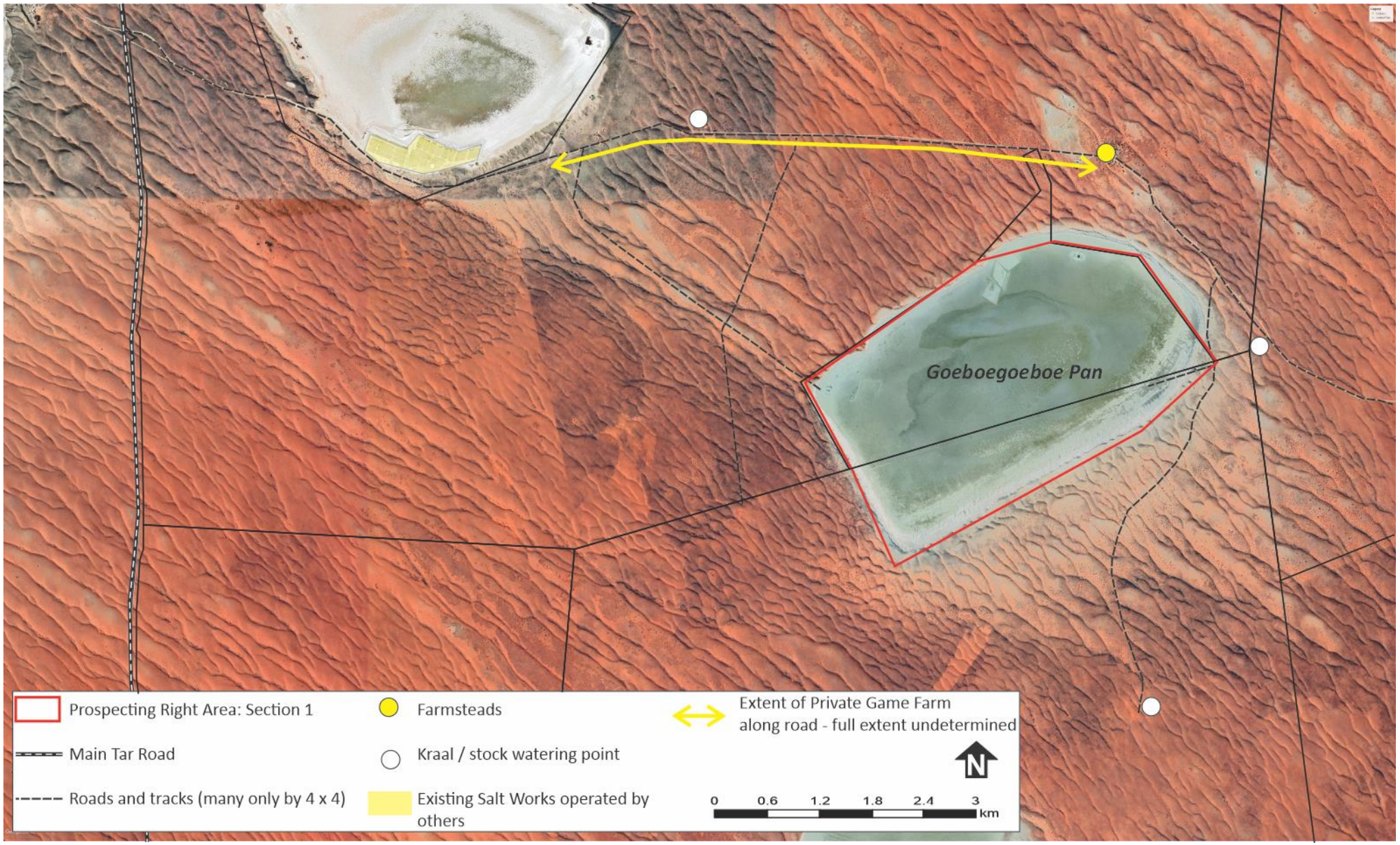


Figure 16: On site and surrounding land uses: Section 2

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
Application for Prospecting Right															
1. POST-APPROVAL ACTIVITIES															
1.1. Mark hole locations (contractor and applicant together)															
2. ESTABLISHMENT ACTIVITIES															
2.1. Provide chemical toilets for staff[5]							■	■							
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.										■	■			■	
3. OPERATIONAL PHASE ACTIVITIES															
3.1. Locate drill rig on site and drill hole.				■						■	■			■	
3.2. Take water samples															
3.3. Backfill drilled hole with removed material															
4. DECOMMISSIONING PHASE ACTIVITIES															
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.															
5. AFTERCARE PERIOD															
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.

[5] 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
Application for Prospecting Right								
1. POST-APPROVAL ACTIVITIES								
1.1. Mark hole locations (contractor and applicant together)								
2. ESTABLISHMENT ACTIVITIES								
2.1. Provide chemical toilets for staff[6]								
2.1.1. Surface and Ground Water	Possible leak from chemical toilet	Very local	Until bioremediation	Possible	Unlikely	Yes	No	Can be avoided and / or managed if required
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

[6] 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. OPERATIONAL PHASE ACTIVITIES								
3.1. Locate drill rig on site and drill hole.								
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								
4. DECOMMISSIONING PHASE ACTIVITIES								
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.								
5. AFTERCARE PERIOD								
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;

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 and made available to all identified Interested and Affected Parties. Any relevant responses received would then inform a revision of the site layout plan.

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

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

Significance		***Criteria***
Negative	Significant (S)	• Recommended level always exceeded with associated widespread community action • Disturbance to areas that are pristine, have conservation value, are important resource to humans and will be lost forever • Complete loss of land capability • Destruction of rare or endangered specimens • May affect the viability of the project
	Moderate (M)	• Moderate measurable deterioration and discomfort • Recommended level occasionally violated – still widespread complaints • Partial loss of land capability • Complete change in species variety or prevalence • May be managed • Is insignificant if managed according to EMP provisions
	Minor/ (I) Insignificant	• Minor deterioration. Change not measurable • Recommended level will rarely if ever be violated • Sporadic community complaints • Minor deterioration in land capability • Minor changes in species variety or prevalence
	Negligible	• An impact will occur but it is barely discernible and not worthy of further investigation
Positive	Minor	• Improvements in local socio-economics
	Significant	• Major improvements in local socio-economics with some regional benefits

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.

The proposed activities will result in the following possible negative impacts. BUT bear in mind that the severity of these impacts is so low as to render the impacts absolutely negligible:

Disturbance of pan surface:
The drill rig will drive from the closest existing road or track on the pan to the selected site. NO roads will be developed on the pan surface.

The rig will set up and begin drilling. The tailings will be stockpiled next to the hole and as soon as the sample has been taken, the hole will be backfilled with the tailings. If required, a concrete cap will be fitted to the backfilled hole.

Note that the drill rig will be an auger type drill with a diameter of 20cm. Assuming 20cm diameter auger hole, to 10m deep, then the volume disturbed per hole = 0.315m³ material per hole x 9 holes = 2.84m³ total disturbance - absolutely negligible and below any trigger in the NEMA listed activities.

Possible Hydrocarbon Impact:
The drill rig will operate using diesel and will have hydraulic fluid to operate the various drill functions. It is possible that leaks may occur. However, the risk is small and the impact will be insignificant. Should the measures prescribed later in this text be implemented, then there will be no impact.

Dust and Noise:
There is a theoretical possibility of noise and dust being generated by the vehicles and equipment on site, but given the small scale and isolation of these activities; the impact will be insignificant (but most likely non-existent).

Visual Impact:
The presence of the drill on site will generate a visual impact but the impact will be temporary and given the isolation of the site, may not even occur (i.e. it is possible that no person other than those involved in the prospecting will even be aware that such prospecting is taking place).

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

The table below shows that even with no mitigation, the risk to the environment is very low. With the implementation of the proposed mitigation, the risk virtually disappears.

Activity	Nature of Impact	Possible Mitigation Measure	Level of Risk if measures properly implemented	Level of Risk if not properly implemented (if at all)
1. POST-APPROVAL ACTIVITIES				
1.1. Mark hole locations (contractor and applicant together)				
2. ESTABLISHMENT ACTIVITIES				
2.1. Provide chemical toilets for staff[7]				
2.1.1. Surface and Ground Water	Possible leak from chemical toilet	Contractor clearing, removal after use	None	Insignificant
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	Ensure limited speeds on roads accessing site	Insignificant to none	Insignificant
2.3.2. Hydrocarbon	Potential impact through oil/fuel leaks	Hydrocarbon management policy to be implemented	None	Insignificant (small scale)
3. OPERATIONAL PHASE ACTIVITIES				
3.1. Locate drill rig on site and drill hole.				
3.1.1. Air Quality	Dust generated by drilling equipment	Dust generation by auger drilling in damp pan soils very unlikely to occur	Not applicable. No measures required	Not applicable

[7] Chemical toilet if considered.

Activity	Nature of Impact	Possible Mitigation Measure	Level of Risk if measures properly implemented	Level of Risk if not properly implemented (if at all)
3.1.2. Noise	Noise generated by drilling equipment	Noise impact need only be attenuated in terms of employee health given excessive distance to any surrounding neighbour. Ensure HPDs available	None	Insignificant
3.1.3. Hydrocarbon	Potential impact through oil/fuel leaks	Hydrocarbon management policy to be implemented	None	Insignificant (small scale)
3.1.4. Visual Impact	Visual impact generated by activities on Pan	None required (except to rehabilitate disturbances)	None	Very Low
3.2. Take water samples				
3.3. Backfill drilled hole with removed material				
4. DECOMMISSIONING PHASE ACTIVITIES				
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment	If not properly conducted then it will result in holes in pan surface as well as material remaining on surface	Immediate Monitoring and Pre-Closure Audit required to ensure material has been backfilled	None	Insignificant
4.2. Ensure the site is free of Hydrocarbon pollution				
4.3. Remove any structures – chemical toilet.				
5. AFTERCARE PERIOD				
5.1. Conduct final performance assessment				
5.2. Lodge closure Application				
5.3. DMR Grant Closure Application				

14 Motivation where no alternative sites were considered.

Not applicable. The applicants operate in the area and know the area well. This prospecting right application is part of the process to eliminate alternatives from a possible future Mining Right application on one or all of the pans. The applicant also has an imminent prospecting right on 2 pans in the Gemsbokhorn area to the NW (i.e. on the Bettastadt and Gemsbokhorn Pans).

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

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, with at least one of the holes 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 and 11.

17 Assessment of each identified potentially significant impact and risk

Note that the impact assessment thus far has concluded that there will be no significant impacts or risks. However the table below assesses all impacts and risks which could conceivably occur.

Aspect	**Which activity could give rise to impact**	**Assessment of impact**	**Assessment of residual risk**
Noise	• Vehicles • Drilling	Probable at very local scale but insignificant	No residual risk
Dust	• Vehicles • Drilling	Possible at very local scale for vehicles using roadways. Unlikely from auger drill. Insignificant.	No residual risk
Visual Impact	Drilling	Unlikely impact of drill being visible to any passer by whilst drilling underway. Insignificant.	No residual risk
Hydrocarbon Pollution	Leaks from vehicles and / or drill	Possible, small scale impact could occur. Impact insignificant (but possibly the largest potential impact of the operation	Insignificant risk
Surface / groundwater pollution due to ablutions	Overflow from chemical toilet	Possible but unlikely pollution of water resource through overflow. Insignificant given small scale and lack of use of water resource (too salty)	No residual risk

Aspect	Which activity could give rise to impact	Assessment of impact	Assessment of residual risk
Land capability / topography / pan surface	Lack of rehabilitation at drill site	Proposal is to backfill drilled holes and cap if required.	Limited residual risk given very small scale of activities at each of the 9 holes.

18 Summary of specialist reports.

The screening tools (i.e. one for each Section) which accompanied the application (and are included here as Appendix 6) is a Department of Environment Affairs online generated report based on the application area intersection with certain online GIS layers. That tool recommended that the following specialist studies be undertaken but does state that it is the EAPs responsibility to confirm the list and to motivate whether such specialist studies will be required. The table below indicates the specialist studies recommended and a reason/ motivation why such specialist's study is being considered or not as part of this Environmental Authorisation.

Ref	Study suggested	Comment
1	Agricultural Impact Assessment	The screening tool acknowledges the agricultural sensitivity of the area as "Low to Medium". It is noted that the surrounding lands form part of a Land Reform Project as mapped in the SDF for 2022. However the proposed prospecting is restricted entirely to the pan surface and only entails the drilling of 3 small diameter auger holes per pan. There is no impact or risk in respect of the agricultural surroundings. Thus, NO SPECIALIST ASSESSMENT will be conducted for Agricultural Impact in this prospecting phase. Should the application progress to mining then a full agricultural impact assessment will be required.
2	Archaeological and Cultural Heritage Impact Assessment	The screening tool notes a very low sensitivity in respect of Archaeological and Cultural Heritage Impact. However, specialist opinion is required. See Appendix 7 which contains the motivation for exemption application in this regard.
3	Paleontology Impact Assessment	The screening tool notes a high sensitivity in respect of Palaeontological Impact. However, specialist opinion is required. See Appendix 7 which contains the motivation for exemption application in this regard.
4	Terrestrial Biodiversity Impact Assessment	There is absolutely no potential for any impact on terrestrial biodiversity through the drilling of 3 holes per pan in the prospecting right area. It is noted that should full mining go ahead then such potential does exist and full specialist study would be required.
5	Aquatic Biodiversity Impact Assessment	There is absolutely no potential for any impact on aquatic biodiversity through the drilling of 3 holes per pan in the prospecting right area. It is noted that should full mining go ahead then such potential does exist and full specialist study would be required.
6	Noise Impact Assessment	The site is located within a largely rural area with generally low ambient noise levels. Consequently, any noise generated by moving vehicles and equipment should result in an impact within the context of other land uses. However, the small scale of the operation renders any impact insignificant. Accordingly, a Noise Impact Assessment is not warranted and NO SPECIALIST ASSESSMENT will be conducted.
7	Radioactivity Impact Assessment	Not applicable to this operation.
8	Plant Species Assessment	The pan surface is completely devoid of vegetation and only existing roads and tracks will be used to access the pan

Ref	Study suggested	Comment
9	Animal Species Assessment	There is absolutely no potential for any impact on animal life through the drilling of 3 holes per pan in the prospecting right area. It is noted that should full mining go ahead then such potential does exist and full specialist study would be required.

The table below shows in summary format the findings / recommendations of the Specialist studies undertaken.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT.
Heritage	Letter of Exemptions inn respect of Heritage	Refer Appendix 7

19 Environmental impact statement

19.1 Summary of the key findings of the environmental impact assessment

Refer also table in Para 17. 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 Maps

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.

Figures 17 & 18 below refer. These maps have been produced using the data provided in the Environmental Sensitivity Maps in the Screening Tools (as per Appendix 6).

The maps only show the environmental elements which received a rating of medium or higher in the Screening Tool.

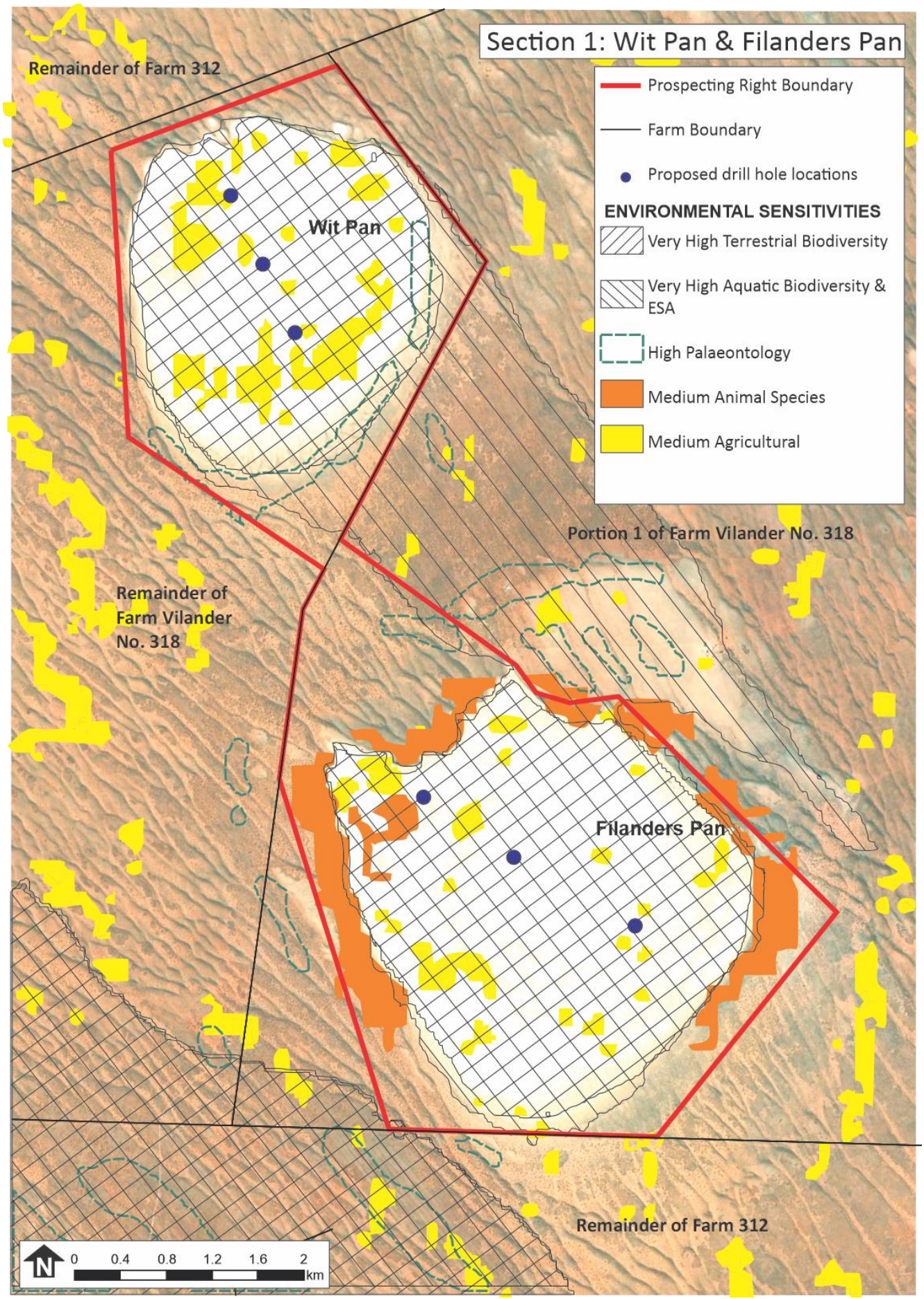


Figure 17: Final Site Map including Environmental Sensitivity overlays –Section 1

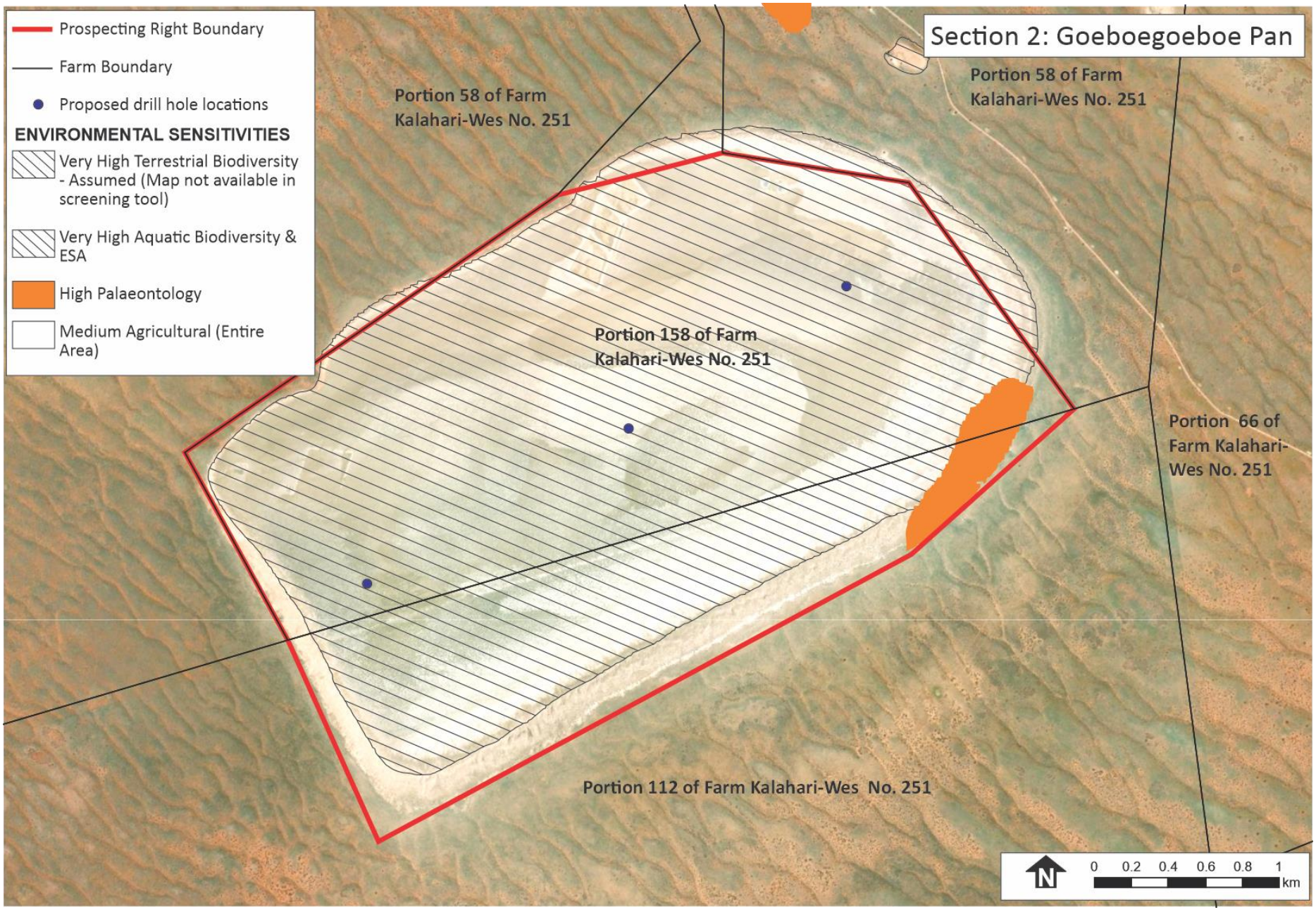


Figure 18: Final Site Map including Environmental overlays - Section 2

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
3) Visual Impact of the drill operating on the pan surface
4) Disturbance of pan surface

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[8]*:*

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 thus 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.

[8] 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.

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.

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.

The proposed prospecting will temporarily disturb an insignificant 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 the prescribed 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.

3 years excluding decommissioning and aftercare phase.

25 Undertaking

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

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 Financial Provision for Rehabilitation) the amount to be provided by Bank Guarantee or cash deposit is R54 000.

26.1 Explain how the aforesaid amount was derived.

It is estimated that a sum of R6 000 per drill site would be required if absolutely no rehabilitation took place at the drill site. Now in order to cater for the 9 drill sites, the calculated quantum is R54 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.

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.

The Screening tools for the sites note that in the case of both the pans the Archaeological and Cultural Heritage Theme Sensitivity is Low. In addition, in the area where drilling is proposed, the Palaeontological Theme Sensitivity is denoted as low except in some areas surrounding the pan and on the pan fringes. These will be avoided.

Given the expected lack of impact in respect of these aspects, a Heritage Practitioner was approached to compile an application for exemption to conduct any additional studies in this regard. Such application is included in Appendix 7 and has been submitted to SAHRA for their response.

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 existing operation. The proposal is that if prospecting proves successful, then Mining Right will be lodged.

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

Refer Part 4

29.3 Composite Map

Refer Figures 17 and 18 which have been compiled based on information presented in the Screening Tools.

29.4 Description of impact management objectives including management statements

29.4.1 Determination of 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.

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	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
1. POST-APPROVAL ACTIVITIES				
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		
2. ESTABLISHMENT ACTIVITIES				
2.1. Provide chemical toilets for staff[9]				
2.2. Conduct Environmental Induction training to staff		Refer Appendix __ 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
3. OPERATIONAL PHASE ACTIVITIES				
3.1. Locate drill rig on site and drill hole.				
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

[9] Chemical toilet if considered.

ACTIVITIES	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
3.1.3. Hydrocarbon	Very Local	As per Monitoring and Hydrocarbon Management Protocols in para 32.5	EMP prescriptions	Drilling
3.1.4. Visual Impact	Local	Remove drill and rehabilitate post drilling disturbances	EMP prescriptions	Post drilling
3.2. Take water samples	Approximately 2 x 10 litre samples per hole			
3.3. Backfill drilled hole with removed material	9 holes and surrounds.	Backfill drill hole with drill waste and cap if required	EMP Prescription	Post Drilling
4. DECOMMISSIONING PHASE ACTIVITIES				
4.1. Ensure all holes have been rehabilitated and that site matches surrounding environment	9 holes and surrounds.	Backfill drill hole with drill waste and cap if required	EMP Prescription	Closure phase if required
4.2. Ensure the site is free of Hydrocarbon pollution				
4.3. Remove any structures –chemical toilet.				
5. AFTERCARE PERIOD				
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.
1. POST-APPROVAL ACTIVITIES		
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

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. ESTABLISHMENT ACTIVITIES		
2.1. Provide chemical toilets for staff[10]	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	
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
3. OPERATIONAL PHASE ACTIVITIES		
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
3.1.4. Visual Impact	Ensure all holes have been rehabilitated and that site matches surrounding environment	Impact remedied. Closure objective
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
4. DECOMMISSIONING PHASE ACTIVITIES		
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.		
5. AFTERCARE PERIOD		
5.1. Conduct final performance assessment		
5.2. Lodge closure Application		
5.3. DMR Grant Closure Application		

[10] Chemical toilet if considered.

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.
3) Chance find procedure in case of Heritage Impact in Para 32.3

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 and 4 serve as a guide to the prospecting applicant and sub-contractor. They must, prior to drilling, meet on site and select each of the 9 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. A concrete cap may be required.

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.

32.3 Management of potential Heritage Impacts

None required. The recommendation of the specialist study: "It is recommended that exemption from further specialist archaeological studies be granted for the Vilander prospecting application, as no important Stone Age or

historical archaeological resources are likely to be impacted by the [Prospecting] Right application".

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 R54 000.

It is estimated that a sum of R6 000 per drill site would be required if absolutely no rehabilitation took place at the drill site. Now in order to cater for the 9 drill sites, the calculated quantum is R54 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 DMRE 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
1. POST-APPROVAL ACTIVITIES			
1.1. Mark hole locations (contractor and applicant together)			
2. ESTABLISHMENT ACTIVITIES			
2.1. Provide chemical toilets for staff[11]			
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 eb 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.
3. OPERATIONAL PHASE ACTIVITIES			

[11] 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.
3.1.4. Visual Impact	Ensure holes are backfilled and site raked after drill has left site	Prospecting supervisor	At end of drilling. Rectify any shortcomings
3.2. Take water samples			
3.3. Backfill drilled hole with removed material			
4. DECOMMISSIONING PHASE ACTIVITIES			
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.			
5. AFTERCARE PERIOD			
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) _None yet.

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

21 July 2023
Date

APPENDIX 1:

EAP:
CV/ Relevant Experience and Declaration

CV and Relevant Experience

Name:	**CRAIG DONALD**
Date of Birth:	26 February 1967
Parent Firm:	Site Plan Consulting
Position in Firm:	Member (50%)
Years with the Firm:	Since 2004 as member
Nationality:	South African
Professional Registration:	EAPASA (Reg #: 2020/2124)

Environmental Assessment Practitioners Association of South Africa

Registration No. 2020/2124

Herewith certifies that

Craig Donald

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

Registrar

SAQA

Qualifications:

Year	Qualification	Institution
1984	Senior Certificate Matriculation	Plumstead High School
1992	National Higher Diploma: Town & Regional Planning (*cum Laude*)	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)

Employment History & Key Qualifications:
1989 -2004: Settlement Planning Services
2004 till present: Site Plan Consulting CC (as 50% member)

I was initially employed by Settlement Planning Services (a Town Planning Consultancy) as a technician during my Higher Diploma in Town and Regional Planning as part of my experiential training. Under the mentorship of Stephen van der Westhuizen my main involvement was the compilation of Environmental Management Programmes (mainly in surface mining related field) and geographic information systems. There was little guidance and no templates for the compilation of the EMPs and between Mr van der Westhuizen and myself, we developed a document structure acceptable to the then Department of Minerals.

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 Mineral and Metal Extraction and the immersive Environmental Evaluation course run by the EEU of UCT. I completed a part-time MBA at UCT in 2003.

In 2004 I joined Mr van der Westhuizen's Site Plan Consulting CC as a 50% member and since then have been serving mostly the Surface Mining industry in all environmental related matters as well other aspects in their licencing and legislated environmental requirements in maintaining said approvals (if granted).

Main tasks:
I have many years practical experience in diverse environmental, spatial and mine planning projects. In that time I have developed experience in use of Word, Excel, CorelDraw and ArcView GIS.

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 completion of Environmental Authorisation Application forms and the compilation of Basic Assessments, Scoping Reports, Environmental Impact Assessments, Environmental Management Plans and Programmes dependent on application requirements in accordance with either or both the Mineral and Petroleum Resources Development Act and the National Environmental Management Act (with the amalgamation of these 2 pieces of legislation in December 2014). These have all entailed full public participation and liaison with and full input from specialists as required.

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 serves 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 are conducted using both the Guideline of the DMR and as Itemised costs in certain relevant operations. In addition to the list below, we have been calculated the rehabilitation quantum for Alexkor and De Beers (now Transhex) operations on the West Coast as well as Lower Orange River operations of Transhex (now LOR-D/Plateaux Diamonds).

The following lists represent the projects wherein I have been the lead EAP. I have been involved in other projects as an assistant to the lead EAP. Note that although I (and Site Plan Consulting) have always adhered to the principles of NEMA in the EIA process, the amalgamation of the Minerals and Petroleum Resources Development Act and National Environmental Management Act as the "One Environmental System" only came into effect in December 2014. The projects I have conducted under that system have been listed separately under the relevant project experience which follows.

Relevant Project Experience:

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

- For Salt on Papendorp Pan as community initiative supported by Cawood Salt (Pty) Ltd
- EMPs only for 7 Heavy Mineral Prospects of the West Coast (Basileus Group)
- Firlands (Gordons Bay) for aggregate - Afrimat
- Zoet and Zuur Diamond pipe (Boshof, Free State)
- Several Alluvial Diamond prospects on West Coast and inland West Coast (Western and Northern Cape) – Surfzone (Pty) Ltd, et al.
- Phosphate prospect (Saldanha) –Gecko Fert (Pty) Ltd
- Aggregate prospect near Oyster Bay in Eastern Cape – Denron Group
- Cobalt, Copper, Molybdenum, Nickel, Lead, Zinc, Silver, Gold & Platinum Group Minerals on 13 farms in the Kenhardt Magisterial District – Lehumo Resources (Pty) Ltd
- Nickel and related minerals on 8 farms near Kliprand – Hondekloof Nickel (Pty) Ltd
- Kaolin at Langklip (near Saldanha) – Seeland Development Trust on behalf of local community.
- Base minerals around Oena Mine in Northern Cape – African Star Resources (Pty) Ltd
- 6 sites for Uranium in the Karoo (Tasmin Pacific Minerals Ltd)
- Nickel prospect at Oup near Pofadder – Lehumo Resources (Pty) Ltd
- Commissioners Pan Salt Prospect – Dwaggas Soutwerke (Pty) Ltd
- Gypsum prospects near Kimberley, Vanrhysdorp and in the Bushmanland (St Gobain Group)
- Sand sources for Atlantis Foundries (Western Cape) – ZLLD Sand Mining (Pty) Ltd

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

- Caledon Manganese Mining Permit – Rand Gold Reclamation (Pty) Ltd
- Pentlands Granite Quarry Mining Right near Empangeni (KZN) – Masa Mzantsi Cement (Pty) Ltd
- Gamohaan Aggregate Quarry near Kuruman (Permit) – Afrimat Group
- Cawood Salt Mine at Sout River mouth (Amendment of existing Right) – Cawood Salt (Pty) Ltd
- Kuipersbult Aggregate Mining Right near Lephalale (Limpopo) as source for Medupi Power station construction – Afrimat Group

- Dikpens Gypsum Mine Extension (Bushmanland) – St Gobain Group
- Yserfontein Pan Gypsum - Amendment of Mining Right including update of EMP – St Gobain Group
- Gypsum Mine near Vanrhynsdorp - Mining Right – PPC (Right now owned by St Gobain Group)
- Transand Aggregate mine near Hartenbos - Mining Right – Transand (Pty) ltd
- Aggregate and sand mine on municipal owned land in Gansbaai (Permit and Right)- Sisiza Ukhanyo Trading 410 (Pty) Ltd
- Sand mining permit near Salmonsdam Nature Reserve, Stanford – DJ Transport (Pty) Ltd
- Limestone Mining Right north of Klawer – Now held by Afrimat (previously Cape Lime (Pty) Ltd
- Sand Mining permits near Gouritz River / Vlees Bay – Transand Group
- Phospate Mining Right near Langebaanweg - Gecko Fert (Pty) Ltd
- Oyster Bay Mining Right application for Aggregate – Denron Group
- Moddergat Sand Mining Right (between Worcester and Villiersdorp) – Afrimat Group
- Mining Right for Manganese near Swellendam – Aquarella (Pty) Ltd
- 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 once-off or regular basis. First compiled in terms of Reg 55 of MPRDA prescriptions and since December 2014 guided by NEMA requirements (Appendix 5 and Regulation 34 of NEMA):

- 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
- Lime Sand near Saldanha – Marine Lime
- 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
- Maskam Gypsum Mine near Vanrhynsdorp – Venatouch (Pty) Ltd
- Nama Copper: Retreatment of existing dumps at Nababeep
- Various Afrimat aggregate operations throughout the country
- Setting up of Environmental Monitoring Committee at Yzerfontein Gypsum Mine
- Setting up of Environmental Monitoring Committee at George K1 Quarry
- Johnsons Brick Clay Mine (Oudtshoorn)
- Farm 256 Portion 4 Gypsum Prospect – Venatouch (Pty) Ltd

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 (Brackenfel)
- 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 EIA process requirements:

- Cape Lime Sand Mine (Schaap Kraal operation) – Afrimat
- Atlantis Foundries Sand Mine Ptn 8 – ZLLD Sand Mining (Pty) Ltd
- Atlantis Foundries Sand Mine Prospect (Ptn 4 & 5) – 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 Oudtshoorn (Mining Right Amendment)
- Okiep Dumps Reprocessing Application – O'okiep Copper Company Ltd
- Karoo One / Bo Plaas Sand and Gravel Mining Permit
- Salt Prospect – Gemsbok Horn (N Cape) – Transalt (Pty) Ltd
- Bosluispan Diamond Mine (Section 102 Application) – Kori Diamonds (Pty) Ltd
- Oena Diamond Mine (Section 102 Application) – African Star Minerals
- Welbedagt East Gravel Permit– Mossel Bay - Buyline Trading
- Gemsbok Horn Salt Prospect – Upington – Industrial Salt
- Okiep Tailings Investigation – OCC – Okiep and Carolusberg
- Regulation 31 Application: Kliprug Quarry for Batch Plant - Afrimat
- Kolkies River Gypsum Mine – Ceres- Space Minerals – not yet lodged
- Grootwitpan Salt Mine Expansion and Consolidation- North of Upington- United Salt
- Salt at Gemsbok Horn (North of Upington) – Transalt (Pty) Ltd
- Manganese Prospect Waboomskloof – MN108 (Pty) Ltd
- Nickel and associated Minerals Prospecting Right Kliprand - BME100 (Pty) Ltd
- Diamond Prospect Koa Valley – Rooiberg Mining (Pty) Ltd
- Pearly Beach Die Dam Quarry Permit – Penmyn (Pty) Ltd
- Nababeep Slag Dumps reprocessing – Nama Copper (Pty) Ltd
- Kleinkrans Sand Mine Expansion – Wilderness – Denron Plant (Pty) Ltd
- Smalblaar Quarry Expansion – Rawsonville - Afrimat Operations (Pty) Ltd
- K1 Quarry Amendment Application – George – Lezmin 2021 (Pty) Ltd

Section 24G Applications:

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

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

_____

Name of Company: **Site Plan Consulting**
Date: 8 June 2023

Appendix 2 & 3:

Public Participation – to be finalised in final BAR

Appendix 4:

Copy of recommended minimum course content for Environmental Awareness Training

FILANDER PANS 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 Audits 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

FILANDER PANS PROSPECT

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

NAME OF APPLICANT:	**Transalt (Pty) Ltd**
CONTACT PERSON:	**Wilmot Prusent**
TEL NO:	**011 864 4900**
FAX NO:	**011 864 5493**
POSTAL ADDRESS:	**PO Box 17224, Randhart 1457**
PHYSICAL ADDRESS:	**7 Clarke Street South Alrode, Alberton 1451.**
FILE REFERENCE NUMBER SAMRAD:	**NC30/5/1/1/2/13638PR**

Report #:2859/C
July 2023

Table of Contents

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 (*cum Laude*)	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 form 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 Phospate 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 (Namqualand)

"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
- Naroogna 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 farms Remainder of Farm Vilander No. 318, Portion 1 of Farm Vilander No. 318, Portion 112 of farm Kalahari-Wes No 251 and Portion 158 of farm Kalahari-Wes No 251.

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 9 drill sites. 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:

Activity	Impact	Scale of impact	Avoidance, Management or Mitigation	Proposed Management / Mitigation Measures	Significance with mitigation, Probability & Duration of Impact
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).	Hydrocarbon (Oil/ fuel leaks)	Local pan	Management required on occurence	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
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	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

Appendix 6:

Screening Tool Reports (x2)

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: Not Yet Assigned

Project name: Vilander Salt Prospect

Project title: Section 1 Area

Date screening report generated: 24/05/2023 13:49:08

Applicant: Transalt (Pty) Ltd

Compiler: Craig Donald

Compiler signature:

.....

Application Category: Mining|Prospecting rights

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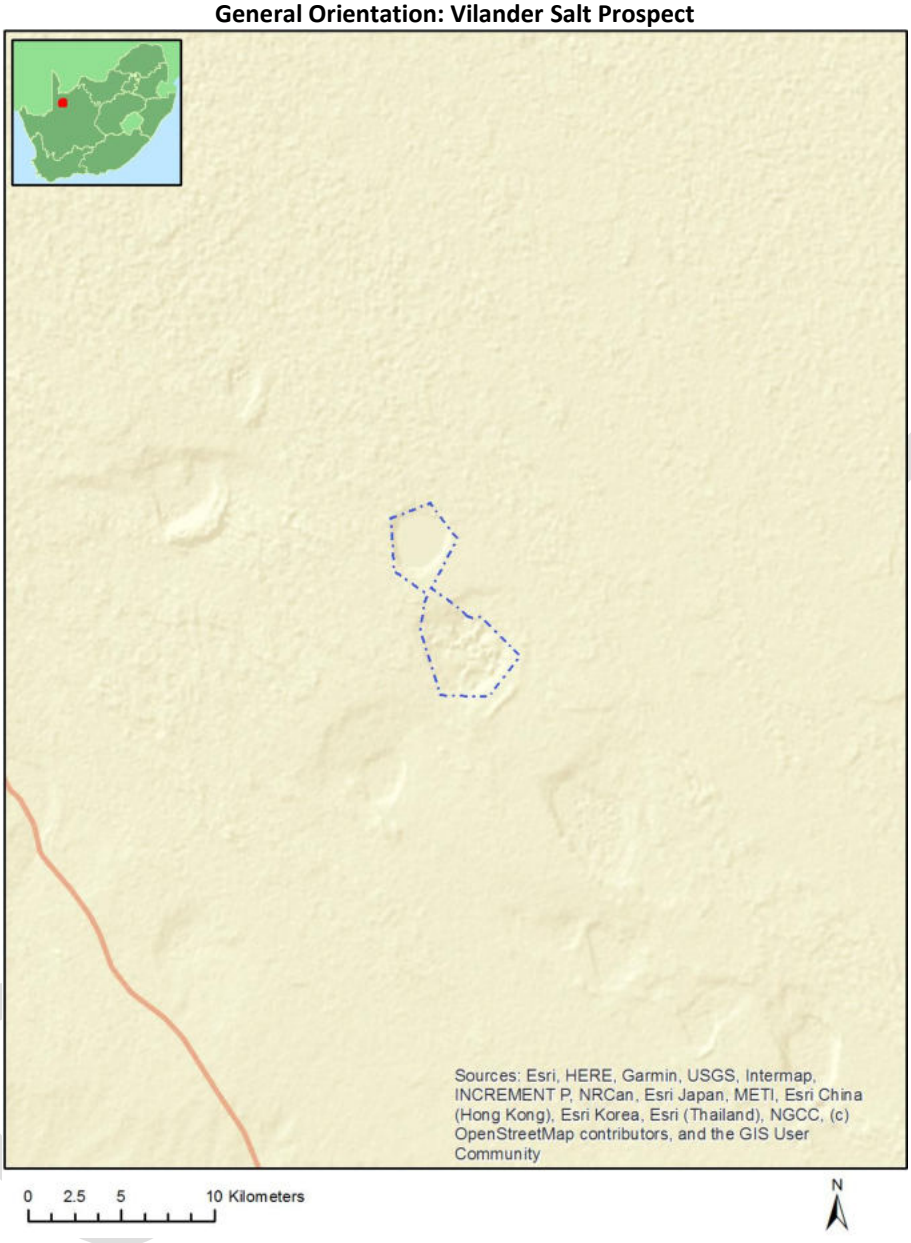
Proposed Project Location

Orientation map 1: General location

General Orientation: Vilander Salt Prospect



Disclaimer applies
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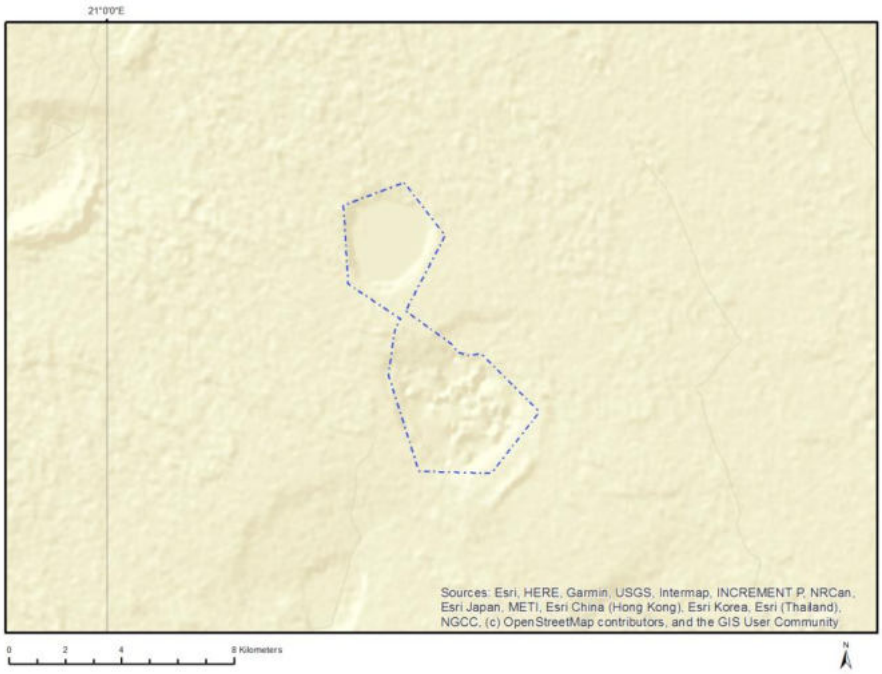
Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	VILANDER	318	0	27°46'36.08S	21°5'25.33E	Farm
2	BLAAUWPAN	312	0	27°53'38.35S	21°8'4.58E	Farm
3	VILANDER	318	1	27°46'33.14S	21°7'40.48E	Farm Portion
4	BLAAUWPAN	312	0	27°51'6.55S	21°5'6.95E	Farm Portion
5	VILANDER	318	0	27°46'40.72S	21°3'9.53E	Farm Portion
6	VILANDER	318	1	27°46'31.37S	21°7'42.96E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

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Environmental Management Frameworks relevant to the application

Environmental Management Framework	LINK
Siyanda District Municipality EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/SIYANDA_EMF_REPORT_2008.doc

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Mining|Prospecting rights**.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

No intersection with any development zones found.

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme		X		
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
7	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/Asse

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		ssmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
9	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

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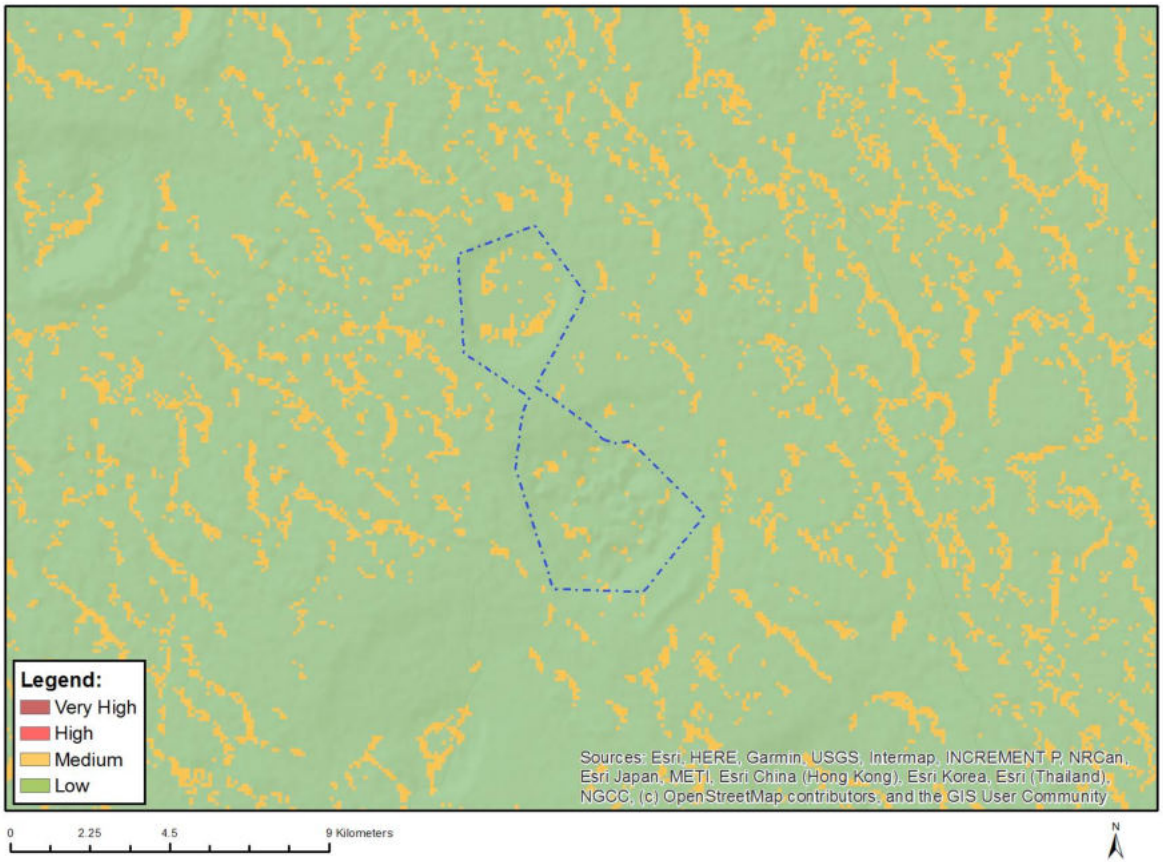
Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

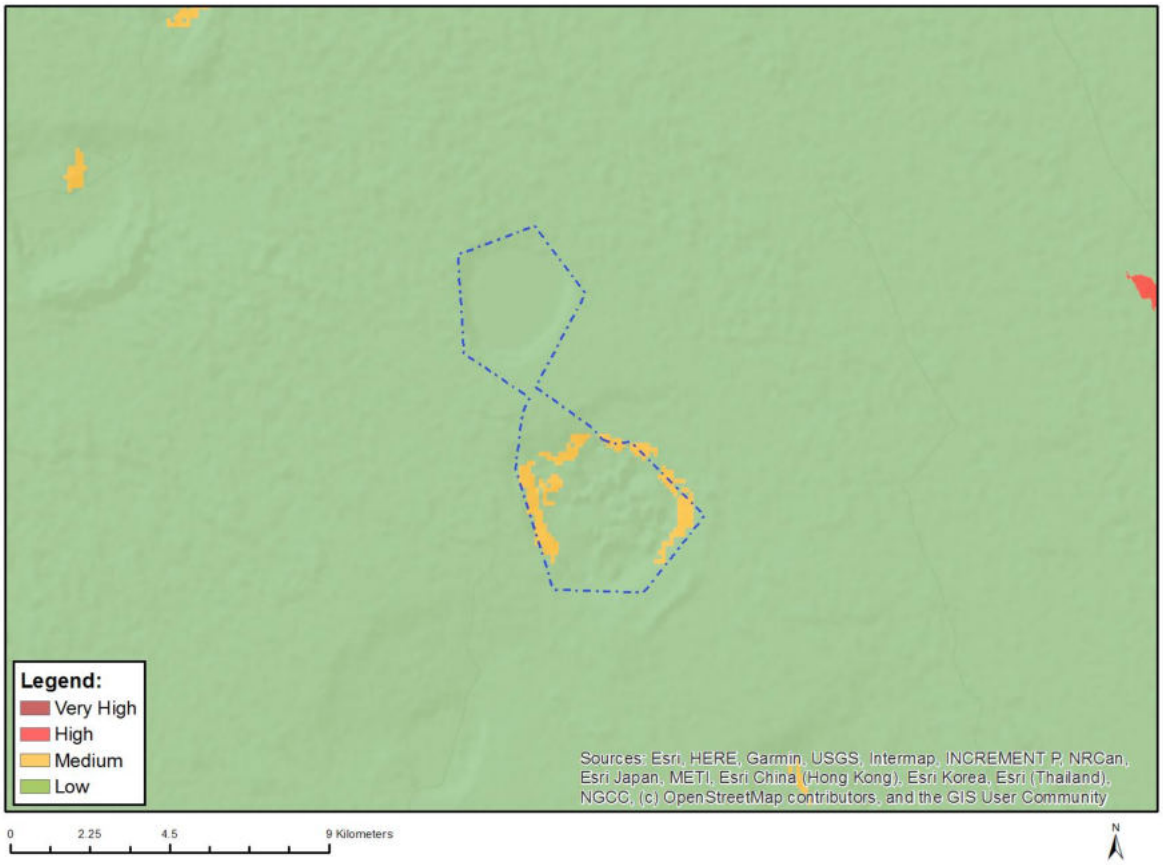


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

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

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



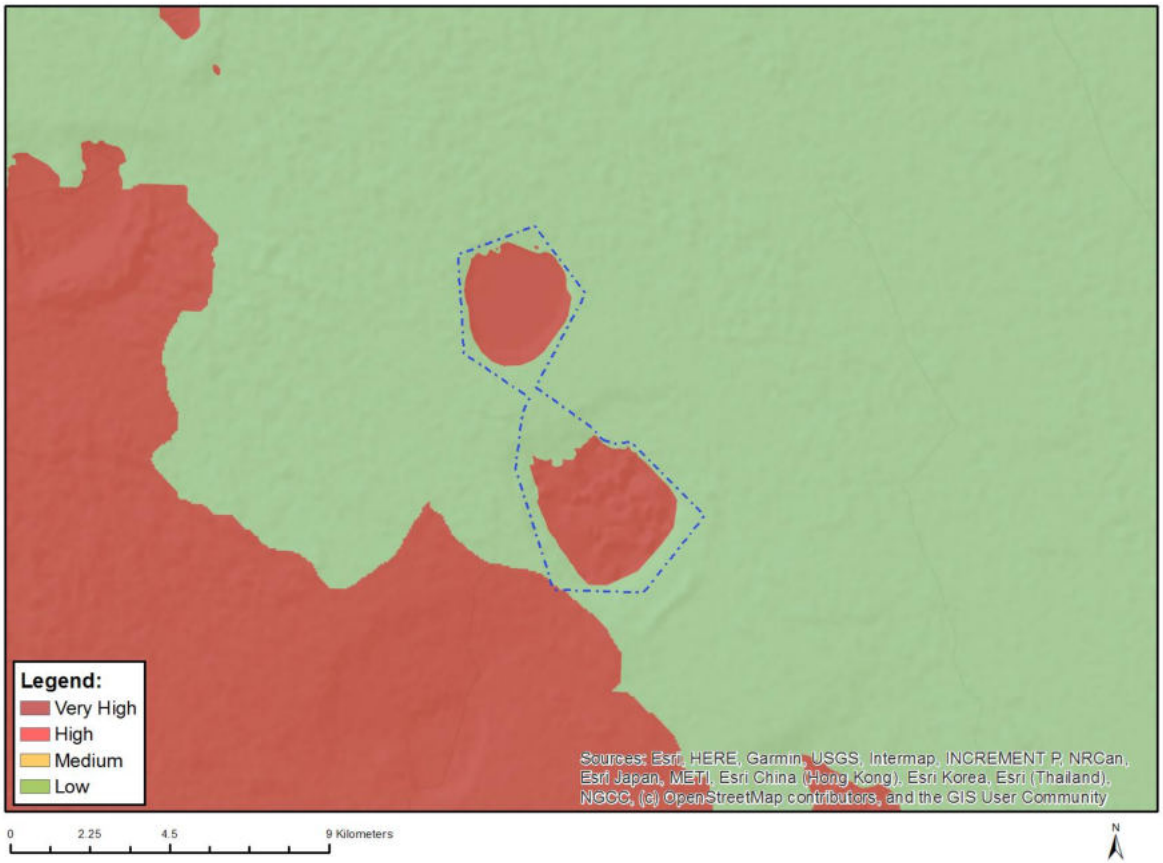
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Subject to confirmation
Medium	Aves-Aquila rapax

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	FEPA Subcatchment
Very High	Wetlands_Kalahari Duneveld Bioregion (Depression)

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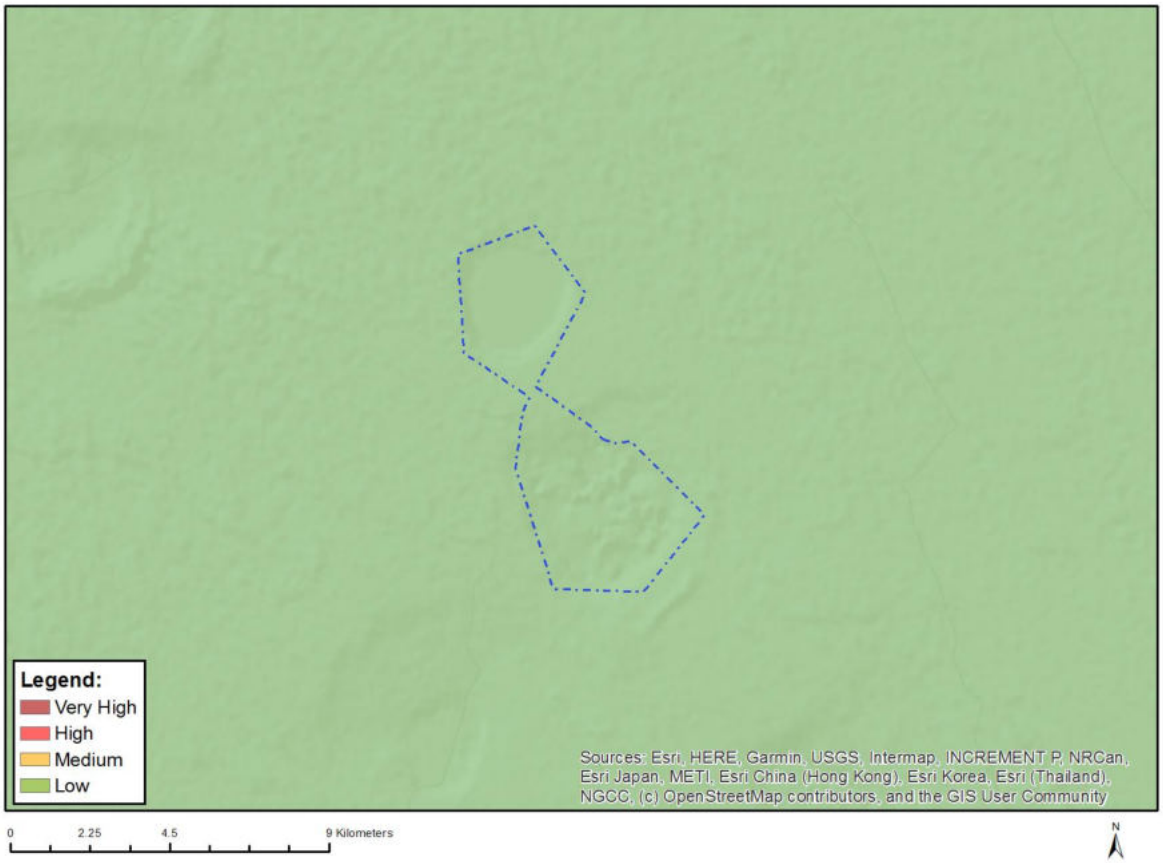
MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

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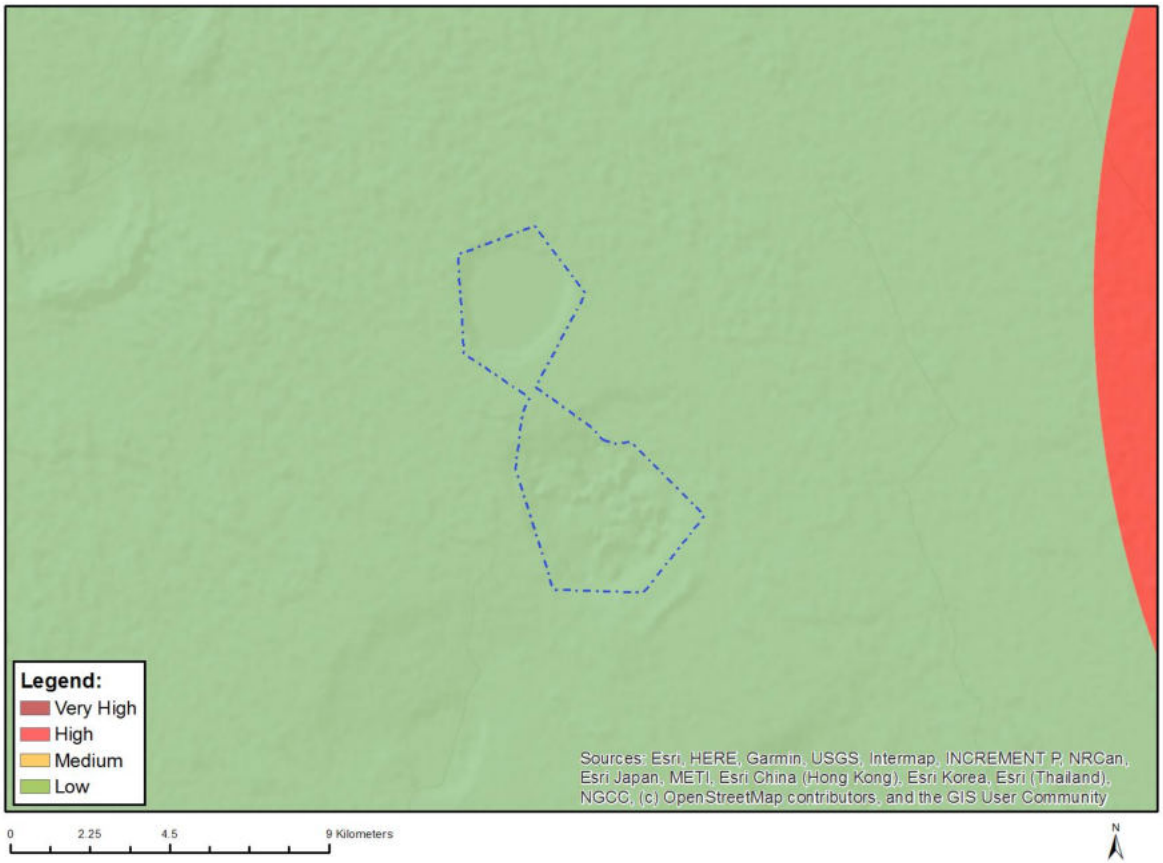
MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

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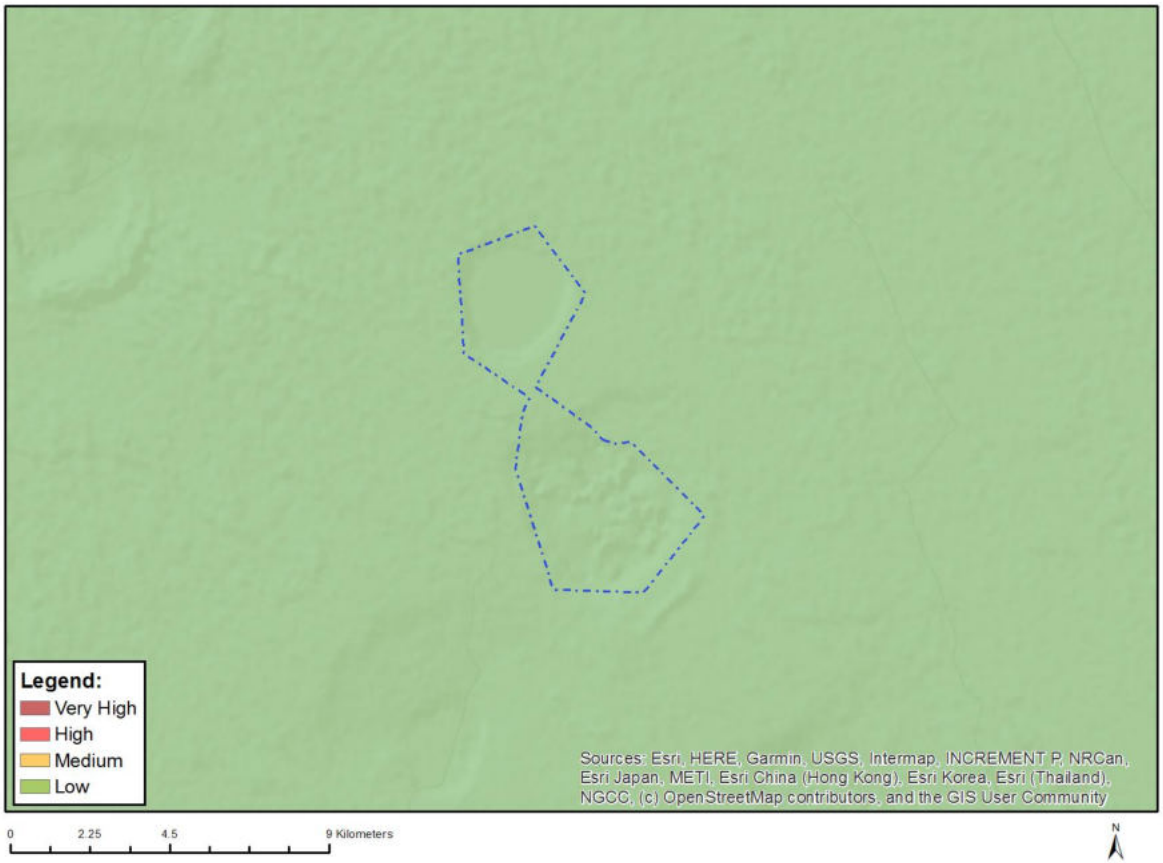
MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

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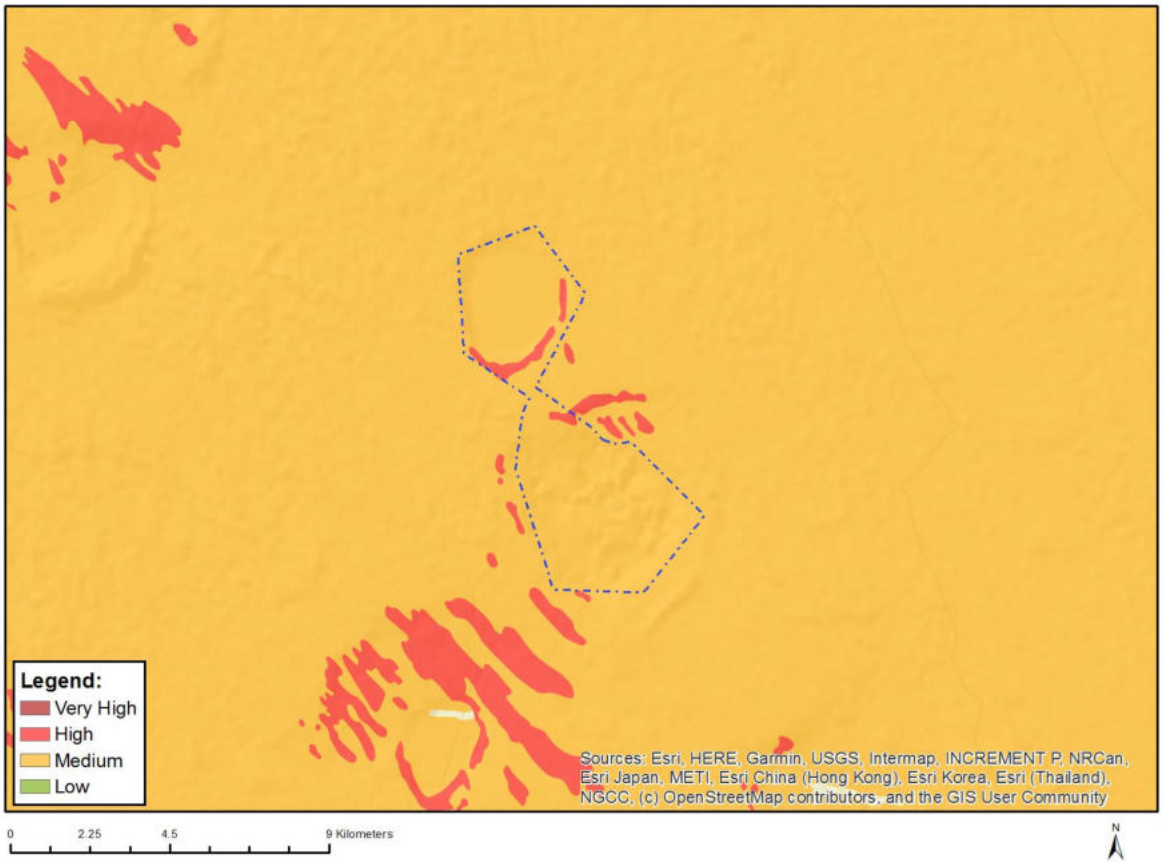
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

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

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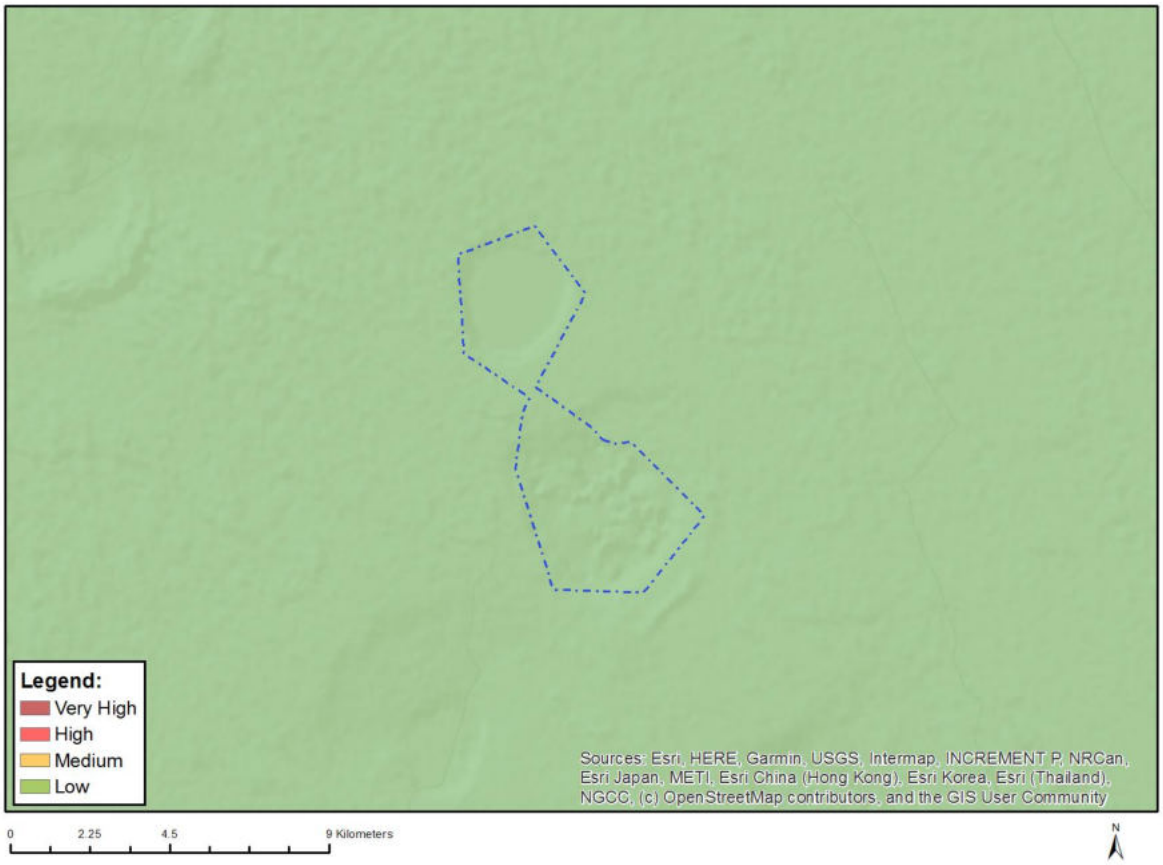
MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

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MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Ecological support area
Very High	FEPA Subcatchments

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24/05/2023

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: Not Yet Assigned

Project name: Vilander Salt Prospect

Project title: Section 2

Date screening report generated: 24/05/2023 14:08:27

Applicant: Transalt (Pty) Ltd

Compiler: Craig Donald

Compiler signature:

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Application Category: Mining|Prospecting rights

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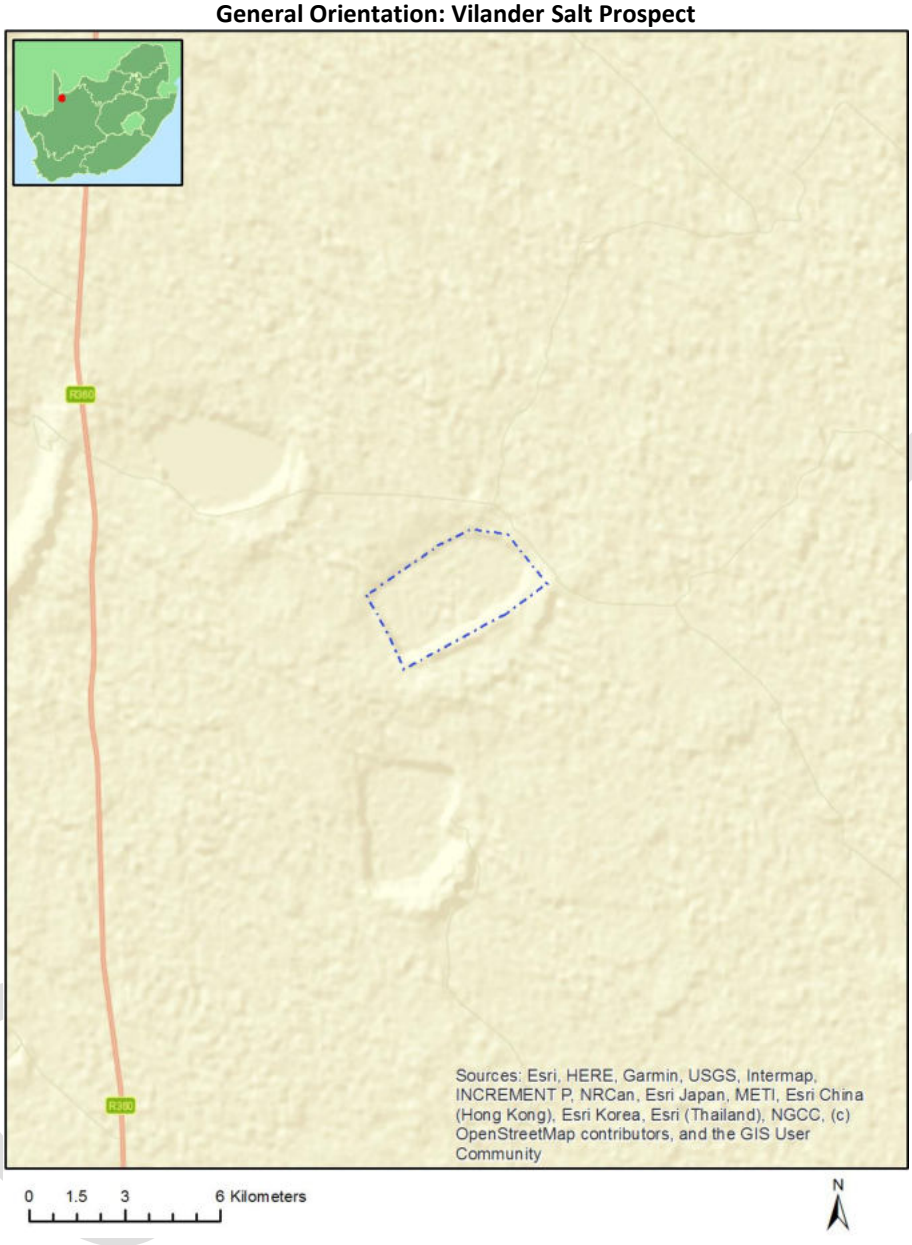
Proposed Project Location

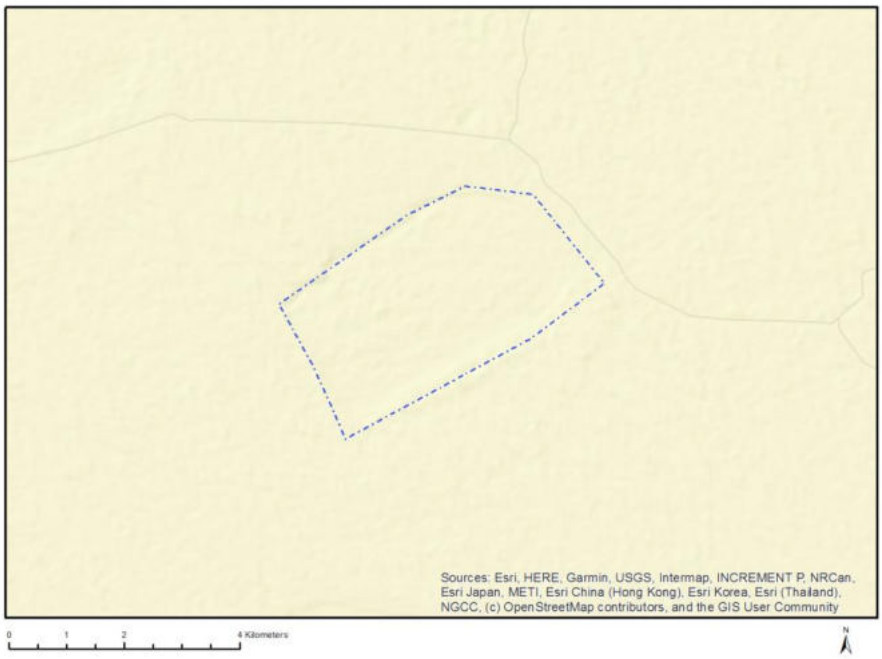
Orientation map 1: General location

General Orientation: Vilander Salt Prospect



Disclaimer applies

Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	KALAHARI WES	251	0	27°30'20.72S	21°27'37.7E	Farm
2	KALAHARI WES	251	157	27°19'26.37S	20°52'1.59E	Farm Portion
3	KALAHARI WES	251	112	27°25'36.64S	20°53'3.84E	Farm Portion
4	KALAHARI WES	251	158	27°22'19.96S	20°53'34.77E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

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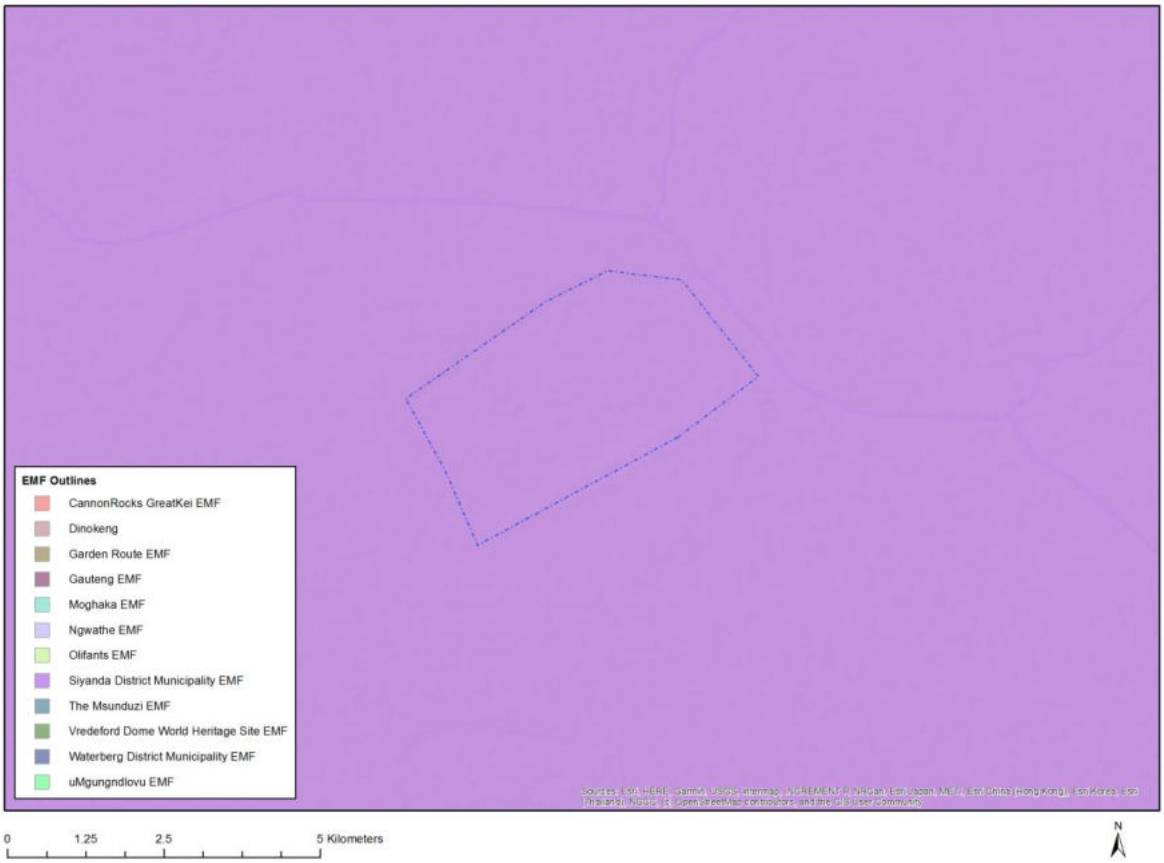
Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Siyanda District Municipality EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/SIYANDA_EMF_REPORT_2008.doc

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Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme		X		
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
7	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/Asse

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		ssmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
9	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

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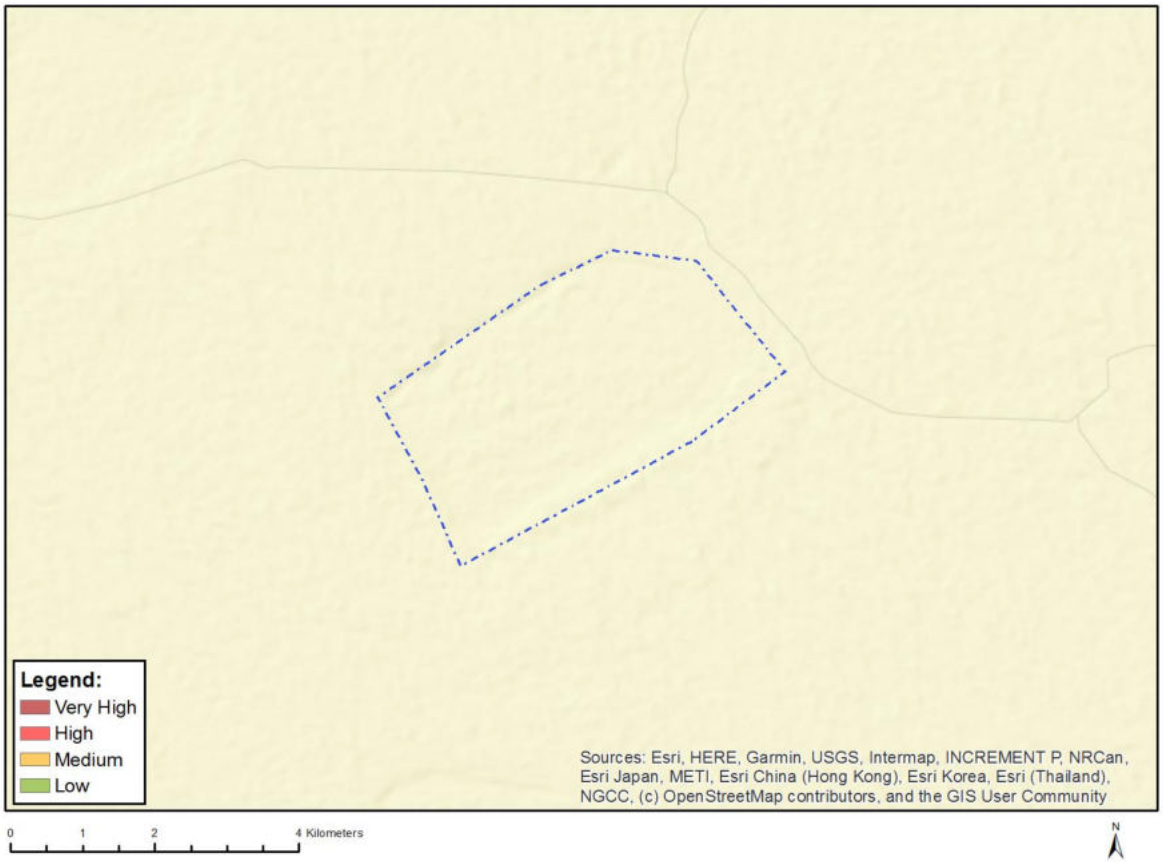
Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

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

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

Unable to obtain map image.

Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Falco biarmicus
High	Aves-Torgos tracheliotos
High	Aves-Aquila rapax
Low	Subject to confirmation

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MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Wetlands_Kalahari Duneveld Bioregion (Depression)

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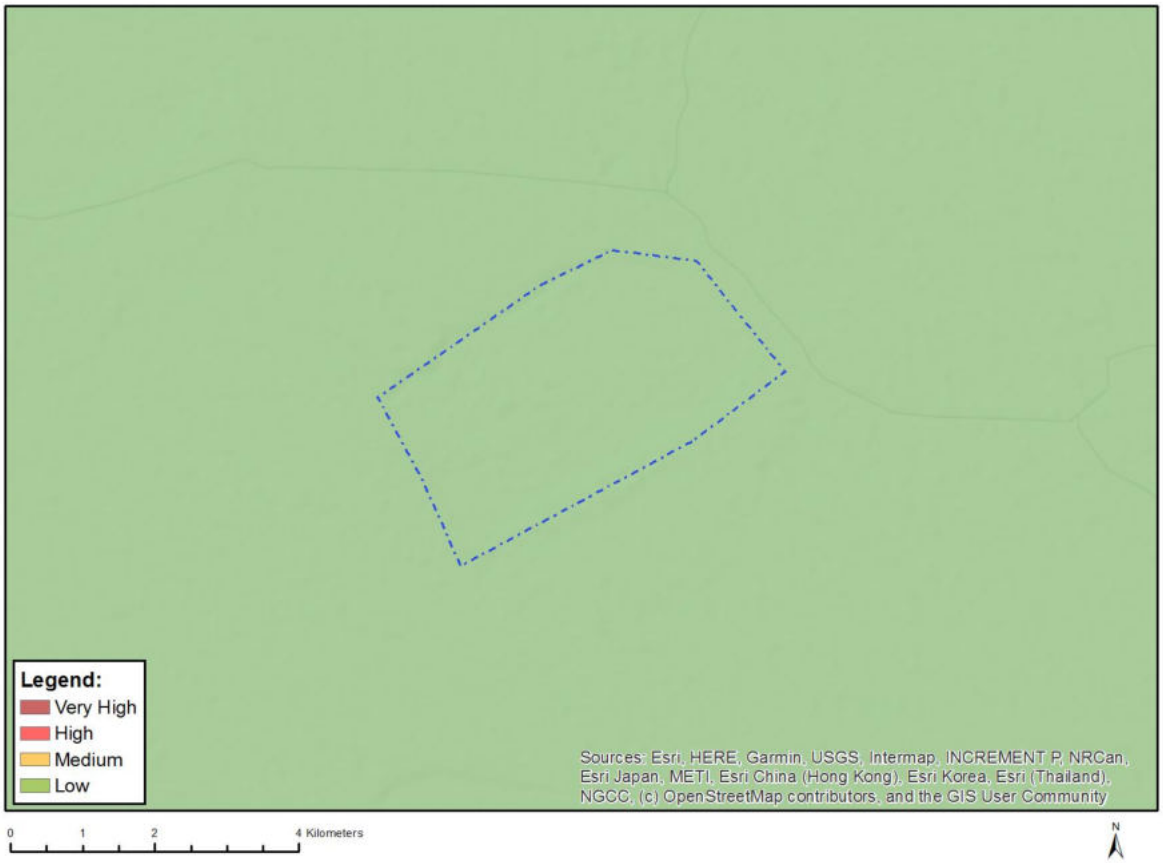
Disclaimer applies

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

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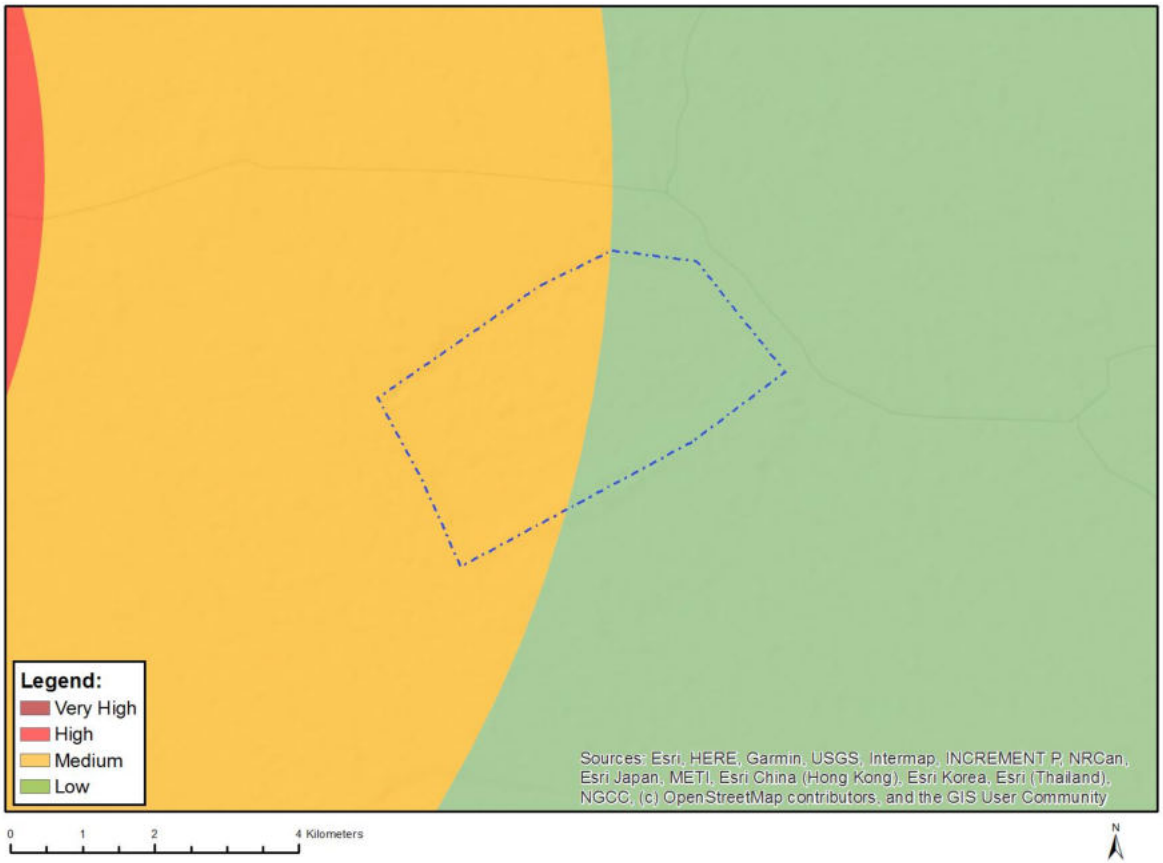
MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Medium	Between 8 and 15 km of other civil aviation aerodrome

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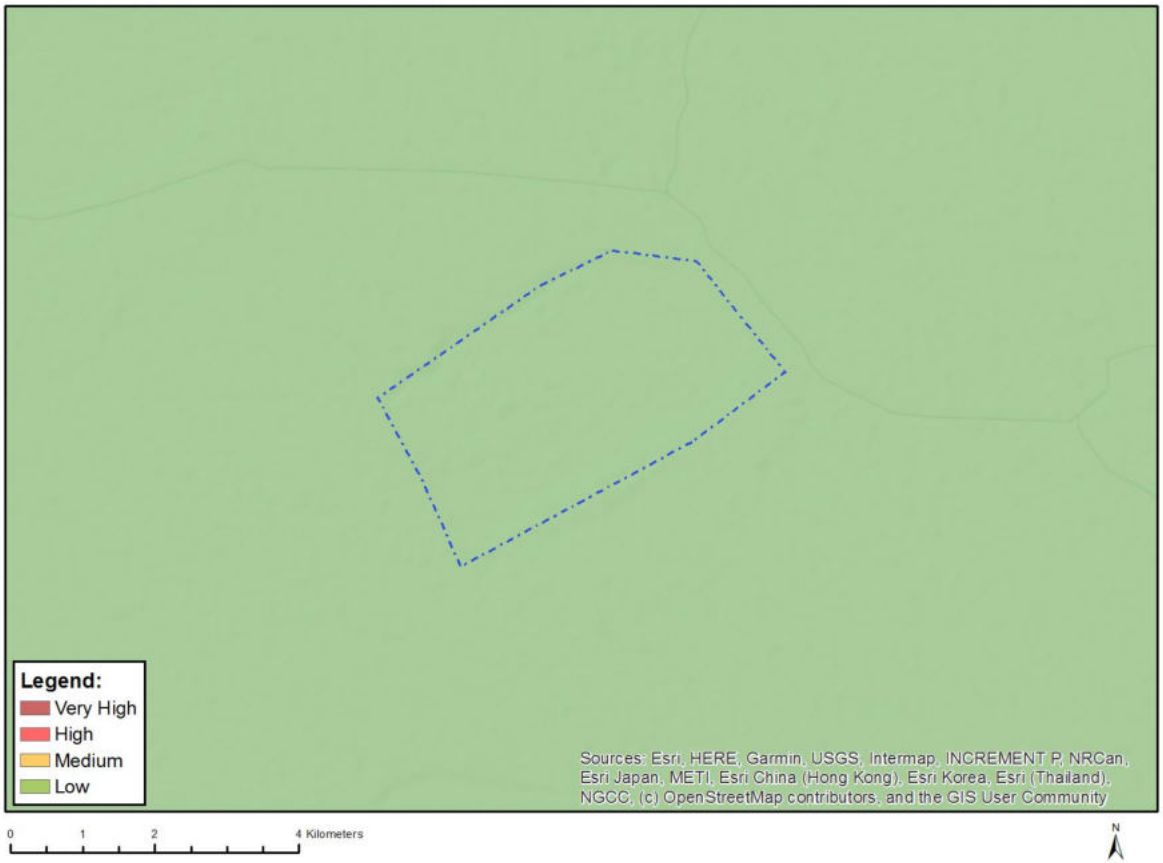
MAP OF RELATIVE DEFENCE THEME SENSITIVITY



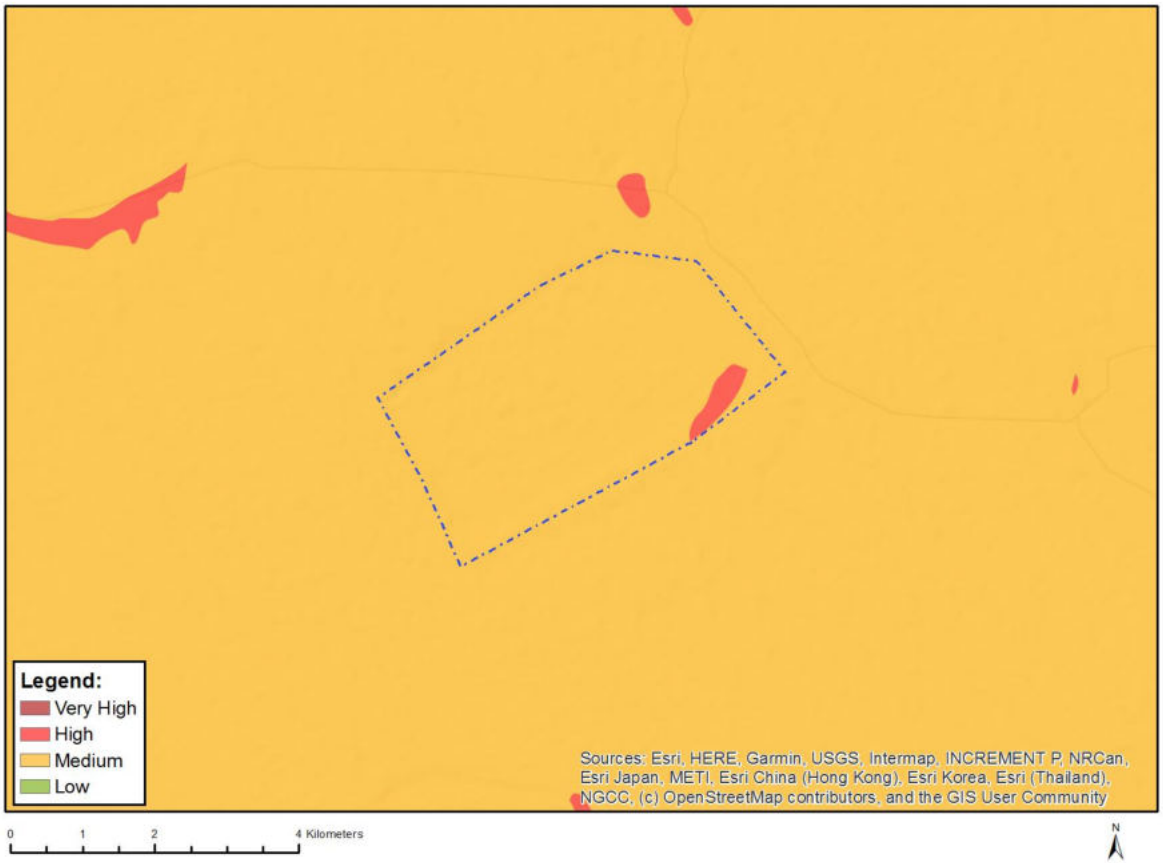
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

OFFICIAL

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

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

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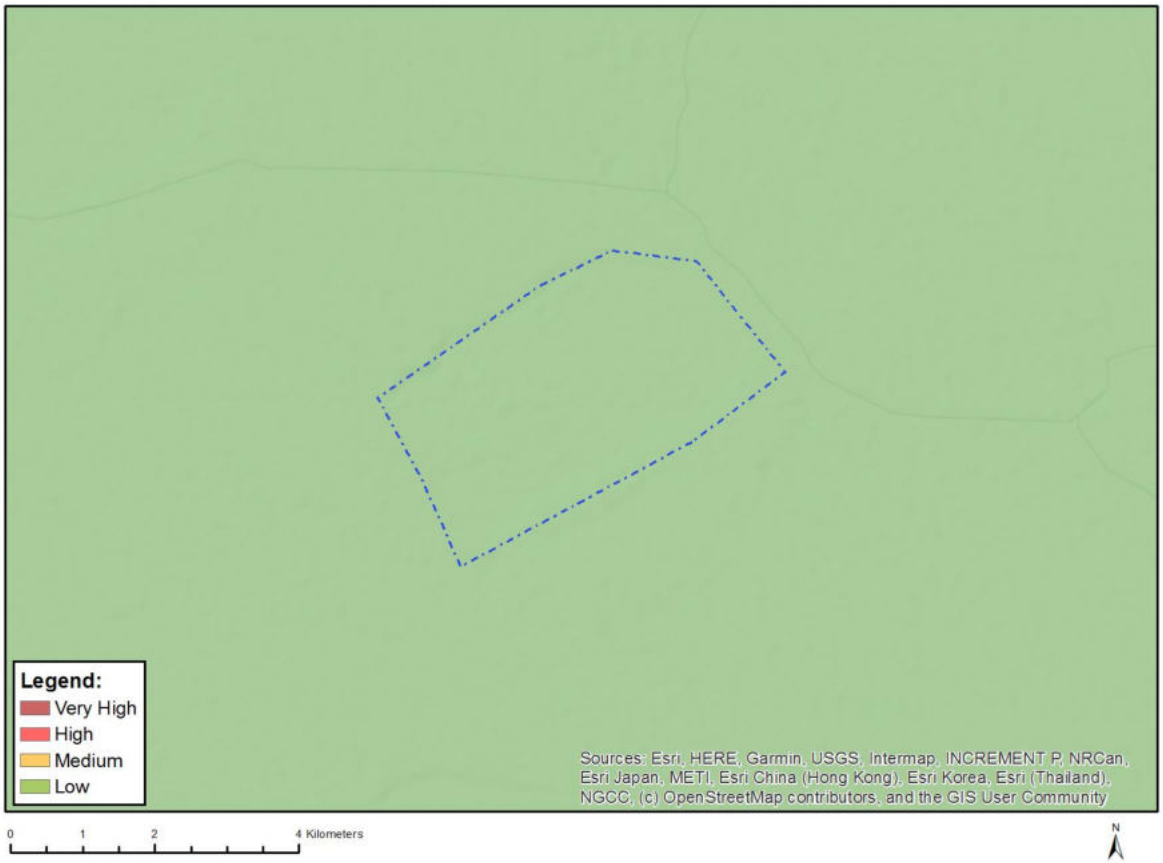
MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

Disclaimer applies
24/05/2023

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Unable to obtain map image.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Ecological support area

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Appendix 7:

Heritage Matters

Agency for Cultural Resource Management
Specialists in Archaeological Studies and Heritage Resource Management

17 July 2023

Att : Ms Natasha Higgitt
South African Heritage Resources Agency
PO Box 4637
Cape Town
8001

Dear Ms Higgitt,

RECOMMENDED EXEMPTION FROM FURTHER ARCHAEOLOGICAL STUDIES, PROSPECTING RIGHT APPLICATION ON REMAINDER OF FARM VILANDER NO. 318, PORTION 1 OF FARM VILANDER NO. 318, PORTION 112 OF FARM KALAHARI-WES NO. 251, & PORTION 159 OF FARM KALAHARI-WES NO. 251, DAWID KRUIPER LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE

1. Introduction

The application entails a Prospecting Right to be lodged over three pans (Vilander Pan, Witpan & Goeboegoeboe Pan), located north of Upington in the Dawid Kruiper Municipality, in the Northern Cape Province (Figures 1 & 2).

`Section 1' comprising Re of Farm Vilander No. 318 and Portion 1 of Farm Vilander No. 318, measures ± 2353ha in extent, while `Section 2' comprising Portion 112 of Farm Kalahari-West No. 251 and Portion 159 of Farm Kalahari West No. 251, measures about 980ha in extent (Figures 3 & 4).

Site Plan Consulting is the appointed, Environmental Assessment Practitioner (EAP) responsible for facilitating environmental authorisation for the project. A Basic Environmental Assessment (BA) Process will be followed in this application.

The Department of Mineral Resources (DMR) is the decision-making authority in this application.

2. Description of the proposed activity

It is proposed that nine holes be drilled to a depth of 10m on the pan floor. Six holes will be drilled in Section 1 (Vilander & Witpan), and three in Section 2 (Goeboegoeboe) (Figures 5 & 6). The diameter of each drill hole will be 20cm, while the disturbed area will be 0.315m³ of material per hole. Nine drill holes will therefore disturb a total area of about 2.83m³ (Site Plan Consulting 2023). Drillers will be accompanied by 1-2 persons who will be responsible for measuring and recording depth to brine and taking water samples for laboratory analysis. All the drill holes will be rehabilitated. Should the brine prove to be of sufficient quality, then an additional application will be lodged to allow for mining of the site. There are already existing access roads to the three affected pans, and therefore no new roads to the drill sites will need to be constructed. There will be no disturbance of the natural vegetation surrounding the pans, either (Site Plan Consulting 2023).

3. Environmental context

The study site is located in the Kalahari Basin, a flat, sand covered, semi-desert area about 100kms north of Upington in the Northern Cape. The area is characterised by a number, of large pans surrounded by higher lying red longitudinal sand dunes typical of the Kalahari

No. 5 Stuart Road Rondebosch, 7700 Phone/Fax 021-6857589
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area. The pans are extremely isolated and, non-natural land uses are sparse with isolated farmsteads, and stock collection and watering points (mainly for cattle). There are some fences and pipelines on the pans, but none of these will be disturbed by proposed activities. There is an existing Salt Works on the Vrysout Pan, about 5km northwest of Goeboegoeboe Pan. The pans are not located within a National Park or any formally protected area (Site Plan Consulting 2023).

4. Archaeological context

The archaeological record of the Northern Cape region reflects the entire human history from Early Stone Age (ESA) times (more than one million years ago), through the Middle Stone Age/MSA (about 300 000-40 000 years ago), to the Later Stone Age/LSA (the last 10 000 years of precolonial history in southern Africa). The last 2000 years particularly was a period of increasing social complexity to the east, with the appearance of herding and farming, and of ceramic and metallurgical (Iron Age) technologies alongside an older continuing trajectory of LSA hunting and gathering and stone tool-based technologies (Morris & Henderson 2019). In these far northern drier areas, it is likely that hunting and gathering persisted into the colonial era.

A search of SAHRIS has shown that little archaeological work has been conducted in this vast arid region north of the Northern Cape. Most, of the work has been done by commercial archaeologists, working in the contract archaeology industry. The literature survey has shown that several Archaeological Impact Assessment (or AIAs), around some of these large pans north of Upington, have been conducted in recent times (Figure 7).

Low density surface scatters of MSA artefacts were first recorded at proposed salt prospecting areas at Bettastadt and Tsonga Pan on the Farm Gemskop Horn 242, about 80kms southeast of the Vilander study area (Morris & Henderson 2019). The significance of the impact on archaeological heritage resources at these two pans, was determined to be Low, however.

Low densities scatters, of weathered, MSA and LSA remains (chips, chunks & flakes), were also recorded during a Heritage Impact Assessment (or HIA) for the proposed Bloupan Salt Mine on the Farm Annesley 338 about 60kms northwest of Vilander Pan and about 50kms southwest of Goeboegoeboe (Engelbrecht 2018). The remains were also graded as having Low (lVC) local archaeological significance.

Small numbers of weathered ESA and MSA resources (of Low significance) were also recorded by Morris (2006) at Eenzaamheid Pan, and Hakskeen Pan (Morris 2016).

A Recommended Letter of Exemption (LOE) for proposed mining of salt on the Farm Groot Witpan (Kaplan 2022), southwest of Vilander, was supported by SAHRA Northern Cape.

Overall, the various salt pan studies surrounding Vilander, Witpan and Goeboegoeboe Pan appear, to indicate a paucity of archaeological traces in these dry arid areas, where archaeological resources are more likely to appear on dune crests on the margins of pans, springs, and streams (Kiberd 2001; Masson 2006; Morris 2006, 2016; Smith 1995).

5. Conclusion

The Prospecting Application which entails the proposed drilling of nine test holes on the Farm Vilander 318 (n = 3), Witpan (n = 3), and Kalahari-West 159 (n = 3) north of Upington are not considered to pose a serious threat to local archaeological heritage because of the following considerations:

• Apart from the small drill holes (20cm in diameter), no further disturbance or activities are anticipated or expected.

• The Impact of drilling on the Heritage `Sense of Place' is rated as Low.

• The literature study indicates that the various salt pans surrounding Vilander, Witpan and Goeboegoeboe cannot be considered sensitive or threatened archaeological landscapes

• The DEA Screening Tool notes a Low sensitivity in respect of Archaeological and Cultural Heritage Impact.

6. Recommendations

It is recommended that exemption from further specialist archaeological studies be granted for the Vilander prospecting application, as no important Stone Age or historical archaeological resources are likely to be impacted by the Prospecting Right application.

Yours sincerely

Jonathan Kaplan
Director: Agency for Cultural Resource Management

7. References

Englebrecht, J. 2018. Proposed Salt Mine on Bloupan, located on the Remainder of the Farm Annesley No. 338, situated within the Dawid Kruiper Local Municipality, ZF Mgcawu District Municipality, Northern Cape Province. Report prepared for Van Zyl Environmental Consultants. Ubique Heritage Consultants, Askham.

Kaplan, J. 2022. Recommended exemption form further archaeological studies, consolidation of salt mining rights under one Mining Right: Portions 10, 13, 18 & 20 of the Farm Groot Witpan No. 327, Gordonia RD, Dawid Kruiper Local Municipality, Northern Cape Province. Letter submitted to SAHRA Northern Cape. ACRM, Cape Town

Kiberd, P. 2001. Bundu Farm. A Middle and Later Stone Age Pan Site, Northern Cape, South Africa. Preliminary results of fieldwork 1998-2000. Nyame Akuma 55: 51-55.

Masson, J. 2006. Archaeology and geomorphology: Eensaamheid Pan, Northern Cape. The Digging Stick 23 (1): 15 -18.

Morris, D. 2016. Heritage Impact Assessment, Hakskeen Pan, in the Dawid Kruiper Local Municipality, Northern Cape, in relation to tourism and event-related development: Final Report (Revised). Report prepared for EnviroAfrica cc. McGregor Museum, Kimberley.

Morris, D. 2006. Report on a Phase 1 Archaeological Assessment of proposed Salt Works areas on the Eenzaamheid Pan north of Upington, Northern Cape. McGregor Museum, Kimberley.

Morris, D. & Henderson, A. 2019. Heritage Impact Assessment of proposed prospecting drilling sites at two pans on Gemsbok Horn 242 in the Dawid Kruiper Local Municipality, Northern Cape. Report prepared for Site Plan Consulting. McGregor Museum, Kimberley.

Site Plan Consulting, 2023. Vilander Pans Salt Prospect. Draft Basic Assessment Report and Environmental Management Programme Report. Report #: 2859/PR/D-BAR.

Smith, A.B. 1995. Archaeological Observations along the Orange River and its Hinterland. In: Smith, A.B. (ed). Eniqualand: Studies of the Orange River Frontier: 265-300. Rondebosch: UCT Press.

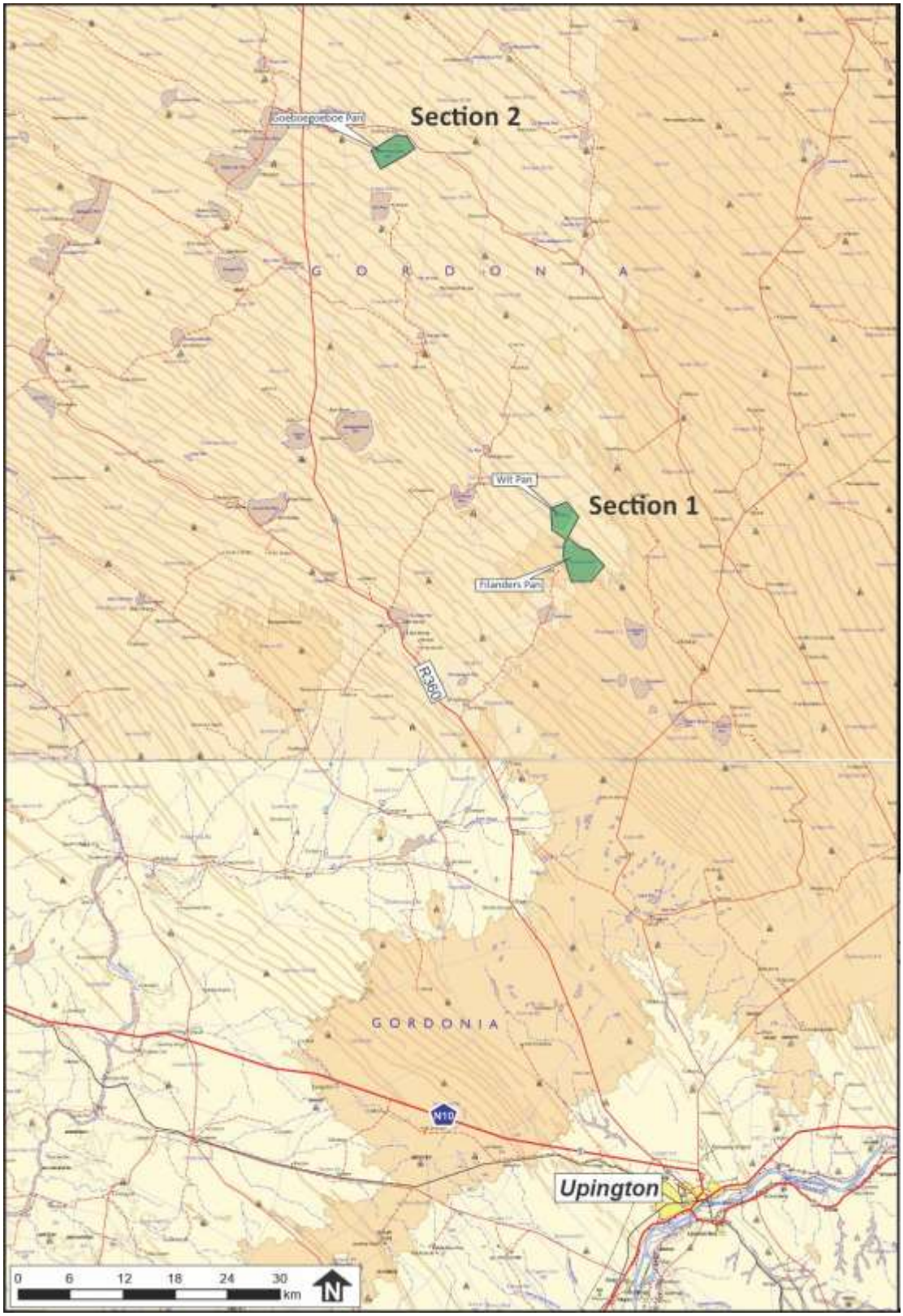

Figure 1. Locality Map: Section 1 and Section 2.

Figure 2. Google Earth satellite map indicating the location of the study area Section & Section 2 (yellow pin) northwest of Upington. Note the high concentration of saltpans north west of the area.

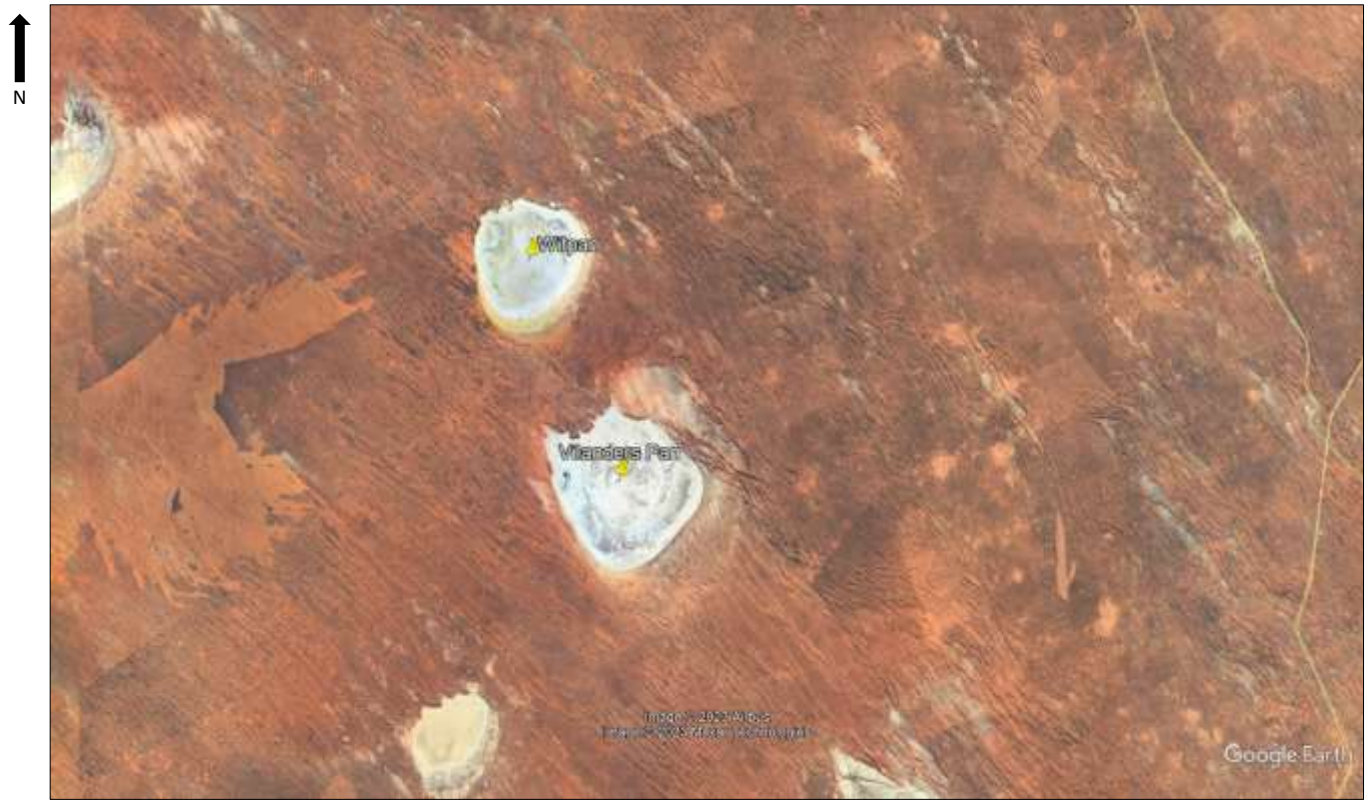

Figure 3. Google Earth satellite map. Close up of Section 1

Figure 4. Google Earth satellite map. Close up of Section 2

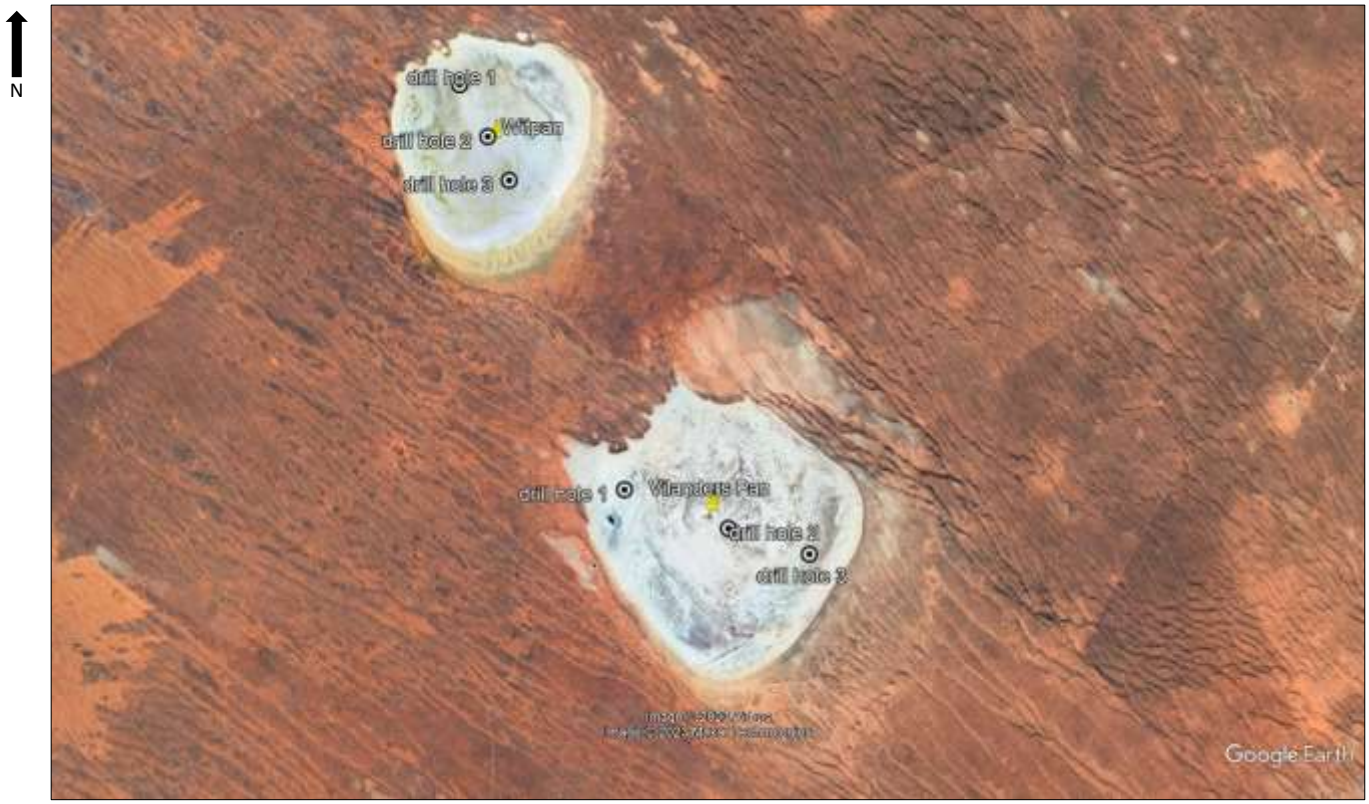

Figure 5. Proposed drill holes in Section 1

Figure 6. Proposed drill holes in Section 2

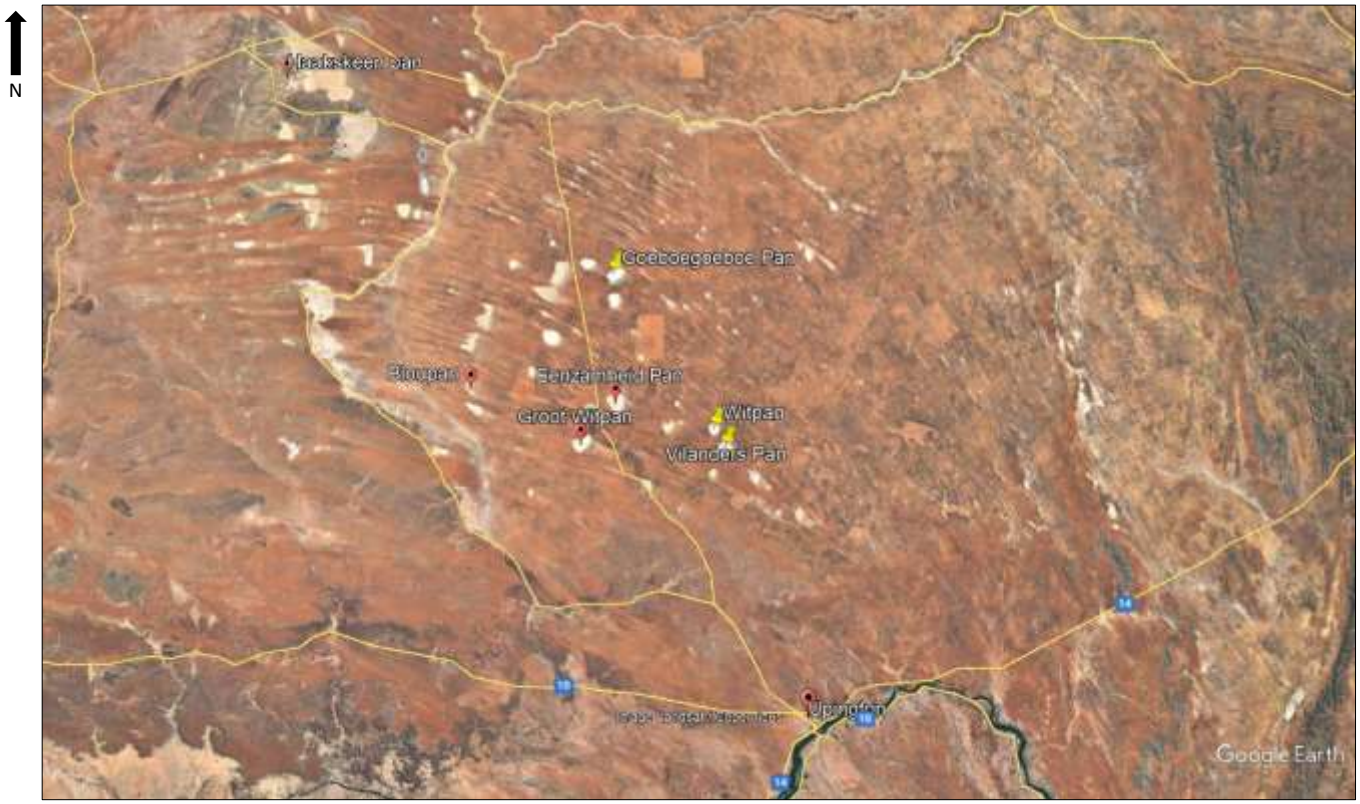

Figure 7. Google Earth satellite map indicting the location of saltpans (red pins) mentioned in the text.

BASIC PALAEONTOLOGICAL ASSESSMENT

Letter of Recommendation for Exemption from further Palaeontological Studies

VILANDER PANS SALT PROSPECT

Farm Vilander 1/318 & RE/318 and Farm Kalahari-Wes 112/251 & 158/251

Dawid Kruiper Municipality, Gordonia District, Northern Cape

FILE REFERENCE NUMBER SAMRAD: NC30/5/1/1/2/___PR

By

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Prepared at the Request of

SITE PLAN CONSULTING

021 854 4260

084 511 1520

CLIENT

Transalt (Pty) Ltd

21 JULY 2023

SUMMARY

The Applicant, Transalt (Pty) Ltd., proposes to sample the saline groundwater (brine) beneath three pans on two farms in the southwestern Kalahari, namely Vilander 318 and Kalahari-Wes 251 (Figure 1), to prospect the potential for salt extraction. Site Plan Consulting has been appointed to conduct the Basic Assessment Report (BAR) process for the required environmental authorizations for the Prospecting Right. This brief report is part of the HIA and its intention is to provide a summary of the main aspects of the geology and the palaeontological sensitivity of the affected formations.

A mobile auger drill will be contracted and deployed to drill 3 holes of ~20 cm diameter to a depth of about 10 metres on each of the three pans (Figure 1), in order to acquire brine-water samples.

The pans are underlain by bedrock of Karoo Supergroup sedimentary rocks of the Dwyka Group. The fossils in this Karoo formation include trace fossils, plant material, a low diversity of invertebrates (molluscs, brachiopods) and fish remains.

The pan deposits (Goeboe Goeboe Fm.) are mapped as of uncertain palaeontological sensitivity (Clear, Figure 2). The pans are quite ancient features and have been fresher water bodies in the past, as is evident by pan carbonates, diatomaceous layers and aquatic molluscs. Excavations in pans have also uncovered fossil bones and Stone Age artefacts.

The 9 drill holes will penetrate a small volume of pan deposits and the underlying Karoo bedrock. The “point” nature of the drill holes renders the likelihood of intersecting fossil bones in the pan deposits improbable. The Karoo bedrock beneath the pans is expected to be weathered and friable and is unlikely to yield well-preserved fossils.

In view of the very small footprint of the proposed 9 auger drill holes the anticipated palaeontological impact of the brine sampling is considered to be LOW to MARGINAL and no additional palaeontological interventions are required.

Notwithstanding, although improbable, a chance occurrence of fossil material cannot be entirely dismissed. It is recommended that the drill holes be regarded as an exploration opportunity for the nature of the pan deposits and be observed for the possible occurrence of Stone Age artefacts and bone and teeth fragments. Should such material be encountered in the drill spoil then SAHRA and/or the McGregor Museum must be informed and supplied with contextual information, such as images of the find and its context in the bore hole log, for assessment and decision on a suitable response.

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CONTENTS

1 BACKGROUND

The Applicant, Transalt (Pty) Ltd., proposes to sample the saline groundwater (brine) beneath the pans on two farms in the southwestern Kalahari, namely Vilander 318 and Kalahari-Wes 251 (Figure 1), to prospect the potential for salt extraction. Site Plan Consulting has been appointed to conduct the Basic Assessment Report (BAR) process for the required environmental authorizations for the Prospecting Right.

This brief report is part of the HIA and its intention is to provide a summary of the main aspects of the geology and the palaeontological sensitivity of the affected formations.

2 LOCATION

The Farm Vilander 318 is located ~75 km NNW of Upington and the Farm Kalahari-Wes 251 is ~124 km NNW from Upington, by direct distances (crow flies). Both are approached initially by the R30 road northwards from Upington, before branching off eastwards along sandy tracks across the Kalahari dune ridges.

1:250 000 Topo-cadastral Sheet 2720 NOENIEPUT. CD NGI.

1:250 000 Geological Sheet 2720 NOENIEPUT. Council for Geoscience.

Vilander 318 - Vilanders Pan – Central drillhole: -27.79828786° S / 21.11396312° E.

Vilander 318 - Witpan - Central drillhole: -27.74991330° S / 21.08973893° E.

Kalahari-Wes 251 - Goeboegoeboepan - Central drillhole: -27.37491589° S / 20.89296481° E.

3 LOCALITY PLAN

The Prospecting Right Application Area Section 1 on Vilander 318 includes two pans namely Vilanders Pan on 1/318 and Witpan on RE/318 (Figure 2).

The Prospecting Right Application Area Section 2 on Kalahari-Wes 251 includes only Goeboegoeboepan which is mainly on 158/251, with the southern margin of the pan overlapping 112/251 (Figure 2).

4 DESCRIPTION OF THE PROPOSED ACTIVITY

A mobile auger drill will be contracted and deployed to drill 3 holes of ~20 cm diameter to a depth of about 10 metres on each of the three pans (Figure 1). Each hole will entail the extraction of ~0.315 m^3 of material, amounting to a total of ~2.83 m^3 of disturbed material for the 9 holes. The Applicant's representative will measure the depth of the water table in the completed holes and acquire brine-water samples. The drill holes will then be backfilled.

5 HERITAGE RESOURCES IDENTIFIED

The bedrock of the area comprises sedimentary rocks of the lowermost formations of the Karoo Supergroup, *viz*. the basal **Dwyka Group** glacial tillites (Figure 3, C-Pd). The Dwyka tillites were deposited when southern Africa, then part of the Gondwana supercontinent, was in the vicinity of the South Pole about 300 Ma (Ma = million years ago) and covered with glaciers and ice sheets. The Dwyka sediments represent the melt-out content from the ice, when ice sheets melted back to the highlands, depositing massive tillites in the ice-scoured valleys which were then succeeded by marine muds, with melt-out dropstones from floating icebergs (the "boulder shales"). These valley and inlet deposits, named the **Mbizane Formation** (Visser *et al*., 1990), are therefore very variable, comprising tillites, conglomerates, sandstones and mudrocks which were left behind on the ice-scoured landscape by the retreating glaciers.

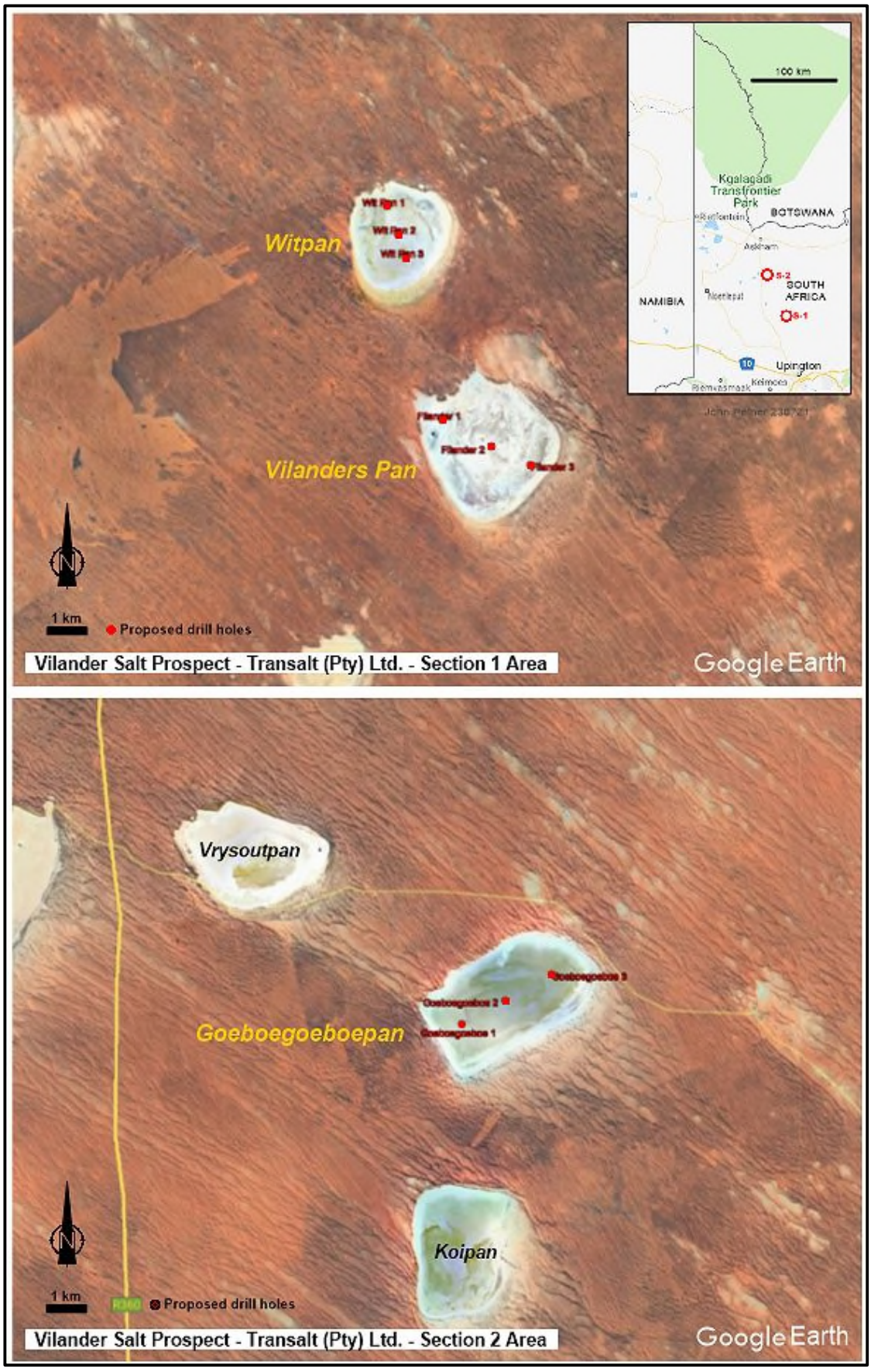

Figure 1. Locations of the Application Areas and proposed drill holes for brine sampling.

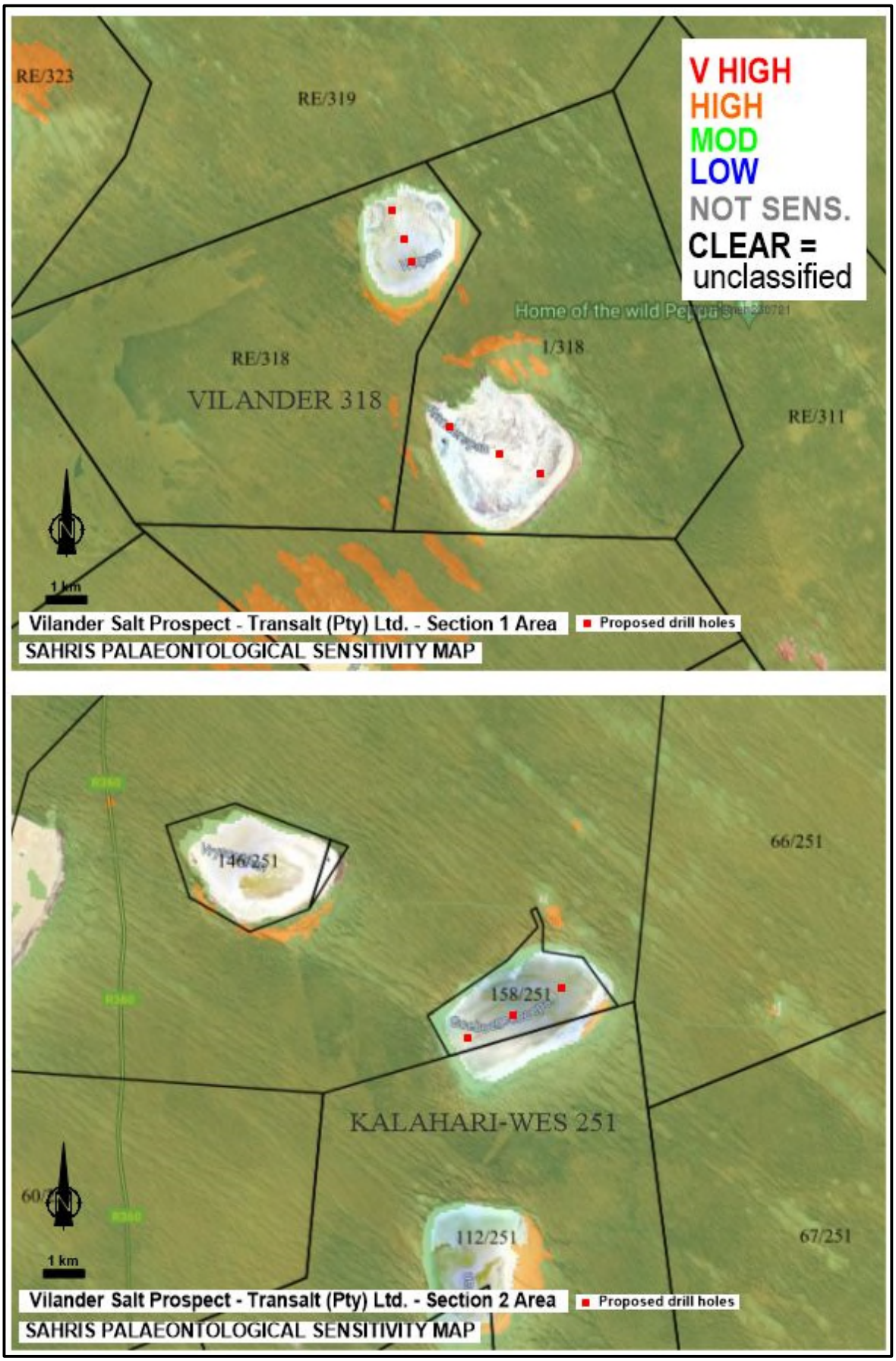

Figure 2. Palaeontological sensitivities of the Application Areas.

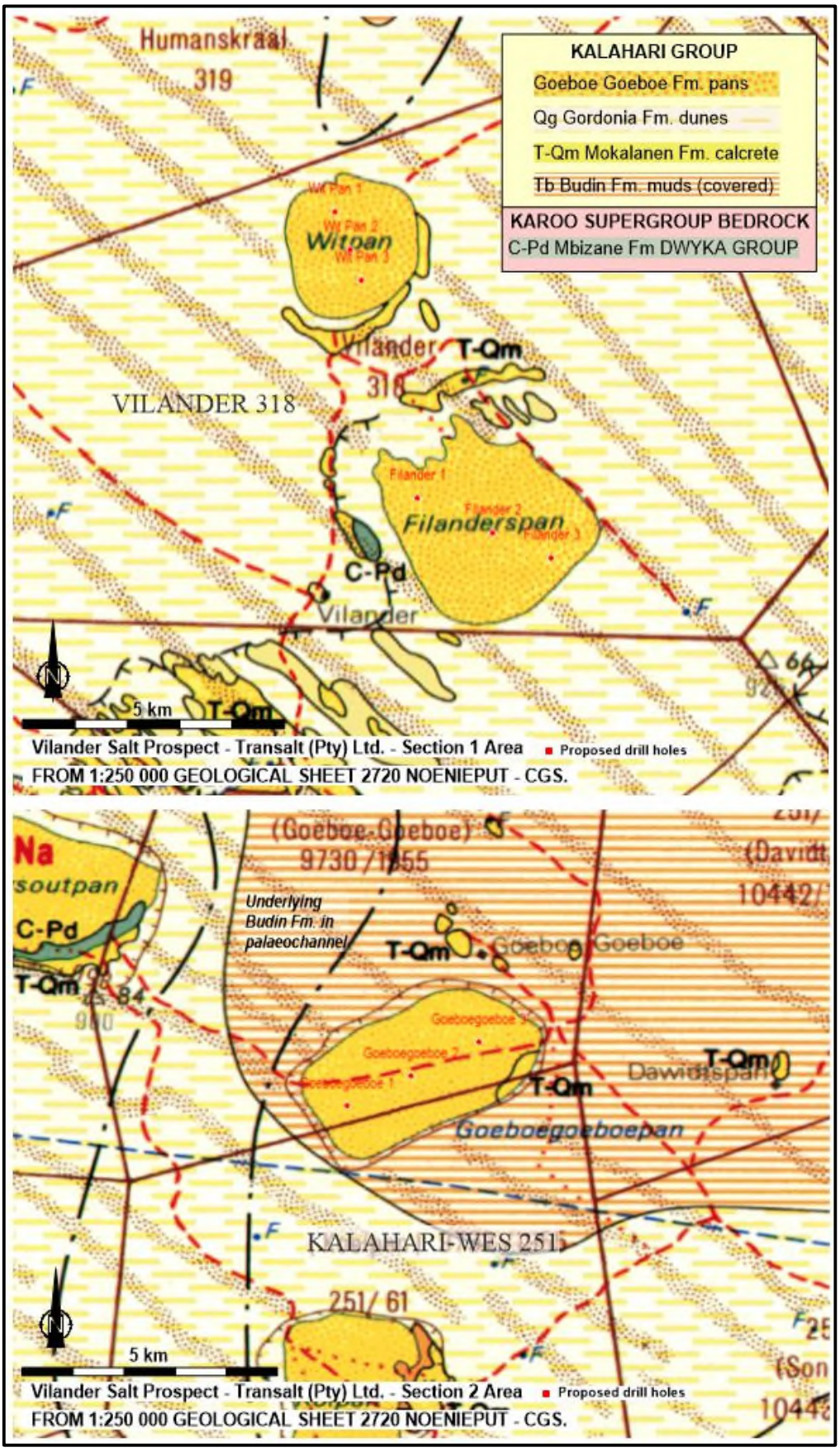

Figure 3. Geology of the Prospecting Right Application Areas.

Much later, subsequent to the breakup of Gondwana 140-130 Ma, most of the Karoo Supergroup was eroded away and by the late Cretaceous (80-70 Ma) a wide, shallow basin had formed in the interior of the subcontinent by crustal warping. This Kalahari Basin accommodates the **Kalahari Group** sedimentary basin infill deposited mainly during the Cenozoic Era (Partridge *et al*, 2006). The Kalahari Basin has a buried topography of palaeovalleys in which the thickest deposits occur. Basal fluvial gravels of the Wessels Formation are succeeded by red and brown calcareous muds of the Budin Formation, the latter being mainly lake sediments extensively deposited in the palaeovalleys (Figure 3, Tb). The lacustrine muds pass upwards into alluvial sandstones and gravels of the Eden Formation which, not being mapped, lacks outcrops in this area. The sequence is capped by a regional calcrete named the **Mokalanen Formation** (Figure 3, T-Qm), considered to reflect aridification since the late Pliocene. The typical reddened aeolian sands of the Kalahari linear dune ridges, the **Gordonia Formation**, overlie the calcrete and dominate the landscape. Pans are numerous and are related to local groundwater surfacing in the flat, poorly drained landscape, concomitant salt accumulation and wind erosion. The pan deposits of mud, fine-grained sand and evaporitic salt layers have been named the **Goeboe Goeboe Formation** (Malherbe, 1984) (Figure 3).

6 ANTICIPATED IMPACTS ON PALAEONTOLOGICAL HERITAGE RESOURCES

The pans are underlain by the bedrock of the Mbizane Formation (Figure 3). The overall palaeontological sensitivity of this Dwyka formation is rated “moderate” (Figure 2). The fossils in these Karoo formations include trace fossils, plant material (typically the *Glossopteris* Flora), a low diversity of invertebrates (molluscs, brachiopods) and fish remains (Almond & Pether, 2009).

The pans are rimmed by the Mokalanen Fm. calcrete, as indicated by the surrounding outcrops (Figure 3, T-Qm). The overall palaeontological sensitivity of the Mokalanen Fm. is indicated as “high” (Figure 2). The calcrete is likely to have been superimposed on the surficial regolith and possibly alluvium broadly equivalent to the Eden Fm., and may also involve the Karoo bedrock. The calcrete generally includes fossil roots and trace fossils such as termitaria. The thick calcretes conceal amalgamated palaeosurfaces on which fossil bones and land snails occur and may also include lithified, “fossil” pan deposits. The current pan deposits (Goeboe Goeboe Fm.) are mapped as of uncertain palaeontological sensitivity (Figure 2, clear). However, the pans are quite ancient features and have been fresher water bodies in the past, as is evident by pan carbonates, diatomaceous layers and aquatic molluscs. Unsurprisingly, excavations in pans have also uncovered fossil bones and Stone Age artefacts (*e.g*. Kiberd, 2001).

The 9 drill holes will penetrate a small volume of pan deposits and the underlying Karoo bedrock. The “point” nature of the drill holes renders the likelihood of intersecting fossil bones in the pan deposits improbable. The Karoo bedrock beneath the pans is expected to be weathered and friable and is unlikely to yield well-preserved fossils.

7 RECOMMENDATIONS

In view of the very small footprint of the proposed 9 auger drill holes the anticipated palaeontological impact of the brine sampling is considered to be LOW to MARGINAL and no additional palaeontological interventions are required.

Notwithstanding, although improbable, a chance occurrence of fossil material cannot be entirely dismissed. It is recommended that the drill holes be regarded as an exploration opportunity for the nature of the pan deposits and be observed for the possible occurrence of Stone Age artefacts and bone and teeth fragments. Should such material be encountered in the drill spoil then SAHRA and/or the McGregor Museum must be informed and supplied with contextual information, such as images of the find and its context in the bore hole log, for assessment and decision on a suitable

response.

8 REFERENCES

Almond, J.E. & Pether, J. 2009. Palaeontological Heritage of the Northern Cape. SAHRA Palaeotechnical Report, Natura Viva cc., Cape Town.

Kiberd, P. 2001. Bundu Farm. A Middle and Later Stone Age Pan Site, Northern Cape, South Africa. Preliminary results of fieldwork 1998-2000. Nyame Akuma 55: 51-55.

Malherbe, S.J. 1984. The Geology of the Kalahari Gemsbok National Park. Supplement to Koedoe: 33-34.

Partridge, T.C., Botha, G.A. & Haddon, I.G. 2006. Cenozoic deposits of the Interior. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) The Geology of South Africa, pp. 585-604. Geological Society of South Africa, Marshalltown.

Visser, J.N.J., Von Brunn, V. & Johnson, M.R. 1990. Dwyka Group. Catalogue of South African Lithostratigraphic Units 2: 15-17. Council for Geoscience, Pretoria.

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9 APPENDIX 1. PALAEONTOLOGICAL SENSITIVITY RATING

Palaeontological Sensitivity refers to the likelihood of finding significant fossils within a geologic unit.

VERY HIGH: Formations/sites known or likely to include vertebrate fossils pertinent to human ancestry and palaeoenvironments and which are of international significance.

HIGH: Assigned to geological formations known to contain palaeontological resources that include rare, well-preserved fossil materials important to on-going palaeoclimatic, palaeobiological and/or evolutionary studies. Fossils of land-dwelling vertebrates are typically considered significant. Such formations have the potential to produce, or have produced, vertebrate remains that are the particular research focus of palaeontologists and can represent important educational resources as well.

MODERATE: Formations known to contain palaeontological localities and that have yielded fossils that are common elsewhere, and/or that are stratigraphically long-ranging, would be assigned a moderate rating. This evaluation can also be applied to strata that have an unproven, but strong potential to yield fossil remains based on its stratigraphy and/or geomorphologic setting.

LOW: Formations that are relatively recent or that represent a high-energy subaerial depositional environment where fossils are unlikely to be preserved, or are judged unlikely to produce unique fossil remains. A low abundance of invertebrate fossil remains can occur, but the palaeontological sensitivity would remain low due to their being relatively common and their lack of potential to serve as significant scientific resources. However, when fossils are found in these formations, they are often very significant additions to our geologic understanding of the area. Other examples include decalcified marine deposits that preserve casts of shells and marine trace fossils, and fossil soils with terrestrial trace fossils and plant remains (burrows and root fossils)

MARGINAL: Formations that are composed either of volcaniclastic or metasedimentary rocks, but that nevertheless have a limited probability for producing fossils from certain contexts at localized outcrops. Volcaniclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by the heat and pressure of deep burial are called metasedimentary. If the meta sedimentary rocks had fossils within them, they may have survived the metamorphism and still be identifiable. However, since the probability of this occurring is limited, these formations are considered marginally sensitive.

NO POTENTIAL: Assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, and therefore do not have any potential for producing fossil remains. These formations have no palaeontological resource potential.

Adapted from Society of Vertebrate Paleontology. 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources - Standard Guidelines. News Bulletin, Vol. 163, p. 22-27.

10 APPENDIX 2. DECLARATION OF INDEPENDENCE

BASIC PALAEONTOLOGICAL ASSESSMENT

Letter of Recommendation for Exemption from further Palaeontological Studies

VILANDER PANS SALT PROSPECT

Farm Vilander 1/318 & RE/318 and Farm Kalahari-Wes 112/251 & 158/251

Dawid Kruiper Municipality, Gordonia District, Northern Cape

FILE REFERENCE NUMBER SAMRAD: NC30/5/1/1/2/___PR

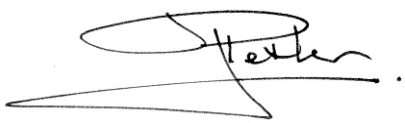
Terms of Reference

This assessment forms part of the Heritage Assessment and it assesses the overall palaeontological (fossil) sensitivities of formations underlying the Project Area.

Declaration

I …**John Pether**……, as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in the compilation of the above report;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- have and will not have any vested interest in the proposed activity proceeding;
- have disclosed to the EAP any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management act;
- have provided the EAP with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 48 of the 2014 NEMA EIA Regulations.



Signature of the specialist

Date: 21 JULY 2023

11 APPENDIX 3. CURRICULUM VITAE

John Pether, M.Sc., Pr. Sci. Nat. (Earth Sci.)

Independent Consultant/Researcher recognized as an authority with 38 years' experience in the field of coastal-plain and continental-shelf palaeoenvironments, fossils and stratigraphy, mainly involving the West Coast/Shelf of southern Africa. Has been previously employed in academia (South African Museum) and industry (Trans Hex, De Beers Marine). At present an important involvement is in Palaeontological Impact Assessments (PIAs) and mitigation projects in terms of the National Heritage Resources Act 25 (1999) (~300 PIA reports to date) and is an accredited member of the Association of Professional Heritage Practitioners (APHP). Continues to be involved as consultant to offshore and onshore marine diamond exploration ventures. Expertise includes:

- Coastal plain and shelf stratigraphy (interpretation of open-pit exposures, on/offshore cores and exploration drilling).
- Sedimentology and palaeoenvironmental interpretation of shallow marine, aeolian and other terrestrial surficial deposits.
- Marine macrofossil taxonomy (molluscs, barnacles, brachiopods) and biostratigraphy.
- Marine macrofossil taphonomy.
- Sedimentological and palaeontological field techniques in open-cast mines (including finding and excavation of vertebrate fossils (bones).

Membership of Professional Bodies

- South African Council of Natural Scientific Professions. Earth Science. Reg. No. 400094/95.
- Geological Society of South Africa.
- Palaeontological Society of Southern Africa.
- Southern African Society for Quaternary Research.
- Association of Professional Heritage Practitioners (APHP), Western Cape. Accredited Member No. 48.

Past Clients Palaeontological Assessments

AECOM SA (Pty) Ltd.	Guillaume Nel Environmental Management Consultants.
Agency for Cultural Resource Management (ACRM).	Klomp Group.
AMATHEMBA Environmental.	Megan Anderson, Landscape Architect.
Anél Blignaut Environmental Consultants.	Ninham Shand (Pty) Ltd.
Arcus Gibb (Pty) Ltd.	PD Naidoo & Associates (Pty) Ltd.
ASHA Consulting (Pty) Ltd.	Perception Environmental Planning.
Aurecon SA (Pty) Ltd.	PHS Consulting.
BKS (Pty) Ltd. Engineering and Management.	Resource Management Services.
Bridgette O'Donoghue Heritage Consultant.	Robin Ellis, Heritage Impact Assessor.
Cape Archaeology, Dr Mary Patrick.	Savannah Environmental (Pty) Ltd.
Cape EAPrac (Cape Environmental Assessment Practitioners).	Sharples Environmental Services cc
CCA Environmental (Pty) Ltd.	Site Plan Consulting (Pty) Ltd.
Centre for Heritage & Archaeological Resource Management (CHARM).	SRK Consulting (South Africa) (Pty) Ltd.
Chand Environmental Consultants.	Strategic Environmental Focus (Pty) Ltd.
CK Rumboll & Partners.	UCT Archaeology Contracts Office (ACO).
CNdV Africa	UCT Environmental Evaluation Unit
CSIR - Environmental Management Services.	Urban Dynamics.
Digby Wells & Associates (Pty) Ltd.	Van Zyl Environmental Consultants
Enviro Logic	Western Cape Environmental Consultants (Pty) Ltd, t/a ENVIRO DINAMIK.
Environmental Resources Management SA (ERM).	Wethu Investment Group Ltd.
Greenmined Environmental	Withers Environmental Consultants.

Stratigraphic consulting including palaeontology

Afri-Can Marine Minerals Corp	Council for Geoscience
De Beers Marine (SA) Pty Ltd.	De Beers Namaqualand Mines.
Geological Survey Namibia	IZIKO South African Museum.
Namakwa Sands (Pty) Ltd	NAMDEB