mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH A

ENVIRONMENTAL IMPACT ASSESSMENT REPORT and ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

GROOTWITPAN SALT

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:	**Industrial Salt (Pty) Ltd**
TEL NO:	**011 864 4900 ext 221**
FAX NO:	**011 864 5493**
POSTAL ADDRESS:	**7 Clarke Street South, Alrode 1451**
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FILE REFERENCE NUMBER SAMRAD:	**NCS30/5/1/2/3/2/1(219)MR**

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List of Abbreviations:

AIA	Archaeological Impact Assessment
BSP	Biodiversity Spatial Plan
CBA	Critical Biodiversity Area
DMR	Department Mineral Resources
DSR	Draft Scoping Report
EAP	Environmental Assessment Practitioner
EMP	Environmental Management Programme
FEPA	Freshwater Ecosystem Priority Areas
GN	Government Notice
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
MWP	Mining Work Programme
NFEPA	National Freshwater Ecosystem Priority Areas

ngl	natural ground level
NID	Notification of Intent to Develop
PIA	Palaeontological Impact Assessment
POD	Public Open Day
SAHRA	South African Heritage Resource Agency
SAHRIS	South African Heritage Resource Internet System
SDF	Spatial Development Framework
SES	Sharples Environmental Services
SLP	Social and Labour Plan
SPC	Site Plan Consulting

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 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process—

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

(b) Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;

(c) Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;

(d) Determine the—-

(i) Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and

(ii) Degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources, and

(cc) can be avoided, managed or mitigated;

(e) Identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) Identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;

(g) Identify suitable measures to manage, avoid or mitigate identified impacts; and

(h) Identify residual risks that need to be managed and monitored.

PART A: SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1 Contact Person and correspondence address

1.1 Details of the EAP

Name of the Practitioner: Craig Donald – Site Plan Consulting
Tel No: 021 854 4260
E-mail address: craig@siteplan.co.za

1.2 Expertise of the EAP.

(1) The qualifications of the EAP (with evidence).
(2) Summary of the EAP's past experience. (In carrying out the Environmental Impact Assessment Procedure)

Refer CV attached as Appendix 1.

2 Description of the property

At present, salt mining takes place in terms of two adjacent Mining Rights held by related yet different judicial entities. The aim of this application is to consolidate those Mining Rights and expand the Mining Right area in the NW into existing prospecting rights.

The application is being made by Industrial Salts (Pty) Ltd. The amendment of an existing application consists of the elements as described in Figure 2 below:

- Abandonment of the Mining Right held by Gordonia Salts (Pty) Ltd and incorporation of that Right into the northern Industrial Salt (Pty) Ltd Mining Right Area
- Expansion of the Mining Right area to the NW to incorporate additional pan area on Portion 18 and Portion 20 of Groot Witpan 327, (parts of which are held under Prospecting Right by another related entity (viz Transalt (Pty) Ltd))

There are 4 land parcels involved:

Farm	Deed Number	Owner	Area (in MR)	21 Digit Code
Portion 13 of Groot Witpan No 327	T1093/1968	Industrial Salt (Pty) Ltd	31.0297ha	C02800000000032700013
Portion 10 of Groot Witpan No 327	T370/1966	Gordonia Salt (Pty) Ltd	180.8103ha	C02800000000032700010
Portion 20 of Groot Witpan No 327	T1791/2008	Industrial Salt (Pty) Ltd	219.0994ha	C02800000000032700020
Portion 18 of Groot Witpan No 327	T683/1984	Industrial Salt (Pty) Ltd	41.1964ha	C02800000000032700018
Total Combined Application Area			**472.1358ha**	

Magisterial district:	**Gordonia**
Distance / direction from nearest town	**The closest town of any size is Upington located 100km SE as the crow flies. Refer Figure 1 for location of other small settlements around the site**

3 Locality plan

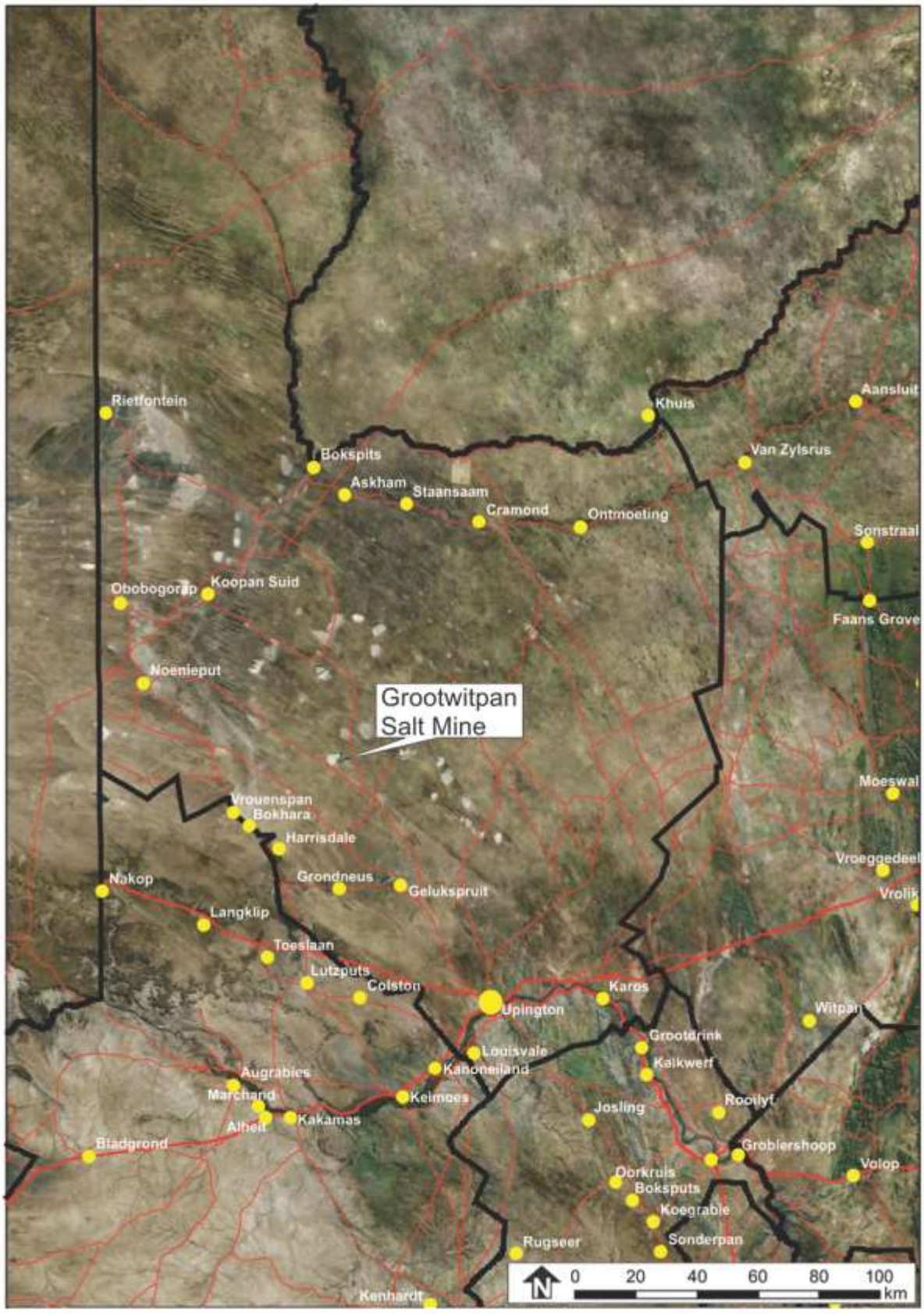


Figure 1: Locality Plan

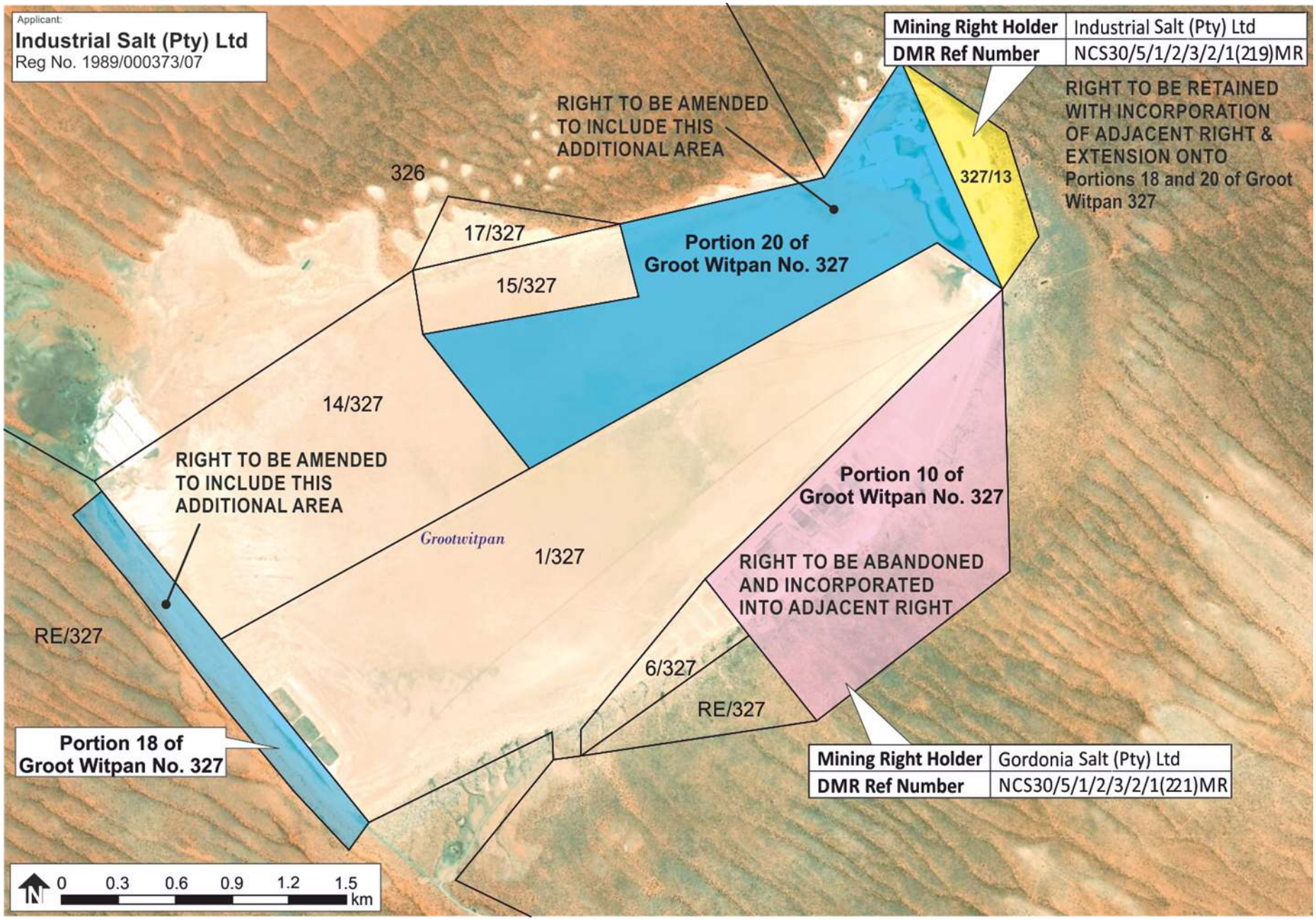
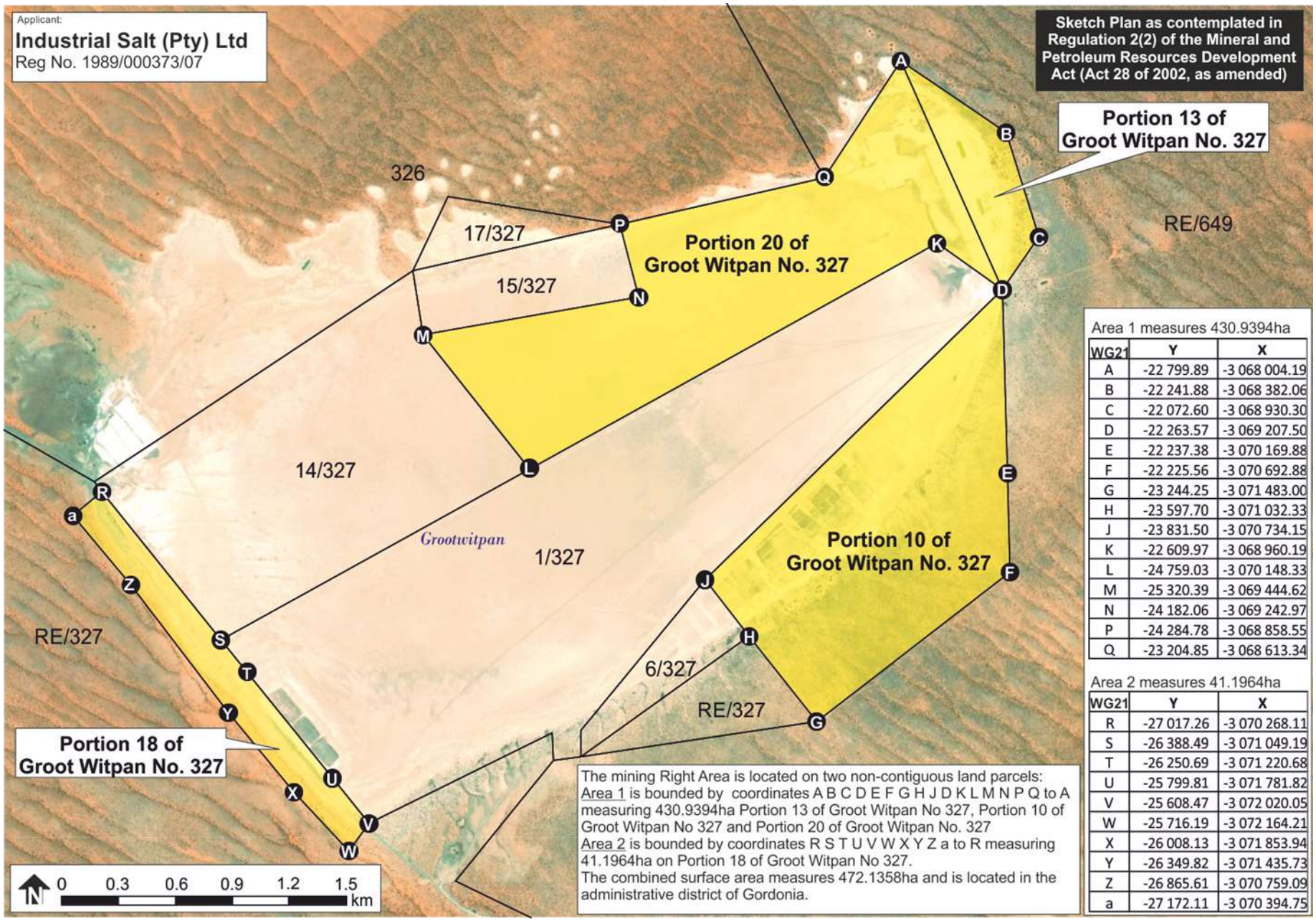


Figure 2: Application components



Area 1 measures 430.9394ha

WG21	Y	X
A	-22 799.89	-3 068 004.19
B	-22 241.88	-3 068 382.06
C	-22 072.60	-3 068 930.30
D	-22 263.57	-3 069 207.50
E	-22 237.38	-3 070 169.88
F	-22 225.56	-3 070 692.88
G	-23 244.25	-3 071 483.00
H	-23 597.70	-3 071 032.33
J	-23 831.50	-3 070 734.15
K	-22 609.97	-3 068 960.19
L	-24 759.03	-3 070 148.33
M	-25 320.39	-3 069 444.62
N	-24 182.06	-3 069 242.97
P	-24 284.78	-3 068 858.55
Q	-23 204.85	-3 068 613.34

Area 2 measures 41.1964ha

WG21	Y	X
R	-27 017.26	-3 070 268.11
S	-26 388.49	-3 071 049.19
T	-26 250.69	-3 071 220.68
U	-25 799.81	-3 071 781.82
V	-25 608.47	-3 072 020.05
W	-25 716.19	-3 072 164.21
X	-26 008.13	-3 071 853.94
Y	-26 349.82	-3 071 435.73
Z	-26 865.61	-3 070 759.09
a	-27 172.11	-3 070 394.75

Figure 3: Regulation 2 (2) drawing

4 Description of the scope of the proposed overall activity.

4.1 Geology

Salt mining has taken place on this site for at least the last 30 years. Salt pans result from a combination of circumstances: The availability of susceptible surfaces, disturbance of communition surfaces (by animals and weathering), lack of integrated fluvial systems and power of deflational processes.

It is very difficult to predict the lifespan of a mine such as this given that brine is replenished after every rain or river flow (or other unknown events related to permeability and saturation variations, etc).

The pan has good quality salt (95-99% NaCl). If there are impurities in the salt then the salt is washed and left to dry before bagging.

At this site, the average production rate of salt over the last 5 years is ±65 000tons per annum but is likely to increase with the planned later addition of supplemental brine from the Gemsbok Horn pan (dependent on future application success). We can report that the applicant is still awaiting the Prospecting Right granting at Gemsbok Horn despite the EA approval several years ago.

4.2 Reserves & Lifespan

As stated above, the lifespan of such a salt deposit is impossible to determine. The salt is replenished through rain episodes. There is however little doubt that the mine will continue producing salt for the next 30 years based on historical experience by the holders.

The holders are currently exploring options to increase production through pumping of brine from other nearby pans to this operation, but such future plans will be subject to all necessary legislative processes.

4.3 Mining Method and Site Layout Plan

Refer Figures 4 & 5 and photos below but note that at present most activities are centred around the northern portion of the operation as contained in Figure 4. Brine is collected through pumping (from pumps mostly located on Portion 20) into holding ponds (as indicated in Figures 4 and 5). The inclusion of Portion 18 into this application is specifically for the possible location of additional pump/s. No evaporation ponds or other infrastructure will be developed on Portion 18.

The brine from the holding / concentration pond is pumped into evaporation ponds. The water evaporates and the salt crystals start to form on the surface. As soon as the layer of salt crystals is thick enough, the salt crystals are harvested scraper and front-end loader.

The water for the brine is constantly replenished from run-off water. There is no discernible dilution of the brine and it is estimated that the salt could be harvested for an indefinite time.

The harvested salt requires sorting. All clumps of salt are removed or crushed and recycled. The finer salt crystals are washed in a rotating washer and crushed between rollers to remove some of the water. The sludge is pumped through a cyclone to remove excess moisture. The washed salt is left to dry and either bagged and loaded or loaded en masse onto carrier trucks and transported to the plant at Klawer or direct to market. Note that all excess brine flows back into a holding pond.

There is a very low percentage of waste salt which is stockpiled on site but used whenever possible as low grade salt sales or recycled through plant to improve purity.

The following equipment use diesel on site (excluding the washing, crushing and cyclone plant described and costed later):

- The 2 x 45kVA generator
- ±15 pump installations on the pan
- 2 x Front End Loader
- 1 x scraper / harvester
- 1 x JCB (excavator)
- 2 x Bell dumpers
- 1 x general purpose tractor

Note that the extent of logistical facilities and existing disturbances are defined in Figures 4 and 5 further below, as well as in Para 6.

Photo 1: Typical electrically driven pump installation on pan.

Photo 2: Main diesel tank left (23kl) and Generator house and 2kl diesel tank (photo right)

Photo 3: Looking south and west from Generator house showing overall view of operations

Photo 4: Looking north and west from Generator house showing overall view of operations

Photo 5: The southern cleared logistical facility area (also known as the Gordonia Salt section)

Photo 6: Photo shows a concentration pond in the background and an evaporation pond almost ready for harvesting in the foreground typically found at solar salt mines on pans in the area.

Photo 7: Overview of the washing / processing plant at the site.

Photo 8: The last stage in the processing is the final sorting through a cyclone with material fed to roving conveyor. The whole machine is on wheels which allows it to move back to generate an elongated clean salt stockpile with loading form the other end. The waste water from this process is fed to a holding dam /small evaporation pond as per photo 9 below.

Photo 9: The water removed by the cyclone is fed to this pond which evaporates to yield very fine salt in small quantities

Photo 10: The status of the access road. Maintenance and sand control measures are required

Photo 11: Workshop showing concrete working apron and drain leading to oil trap.

Photo 12: Typical Evaporation pond. Note the "dam" wall at less than 1.5m in height and the shallow nature of these evaporation ponds

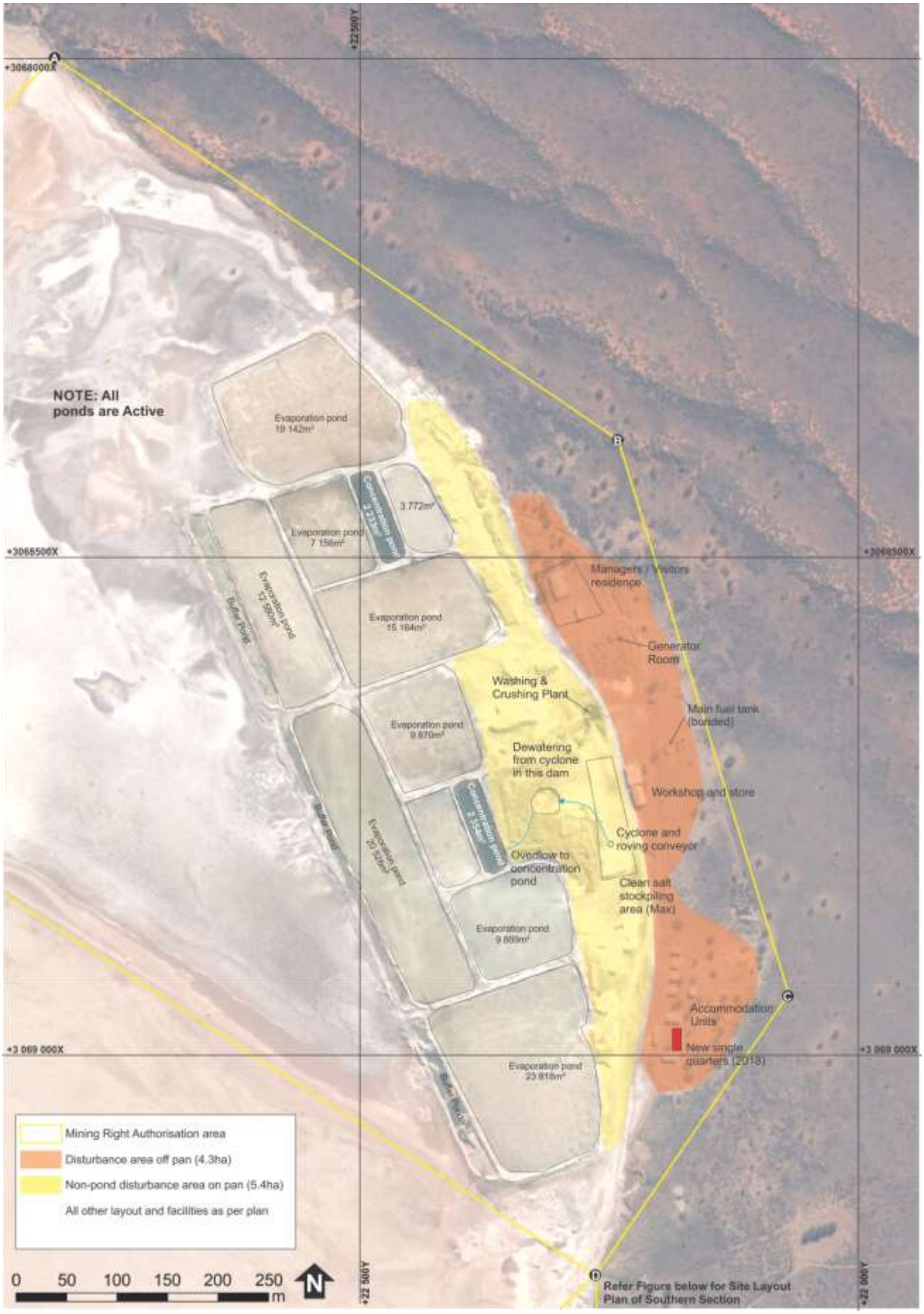


Figure 4: Existing Site Layout Plan for the Northern Section (previously called the Industrial Salt Section)

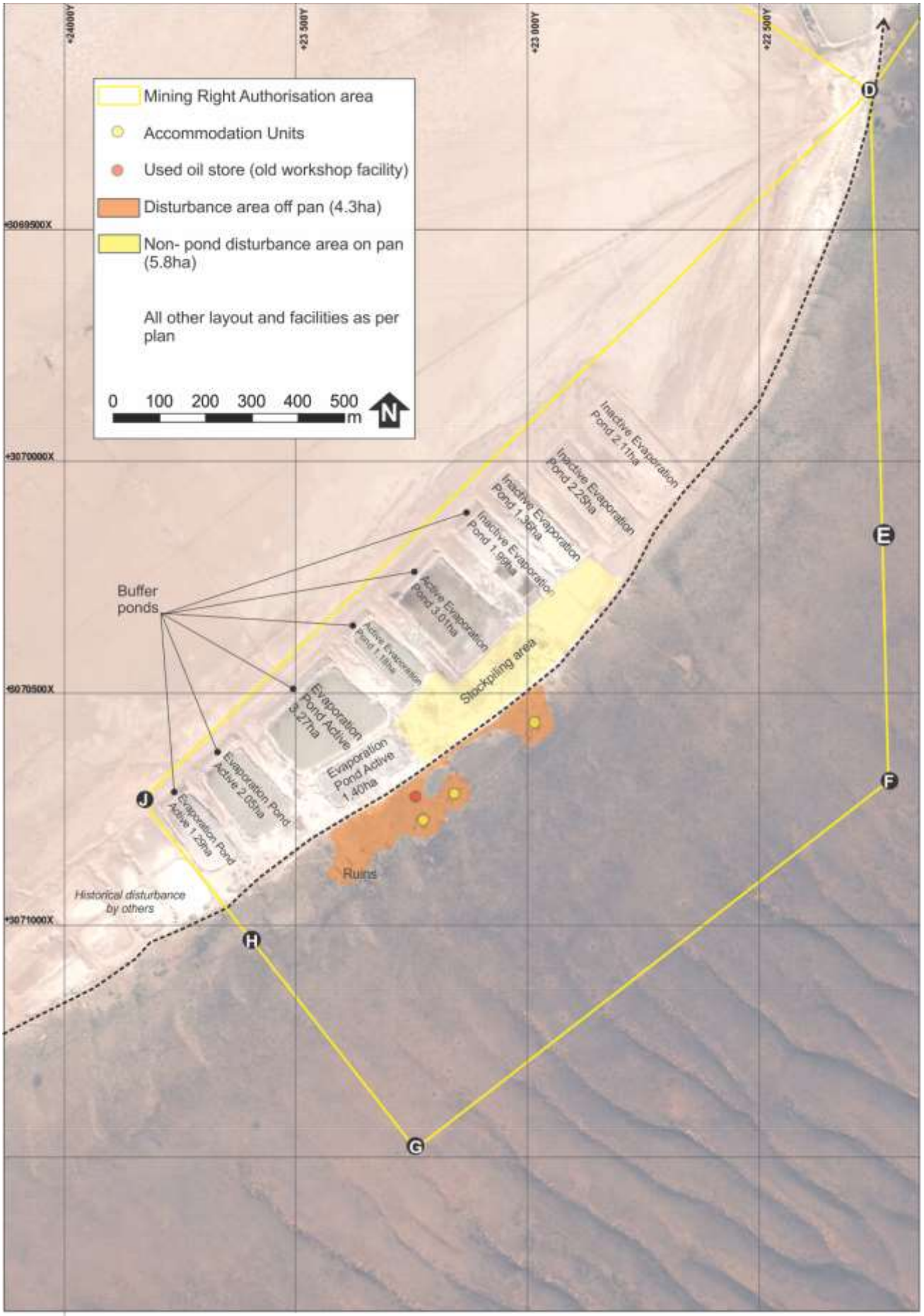


Figure 5: Existing Site Layout Plan for the Southern Section (previously called the Gordonia Salt Section)

5 Listed and specified activities

In order to fully determine the listed activities at any site, it is required that the following be determined:

1) **Critical Biodiversity area**
   The 2016 mapping published for the Northern Cape on SANBI's BGIS system show that the undisturbed pan areas are categorised as Ecological Support Areas, whilst the area surrounding the pan is located in "Other Natural Area". See Figure 8.

2) **Vegetation status**
   The ponds and on pan activities are located on an area defined as having vegetation type Southern Kalahari Salt Pans whilst the off pan activities are located on Gordonia Duneveld. None of these are listed in NEMBA as Critically Endangered, Endangered nor Vulnerable.

3) **Defined Sensitive Area**
   The NFEPA mapping could not be downloaded or viewed online. As a result, we have provisionally assumed for this purpose that the wetland is a defined Sensitive Area. This fact will be defined before the draft EIA/EMP is released.

4) **Zoning**
   It appears from an extrapolation of the zoning map on the Municipality's website that the site must be zoned as Agricultural. Note however that we could not find a specific zoning for this property.

5) **SDF:**
   The SDF states that it uses biodiversity as the guiding principle in the Spatial Planning Category definition. No map could be found that specifically covers the Mining Right area in the SDF but based on a perusal of the documentation, the site would either be classified as:
   - Agriculture (C.a.2)
   - Other Natural Areas (B.b.3)

The listed activities which are/were triggered as follows:

ACTIVITY	AERIAL EXTENT OF ACTIVITY	LISTED ACTIVITY	LISTING NOTICE (April 2017)	WASTE MANAGEMENT AUTHORISATION
Application for Amendment: Mining Right	472.1358ha	X	Listing 984: Activity 17[1]	
1. ESTABLISHMENT ACTIVITIES (Completed and approved in terms of 2 x existing approved EMPs)	It is important to note that this mine is already in place and no establishment phase is required.			

[1] In 2021 the amendment of Mining Rights through Section 102 application was catered for specifically in anew Listed activity being Listing Notice 1 Activity 21D.

ACTIVITY	AERIAL EXTENT OF ACTIVITY	LISTED ACTIVITY	LISTING NOTICE (April 2017)	WASTE MANAGEMENT AUTHORISATION
1.1. Clearing of logistical facility area **outside of pan** edge (Currently 2 areas i.e. at northern and southern ponds)	Total area = 8.6ha	X	Listing 983: Activity 27[2]	
1.2. Establishment of logistical facilities including residences, office, workshop, generator facility, etc				
1.3. Establishment of plant and stockpiling area **on pan**. (Currently 2 areas i.e. at northern and southern ponds)	Total Area = 11.8ha	X	Listing 983: Activity 27 **And** Listing 983: Activity 12 **OR** Listing 985: Activity 14 & 23 **And** Listing 983: Activity 19	
1.4. Establishment of bunded fuel tanks. There are 3 tanks (main tank behind workshop and smaller tanks at generator and crusher)	±30kl (see note in table below)	X	Listing 985: Activity 10	
1.5. Excavation of material from outside pan to construct pond walls - Done	Within 8.6ha cleared area described in Line item 1.1			
1.6. Development of dam walls for ponds on pan - Done	>10m³ & >100m²	X	Listing 983: Activity 12 **OR** Listing 985: Activity 14 & 23 **And** Listing 983: Activity 19	
2. OPERATIONAL PHASE ACTIVITIES (Currently occurring in terms of 2 x approved EMP)				
2.1. Borehole pumping water virtually continuously from middle of pan into concentration ponds (via on surface pipes)	3m² / pump area			Will require WULA
2.2. Brine is collected concentration ponds.	±5000m² at present	X	Listing 983: Activity 19	

[2] The 20ha requirement is triggered when combined with line items 1.3 and 2.2

ACTIVITY	AERIAL EXTENT OF ACTIVITY	LISTED ACTIVITY	LISTING NOTICE (April 2017)	WASTE MANAGEMENT AUTHORISATION
2.3. From these concentration ponds the brine is pumped into evaporation ponds. Evaporation ponds contain brine on the pan surface. Assume water to max 0.4m deep. This is unlikely to all occur at the same time but the capacity is available	33.0ha pond surface area… but total disturbance excluding plant & stockpiling area = 63.9ha for walls and areas between ponds 132 061m³ water capacity	X	Listing 983: Activity 27	Will require WULA
2.4. Evaporated salt scraped off surface by scraper				
2.5. Scraped salt loaded by front end loader to haul truck				
2.6. Salt hauled to on pan storage by truck				
2.7. Salt allowed to dry in logistical facility / stockpiling area				
2.8. Dried salt sent through sorting assembly. Excess brine sent to Concentration Pond.		X	Listing 984: Activity 17	
2.9. Sorted salt sent through cyclone for final moisture removal. Excess brine sent to Concentration Pond		X	Listing 984: Activity 17	
2.10. Waste Salt Handling	Within 11.8ha **on pan** stockpiling area			Not required.
2.11. Vehicles using unsurfaced roadways	Existing ±6m wide			
2.12. Use of diesel				
2.13. Use of small workshop	Building measures 55m² and includes office and store			
2.14. Potable water trucked in as required (minor volumes)				
2.15. Toilet to Septic Tank with overflow to French Drain				
3. DECOMMISSIONING PHASE ACTIVITIES			GNR983: Activity # 22. Only applies at time of closure	
3.1. Remove final evaporated salt				
3.2. Remove / flatten all evaporation pond side walls.				
3.3. Backfill buffer / concentration pond with existing stockpiled material	2 x 2300m²			
3.4. Remove all structures foundations and footings (unless required by landowner)				

ACTIVITY	AERIAL EXTENT OF ACTIVITY	LISTED ACTIVITY	LISTING NOTICE (April 2017)	WASTE MANAGEMENT AUTHORISATION
3.5. Rip surface of logistical facility and stockpiling area to 30 -45cm deep	8.6ha			
3.6. Allow to revegetate naturally	8.6ha			
4. AFTERCARE PERIOD				
4.1. Remove alien vegetation, if present				
4.2. Monitor revegetation success and continue				
4.3. Conduct final performance assessment				
4.4. Lodge closure Application	472.1358ha	X	GNR983: Activity # 22. Only applies at time of closure	
4.5. DMR Grant Closure Application				

Triggered Activity	Description	Notes
Listing 983: Activity 12	The development of— i. dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 m²; or ii. infrastructure or structures with a physical footprint of 100m² or more; where such development occurs— a) within a watercourse; b) in front of a development setback; or c) if no development setback exists, within 32m of a watercourse, measured from the edge of a watercourse; — excluding— cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies.	Note that the exclusion cc) "*excluding activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies*" may lead to Listing Notice 3 activity 14 being applicable depending on whether the considerations for the Northern Cape do apply or not. It is unknown whether the site is located in : a. National Protected Area Expansion Strategy Focus areas; b. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; Note further that Listing Notice 983: Activity 13 does not apply given that the salt pan is considered in-stream storage.
OR		
Listing 985: Activity 14 & 23	The development of— (i) dams or weirs, where the dam or weir, including Infrastructure and water surface area exceeds 10m²; or (ii) infrastructure or structures with a physical footprint of 10m² or more; where such development occurs— (a) within a watercourse	See Note above. Note Listing 985 Activity 23 refers to possible expansion of such dams in excess of 10m²
Listing 983: Activity 19	The infilling or depositing of any material of more than 10m³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m³ from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving— i. will occur behind a development setback; ii. is for maintenance purposes undertaken in accordance with a maintenance management plan; iii. falls within the ambit of activity 21 in this Notice, in which case that activity applies;	Note that Activity 21 described in exclusion iii refers only to an application for Mining Permit. This application entails a Mining Right and the activity has been considered triggered.

Triggered Activity	Description	Notes
Listing 983: Activity 22	The decommissioning of any activity requiring – i. a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or ii. a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure;	Only applies at time of decommissioning / closure.
Listing 983: Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— i. The undertaking of a linear activity; or ii. Maintenance purposes undertaken in accordance with a maintenance management plan.	
Listing 984: Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, …	This listed activity is being considered applicable despite the apparent lack of vegetation on the pan surface, because of the designation in the vegetation map compiled by Mucina and Rutherford (refer figure 1) as Southern Kalahari Salt Pans with associated vegetation description.
Listing 984: Activity 17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— a. associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or b. the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;	
Listing 985: Activity 4	The development of a road wider than 4m with a reserve less than 13,5m…. In the Northern Cape… Outside urban areas …. (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.	This has been included give the location of some of the roads on the pan surface
Listing 985: Activity 10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80m³: In the Northern Cape…. ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; iii) Outside Urban Areas: (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.	This has been included given that possibility that such activity will be triggered. At the moment the there is a 23kl tank and 2 x 2kl tanks, plus drums of oil and lubricants on the site which may, unlikely, take the combined capacity to over 30kl. Please be aware that we have been unable to download the FEPA Wetlands GIS data and assume that the pan is a sensitive FEPA.

6 Description of the activities to be undertaken

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

Refer Para 4 and 5 above.

7 Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED (i.e. Where in this document has it been explained how the development complies with and responds to the legislation and policy context)	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT (E.g. In terms of the National Water Act: - Water Use License has/has not been applied for).
National Environmental Management Act	Entire document including public participation	Environmental Authorization from DMR as competent authority
Mineral and Petroleum Resources Development Act	Template for BAR	DMR application and process
2016 Mapping of Northern Cape CBA's (from SANBI website)	Vegetation	DMR application and process
Municipality's SDF and IDP	Need and Desirability (Para 6.1)	End Use informant
National Water Act	Disturbance of water course	Water Use Licence applications required. WULA has been lodged.
National Heritage Resources Act	Para 27.1.2	Draft Scoping lodged to SAHRA.
EIA Guideline and Information Document Series' "Guideline on Need and Desirability	Need and Desirability (Para 6.1)	Guideline for information utilized in this document
EIA Guideline 5 Assessing alternatives and impacts	Cumulative Impact Assessment (Para 6.3)	Guideline for information utilized in this document
NEMWA	Not applicable	No application for Waste Licence required
Hazardous Substances Act, 1973 (Act 15 of 1973)	Para 32.5	The measures proposed take the Act into account.
Noise and dust regulations and recommendations	Para 32	The mitigation measures proposed take the requirements into account.
Land Use Planning Act, 2014 (Act No. 13 of 2014)	Not applicable until after EA has been (if) granted.	A land use application is required. Whichever form the application is required will be determined in consultation with the Municipality and is only lodged after the EA is (if) granted.
National Dust Control Regulations (Government Notice No. R. 827 of 1/11/2013)	Dust control	Dust control measures to be implemented and monitoring required

8 Need and desirability of the proposed activities.

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

8.1 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.

The need and desirability does not only focus on the actual mining phase of this site (30 year-long) lifespan but also fully considers the matter of post-mining land use. The rehabilitation of the site will entail the removal or flattening of the pond walls on the pan whilst off pan the rehabilitation will entail the removal of all logistical facilities, the ripping/scarifying of the affected surface and allowing for natural regrowth to occur so that the site can form part of the surrounding veld for grazing.

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

8.1.1 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	The site is divided into off pan and on pan activities. The off pan activities have resulted in the disturbance of some 8.6ha of Gordonia Duneveld Vegetation type (Mucina and Rutherford, 2012). This vegetation type is NOT classified as threatened (in terms of NEMBA). Furthermore this area is classified as Other Natural Area in the CBA mapping of the Northern Cape (2016). The on pan activities take place over an area of ±45ha (including pump locations) in Southern Kalahari Salt Pans vegetation type, despite the lack of vegetation on the salty pan surface. The 2016 CBA mapping for the Northern Cape classifies the pan as being an Ecological Support Area (by virtue of it being a pan). This EAP has been unable to establish the FEPA wetland rating of the pan but has for the purposes of this report assumed it to be a sensitive area. The surface activities at this site do not represent a permanent or significant impact. This can be assessed with a high degree of confidence given the current operational status of the operation. Also remember that there are approved EMPs' for the operation and this scoping report forms part of the amalgamation of those EMPs into one document.
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.	<u>*Gordonia Duneveld*</u>: Least threatened. Target 16%. Some 14% statutorily conserved in the Kgalagadi Transfrontier Park. Very little transformed. Generally low erosion, but some areas with spectacular destabilisation of normally vegetated dunes (through local overstocking) favoured by photographers. Erosion is normally very low. <u>*Southern Kalahari Salt Pans*</u>: Least threatened. Target 24%. About 8% statutorily conserved in the Kgalagadi Transfrontier Park. The vegetation of the pans is subject to natural degradation/ regeneration cycles controlled by concentration of grazing animals (antelopes in particular).
1.1.5.	Ecological drivers of the ecosystem.	The main ecological drivers are located along the fringes of the pan (interface between the hinterland and pan surface). In this case, no further disturbance of that interface will take place. The pan does rarely flood due to rainfall.
1.1.6.	Environmental Management Framework	No EMF was located.

1.1.7.	Spatial Development Framework, and	Remember that this operation and its approved EMP preceded the publication of the SDF. The SDF states that it uses biodiversity as the guiding principle in the Spatial Planning Category definition. No map could be found that specifically covers the Mining Right area in the SDF but based on a perusal of the documentation, the site would either be classified as: Agriculture (C.a.2) Other Natural Areas (B.b.3) In respect of the Agricultural SPC, the following is quoted from the SDF: *Urban development on any non-urban SPC should be excluded where such a development is outside of the urban edge, whereas the following SPCs are seen as complementary to Agriculture (with all other legislative processes being complete and in place) and the rezoning to being any of the following, can be considered under specific conditions and approvals:* *…..) E.e.1 Extractive industry* In respect of other Natural Area, the following is quoted for the SDF: *If a development is considered across an area that is covered with this category, the relevant environmental department should be contacted for inputs and to indicate whether they will require any environmental assessment. Developments should be encouraged to stay clear from these areas or at least consider it in their site layouts.* The point is that any development proposed within these areas must undergo all legislated processes and include input from all relevant parties before decision is made.
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	This development has no doubt resulted in some disturbance of ecosystem but that impact is clearly insignificant. The approved EMPs and this combined document have and will continue to aim to reduce or eliminate any negative impact which occurs from this site.

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 the EIA/EMP.
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 are very low at this site. The waste streams will be: Waste from personnel amenities Domestic Waste Industrial Waste (including Hydrocarbon Waste) All waste is and will continue to be disposed off site as prescribed in this document.
1.5.	How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The draft Scoping Report was submitted to SAHRA (on the SAHRIS system) and any heritage studies required will be conducted. Note that no further disturbance is expected.
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 salt which is a renewable resource. In terms of equitable use of the resource, the applicant has 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?	The salt which is being mined at this site is in fact a renewable resource. The other renewable resource is groundwater. The use of such water is currently part of a WUL Application with DWS in Upington. Such WUL application is being conducted by Ms D Fordham of Sharples Environmental Services. The WUL application process will determine the nature of the impact on groundwater regime in the area. The brine water pumped from the pan is extremely brackish in any event and cannot be used for human or animal consumption (and is unlikely to sustain crops if there were any in the area).
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)	This mining operation does not lower the dependency on use of resources to maintain economic growth.
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?)	The use of brine and the harvesting of salt represent a renewable function and this operation could in theory continue in perpetuity. The proposed final rehabilitation of the site results in no permanent or residual impact for future generations.
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	Impacts of mining have been subject to earlier approved EMPs. The operation is now again subject to full public participation in the amendment of the EMP so that the EMP can serve a single operation as opposed to the separate operations which is now the case.
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?	By applying the 30 year experience of the EAP in salt mining operations, it is considered that knowledge gaps are small enough to reduce risk to acceptably low levels.

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?	Impacts of mining have been subject to earlier approved EMPs. The operation is now again subject to full public participation in the amendment of the EMP so that the EMP can serve a single operation as opposed to the separate operations which is currently the case. Note that to date, the Scoping process has not yielded any requirement for additional specialist studies, although it is with a high degree of confidence that SAHRA will require heritage impact assessment conducted by specialist.
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 negative impacts have been identified in part 14 of this document. Measures taken to avoid impacts are contained in Part 32 Proposed measures taken to minimise, manage and remedy negative impacts are contained in para 34.
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?	Not applicable.
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 proposed rehabilitation methodology will result in a post mining land use which is very similar / same as current land use/ state of the surrounding land. Whilst mining is underway the impacts in socio – economic sense will be in respect of landowner, compensation, mine owner compensation, limited employment opportunities, positive impact on down the line industries and suppliers, local / regional / national availability of salt
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 most likely that the impact of continued mining will be insignificant if all management measures are undertaken (assessed as part of the scoping phase).
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?	Any potential environmental impacts (vegetation (and others identified during scoping)) that are perceived to possibly be significantly impacted upon or about which insufficient information is available would be subjected to specialist study. At this stage no specialist study has been required (although it is expected that HIA will be required by SAHRA) It is unlikely that mining of any resource would result in the "best practicable environmental option" in terms of ecological considerations but it must be remembered that there are other considerations in respect of the socio-economic and built environment which also have a bearing.

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?	Cumulative impact has been provisionally described as insignificant on all aspects of the ecology (as described in para 8.2).

8.1.2 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
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,	Refer line item 1.1.7 in table in Para 8.1.1. The operation does provide employment opportunities (albeit limited) to residents in the region, as well as down the line indirect benefits to a range of suppliers, thereby meeting one of the socio-economic imperatives of the IDP, viz employment
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	Salt mining currently takes place at this site. The site is extremely isolated and the only other feasible off pan land use is low level grazing for small stock units.
2.1.4.	Municipal Economic Development Strategy ("LED Strategy").	The Municipality, along with many others suffers from low employment rates within which consideration the direct and indirect employment is important. Furthermore, the enforced Social and Labour Plan commitments in respect of community development also must not be discounted.
2.2.	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Refer Para 27.1
2.2.1.	Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	The Municipality, along with many others suffers from low employment rates within which consideration the direct and indirect employment is important. Furthermore, the enforced Social and Labour Plan commitments in respect of community development also must not be discounted.
2.3.	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities	The needs and interests of the community are provided for through direct (although limited) and indirect employment, local, regional and national provision of salt, impact of the Social and Labour Plan, lack of ecological impact of the operation Including lack of noise and dust impact on communities.
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?	Yes. The salt mine is to all intents and purposes a permanent operation given the renewable nature of the brine. As such, there is no impact on future generations
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 very isolated and the staff members all live in single quarters on site.

2.5.2.	reduce the need for transport of people and goods	It will not require commuting
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,	Not applicable
2.5.5.	be in line with the planning for the area,	The SDF, EMF and IDP all mention mining but only to preclude its location. They do not discuss where mining should take place except to state that when it is contemplated then the applications must follow Integrated Environmental Management 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	Yes. This is an extension of existing operation, not a new site which would potentially result in doubling of impacts
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 mining and although mining per se cannot usually encourage such sustainable land development practices and processes, this is not true of salt mining from brine. Furthermore it can be conducted in such a way as to minimise the impact on the environment
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.),	Not applicable. This is a Mining Right and geology dictates the location of such operations.
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),	It may be argued that grazing could provide socio-economic returns, but those pale into insignificance when compared with the mining's economic potential. In addition, the proposed mining does not preclude post mining future use of the site for grazing.
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	The draft Scoping Report has been submitted to SAHRA (on the SAHRIS system) and any heritage studies required will be conducted. Note that no further disturbances are expected.
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.
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 mining 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	No negative impacts have been identified in part 13 of this document given that the same current operators will continue their task under the mining right. In the monthly mine health and safety meetings this element is and will continue to be dealt with as a matter of course.
2.7.2.	Positive impacts. What measures were taken to enhance positive impacts?	Proposed measures taken to enhance positive impacts (socio-economics) are contained in para 27.1
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.)?	This assessment considers the mine from a holistic perspective to ensure that mining does not result in unacceptable ecological impact.
2.9.	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations	Not applicable.
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?	The company meets the requirement for BEE shareholding.
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?	The applicant is an existing compliant company and all legislation has been adhered to.
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 are subject to Health and Safety legislation (Mine Health and Safety Act 29 of 1996). Such prescriptions are not within the ambit of this document but are strictly monitored by DMR.
2.13.	What measures were taken to:	
2.13.1.	Ensure the participation of all interested and affected parties.	Refer Part 11 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 11 for full record of Public Participation
2.13.3.	Ensure participation by vulnerable and disadvantaged persons.	The application will be advertised in local newspaper and advertised on posters at the gate of the existing mine
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 11 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 11 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 11 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 are subject to Health and Safety legislation (Mine Health and Safety Act 29 of 1996). Such prescriptions are not within the ambit of this document but are strictly monitored by DMR.
2.16.	Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.16.1.	the number of temporary versus permanent jobs that will be created,	No new jobs are created will be created above those already employed at the site and in indirect positions
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),	Current employed is locally sourced and will remain so.
2.16.3.	the distance from where labourers will have to travel,	The site is very isolated and the staff members all live in single quarters on site.
2.16.4.	the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and	The mining itself has a very small impact on the job market but down the line employment also takes place. The impacts of the operation will be tested in the scoping phase but are unlikely to be significant based on current mining impacts which are known
2.16.5.	the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	The proposed mining operation will continue to provide employment for approximately 19 direct job positions.
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 11 for full record of Public Participation which includes 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 largely insignificant in all aspects of the environment. Specialist input may be sought to confirm this. The proposed project has and will continue to be 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. 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, the upcoming EMP will prescribe measures to be put in place to monitor and then mitigate / manage or avoid any known or unexpected impact. All Mining Right's holders are responsible to annually update a calculation to determine the costs of Immediate Closure of the site. Such calculation is based on DMR Guideline and the value of the fund must be provided to the DMR either in form of cash or by Bank Guarantee or other. 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. This will be considered if the specialist studies show that significant impact would result from the proposed development.
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?	Refer Para 8.2

8.2 Cumulative Impact Assessment

The assessment of cumulative impacts is not applicable in this case given the operational nature of the project. No new impacts are anticipated in future through continued mining at this site.

9 Motivation for the development footprint

Including a full description of the process followed to reach the proposed footprint.

This application is in reality a rationalization of existing rights with very little difference in existing disturbed footprint. As contained in Figure 2, it is the incorporation of an existing right in sister company's name into this Right, in order to reduce the administrative requirements for operating two mines. In addition, the Right is to be amended to include the earlier Prospecting Right on portions 18 and 20 of Groot Witpan.

The draft Scoping report was used as a basis for initial comment. That round of public participation provided input into the final Scoping Report and the draft EIA/EMP that is now circulated for comment.

The footprint contained in the draft and final scoping report was fundamentally the same as this draft EIA/EMP report and no material changes have occurred.

Note that if this proposed consolidation and extension is approved, that no logistical facilities will be duplicated at the southern ponds (i.e. the Gordonia site) but that a washing and crushing leg as well as cyclone may be established at the currently prepared area on the pan (where activities of this nature currently take place). In addition, no ponds or logistical facilities will be developed on Portion 18 with the plan being that a pump-station or 2 may be installed on that portion.

10 Details of all alternatives considered.

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

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

10.1 Property on which or location where it is proposed to undertake the activity;

The holder has extensive knowledge of the area and surrounds and given the context

described in Para 10 above, has lodged an application for Prospecting Right in respect of salt on adjacent pan (some 10k east) through sister company with the aim of pumping brine from that eventual operation (if approved) to the evaporation ponds on Grootwitpan. The Mining Right application has not yet been lodged as the company awaits the Right to prospect.

10.2 Type of activity to be undertaken;

Continued salt mining is the proposed activity. In terms of the mining company's business there can be no other alternative activity. It is important to note that the land parcel can be returned to its pre-mining "alternative".

10.3 Design or layout of the activity;

The mine plan as seen in Figures 4 and 5 and described in para 4 and 5 is based on the years of operation at the site.

10.4 Technology to be used in the activity;

Salt mining technology is very simple and has remained the same for decades. The use of scrapers, dumpers, front-end loaders will continue to move the salt to the washing, crushing and sorting plants.

10.5 Operational aspects of the activity;

The existing salt mining project has been in operation for several years and any alternative operational aspect would have been considered and implemented if it were a more suitable alternative.

10.6 Option of not implementing the activity.

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

The aspect of no go project also goes against the principle of optimization of resource as espoused in the MPRDA.

11 Details of the Public Participation Process Followed

Public participation has taken place and will continue to take place in the following manner and programme:

1) The **landowner** is the applicant. All required resolutions have been submitted with the application.
2) **Surrounding landowners**: These were sent copies of this Scoping report by registered mail or Email depending on their preference as determined by telephone call. Should they have requested a meeting, then such consultation would have taken place. Refer Figure 6 below for map of surrounding landowners' farms – Refer Appendix 3 for proof.
3) **State Departments**: Registered mail / email was sent to the following State departments and NGOs- Refer Appendix 3:

a. Department of Environment & Nature Conservation
b. Department of Water and Sanitation
c. Dept. of Agriculture Forestry and Fisheries
d. Municipality – Manager's Office and Environmental Section
e. Land Claims Commissioner.

Note that the Scoping report was sent to SAHRA on the SAHRIS system. SAHRA have responded that additional studies are required in the form of a Archaeological Impact Assessment and Palaeontological Assessment. However both these specialists have recommended an application for exemption given the lack of additional disturbance. Their reports are contained in Appendix 9. These have been submitted on SAHRIS.

4) **Broader public** were be notified in 3 ways – Refer Appendix 3 for proof:
   a. By way of newspaper advert in local newspaper
   b. By way of posters placed at project entrance. Posters measured 62 x 40cm as per NEMA regulations.
   c. Though notification of the local councilor.

   Please note that each of these notifications contained details as to:
   - How to contact the EAP
   - How to get to see a copy of the draft Scoping report with notice that 2 copies of the draft Scoping Report were available at the Upington Public Library or available per email or hard copy by post
   - If there was sufficient interest then a public open day will have been arranged.

5) Receipt of all comments in respect of the draft Scoping Report.
6) Compilation of final Scoping report with copies of all received comments.
7) Lodging to of final Scoping Report to DMR
8) Late comments will be entertained and submitted to the DMR

Future Public Participation will consist of:

1) Finalization of a draft EMP including:
   a. Specialist studies if required.
   b. Comments in respect of the draft scoping report
2) Distribution of draft EIA-EMP to registered I&AP's as well as all State Departments and NGOs listed above for 30 day commenting period - NOW
3) If comments received on draft EIA/EMP make material change to EMP, then redistribution of 2nd draft version of the EIA-EMP will take place
4) Lodging of Final EMP to DMR with all comments and changes made as required.

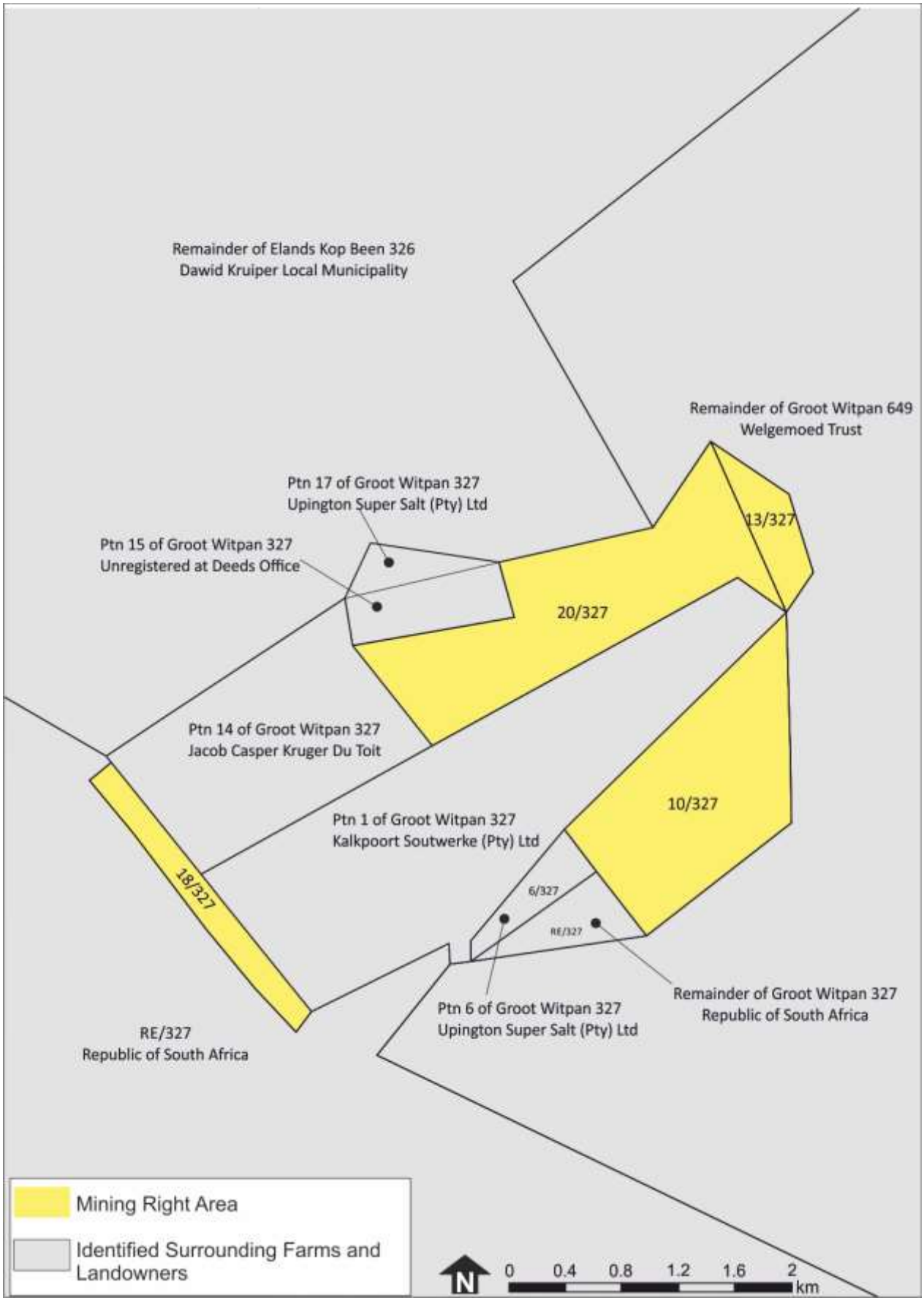


Figure 6: Surrounding Landownership

Interested and Affected Parties:	Draft Scoping		Draft EIA / EMP		Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
	Method	Date Comments Received	Method	Date Comments Received			
Landowner							
Industrial Salt (Pty) Ltd is the applicant		NA	NA		Landowner is applicant		
SURROUNDING LANDOWNERS							
Remainder of Elands Kop Been 326 Dawid Kruiper Municipality – Comment requested from MM – see below							
Remainder of Groot Witpan 649 MS Du Plessis Familie Trust					UNABLE to locate. Will continue trying.		
Portions 6 & 17 of Groot Witpan 327 Upington Super Salt (Pty) Ltd Tel: 054 337 5500 Care of Admin manager Ms Pearl van Wyk mining@blaauwsgroup.co.za	Email	22/7/2020	NA. No objection		Letter of no objection.		
Portion 14 of Groot Witpan 327 Jacob Casper Kruger du Toit PO Box 1228 Upington 8810 Tel: 083 688 5021 Jacob@kpsout.co.za	Email	None	Email	None	Note the draft EIA/EMP email bounced back. Address unknown.		
Portion 1 of Groot Witpan 327 Kalkpoort Soutwerke Harry van Zyl – 072 736 9870 harry@kpsout.co.za	Email	22/7/2020	Email		They requested the following: • Special[ist] Studies • Geohydrological Studies/Report • Proof of application for amended Water Usage Licence • The amount water usage which has been applied for	Note that the WULA is underway and has been lodged by other consultants – Refer para 12.1.8 for proof of lodgement. Refer also Appendix 7 for copy of Specialist Report Freshwater Ecology Report and Appendix 9 for Exemption applications in respect of Heritage studies.	

Interested and Affected Parties:	Draft Scoping		Draft EIA / EMP		Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
	Method	Date Comments Received	Method	Date Comments Received			
Remainder and Ptn 15 of Groot Witpan 327. Republic of South Africa Comment requested from DPW – see below	Email	None	Email				
Municipal Representatives							
Dawid Kruiper Municipal Manager: Civic Centre, Mutual St, Upington 8801 Name: E Ntoba Tel: 054 338 7001 Email: manager@kharahais.gov.za	Reg Mail & Email	None	Email				
Organs of state and NGO's (Responsible for infrastructure that may be affected Roads, Eskom, Telkom, DWS etc.)							
Department of Environment and Nature Conservation : Northern Cape Private Bag X6120, Kimberley, 8301 Tel 053 807 7300 Head of Department	Reg Mail	None	Email				
Department of Environment and Nature Conservation : Northern Cape Private Bag X16 Springbok 8240 Tel 027 718 8800 No head of Department at present. Emails sent to: H Hanekom & S B Maqolo Hannekehanekom@yahoo.com sbmaqolo@gmail.com	Reg mail and 2 email	None					
Department of Water and Sanitation: Mr Abe Abrahams: Chief Director: Northern Cape Private Bag X6101 Kimberley 8300 Tel: (053) 830 8800 Cell: 082 883 6741 AbrahamsA@dws.gov.za	Reg mail Email	None	Email				

Interested and Affected Parties:	Draft Scoping		Draft EIA / EMP		Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
	Method	Date Comments Received	Method	Date Comments Received			
DWS Northern Cape Region 28 Beaconsfield Road Kimberley 8301 Ms V Ramugondo ramugondov@dws.gov.za	Reg mail & email	None	Email				
Dept. of Agriculture Forestry and Fisheries(Springbok): 2 Hospital Street, Springbok, 8240 PO Box 18 Springbok, 8240 District Manager Mr Darren Engelbrecht E: darrenlengelbrecht@gmail.com Tel: 027 712 1315							
Department Agriculture, Environmental Affairs, Rural Development and Land Reform: Northern Cape. C/O Voortrekker and Magasyn Street Springbok 8240 Tel: 027 718 8800 (053 807 7300) Peter Cloete Email: peter.denc87@gmail.com	Email	None	Email				
Department of Public Works Ruwayda Baulackay Private Bag X5002, Kimberley, 8300 Tel: 053 838 5202 Cell: 083 459 7602 Email: ruwayda.baulackay@dpw.gov.za	Email	None	**Email**				
Communities							
Community of Upington (Advertised in Gemsbok)		27/07/2020	Email		S du Plessis expressed interest to provide dust suppression should it be required – Refer Appendix 4		
Commission On Restitution Of Land Rights: Regional Land Claims Commission: Northern Cape. Tel: (053) 807 5700 Ryan.oliver@drdlr.gov.za	Email	24/08/2020 27/08/2020	NA		Acknowledgement of receipt of request followed by confirmation that no claims are applicable to these land portions		
Traditional Leaders							

Interested and Affected Parties:	Draft Scoping		Draft EIA / EMP		Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
	Method	Date Comments Received	Method	Date Comments Received			
Other Competent Authorities							
SAHRA/HNC Lodgement on Heritage electronic lodging system: SAHRIS		15/12/2020			Requested AIA and PIA.	Specialists have compiled exemption applications which have been lodged on SAHRIS. Refer Appendix 9 for copies of studies	
DMR:NC Regional Manager							
OTHER AFFECTED PARTIES							
INTERESTED PARTIES							

Note that final comments must be in within 30 days and will be forwarded to the DMR as soon as possible after that.

12 The Environmental attributes associated with the development footprint alternatives.

12.1 Type of environment affected by the proposed activity.

12.1.1 Topography

Topography usually has a bearing on visual impact. In this case, there is no visual impact on surrounding land user, given the extreme isolation of the site.

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

Tectonic processes (e.g., faulting and down warping) and climatic disruption of pre-existing drainage systems, and the presence of susceptible substrates, are now accepted as the main reasons for the initiation of a pan. Thus, the most suitable loci for pans are most likely joints, fractures, faults or dyke intersections because the rock is already weakened at these areas and is thus susceptible to further weathering. At these sites' groundwater flows are concentrated, which enhances erosion and decomposition. This accelerated weathering promotes additional weathering through the release of salts (Klerk et al. 2016).

Existing impacts in respect of topography have arisen through:

Nature and extent of existing impact	**Duration**	**Significance**	**Extent to which impact can cause or be:**		
			reversed	**irreplaceable loss of resource**	**avoided, managed or mitigated**
Removal of material outside of pan to serve pond walls on pan	Life of mine (most likely permanent)	Insignificant	Could be reversed through backfilling but most likely rehabilitated through shaping	No	Can be mitigated
Development of the pond walls on pan surface up to 1.5m in height	Life of mine	Moderate	Must be reversed through spreading or removal after mining	No	Must be managed

Other insignificant impacts on topography have arisen through:

- Waste salt dumping heaps – medium term / temporary but may exceed 24 months in places
- Entrance road construction – Life of mine
- Salt mining stockpiles - Temporary

12.1.2 Visual Impact

None, except negligible impact to anyone who enters the confines of the basin.

12.1.3 Soil

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

In the case of this mine, there has been no topsoil removal prior to development of the disturbed off-pan areas. But any topsoil which would have been removed and stockpiled now would not in any event serve as topsoil in 30 years' time when decommissioning rehabilitation could take place at this mine's extension.

These sands have limited growth medium potential due to high concentration of minerals as well low water retention capability. This together with low rainfall limits success of any revegetation intervention.

The potential for wind erosion of the sands is aggravated by the strong winds and some erosion is visible in the vicinity of the mine office and next to the access road.

Impacts on soil which have occurred to date are as follows:

Nature and extent of existing impact	**Duration**	**Significance**	**Extent to which impact can cause or be:**		
			reversed	**irreplaceable loss of resource**	**avoided, managed or mitigated**
Excavation of sandy material outside of pan to serve pond walls on pan	Life of mine (most likely permanent)	Insignificant	Could be reversed through backfilling but most likely rehabilitated through shaping	No	Can be mitigated
Disturbance / trampling and compaction of soil in off pan areas for logistical facilities and accommodation	Life of mine	Insignificant	Must be reversed through ripping / scarification post mining	No	Can be mitigated

12.1.4 Pre – Mining Land Capability

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

- Rainfall between 50-150mm per year (mostly late summer)
- Extremely high temperatures, strong dry winds, saline water and high evaporation combine to preclude crop production.
- No irrigation takes place
- Livestock watering a challenge with often poor quality water available.
- Majority of soils have poor moisture retention, low pH and low nutritive quality
- Land capability is thus non arable low potential grazing land
- …veld has an extremely low carrying capacity (±80ha/AU).

There are 2 land units to consider:

Off pan areas: These areas are used for grazing by livestock and game farming. The carrying capacity is extremely low (at ±80ha/au). Current impact on this land unit has occurred as follows:

Nature and extent of existing impact	Duration	Significance	Extent to which impact can cause or be:		
			reversed	irreplaceable loss of resource	avoided, managed or mitigated
Loss of grazing: Disturbance by logistical facilities and accommodation totals approx. 8.6ha	Life of mine	Insignificant	Yes	No	Must be rehabilitated post mining
Loss of grazing: Off pan Access road: 4-6m wide to 2.2km from nearest public road	Life of mine	Insignificant	Can be reversed. May be retained	No	Can be rehabilitated post mining

On pan areas: Most of the disturbance area is on the pan with approximately 75.7ha disturbed for the ±20 ponds and the processing and stockpiling area. The pumps on the pan also lead to very insignificant impact.

Nature and extent of existing impact	Duration	Significance	Extent to which impact can cause or be:		
			reversed	irreplaceable loss of resource	avoided, managed or mitigated
Loss of pan function: Disturbance by pond development and processing and stockpiling totals approx. 75.7ha (out of total pan area of 1 108ha)	Life of mine	Insignificant	Yes	No	Must be rehabilitated post mining

12.1.5 Natural Vegetation

The main sources of information typically used at Scoping Stage are:

- Mucina and Rutherford mapping (2006): Vegetation of South Africa, Lesotho and Swaziland.
- CBA mapping from SANBI's mapping of the 2016 Northern Cape CBA Mapping.
- The classification of the vegetation types according to Critically Endangered, Endangered, Vulnerable or Least Threatened classification in terms of NEM: BA.

The Mucina and Rutherford mapping (Refer Figure 7) shows the Mining Right area to be located within 2 vegetation types viz. Gordonia Duneveld and Southern Kalahari Salt Pans. According to National Environmental Management Biodiversity Act's schedule in respect of the National List of Ecosystems that are Threatened and in Need of Protect published in GN1002 (9/12/12), both these are classified as least threatened.

Conservation Targets:

- *Gordonia Duneveld*:
  Least threatened. Target 16%. Some 14% statutorily conserved in the Kgalagadi Transfrontier Park. Very little transformed. Generally low erosion, but some areas with spectacular destabilisation of normally vegetated dunes (through local overstocking) favoured by photographers. Erosion is normally very low.

- *Southern Kalahari Salt Pans*:

Least threatened. Target 24%. About 8% statutorily conserved in the Kgalagadi Transfrontier Park. The vegetation of the pans is subject to natural degradation/ regeneration cycles controlled by concentration of grazing animals (antelopes in particular).

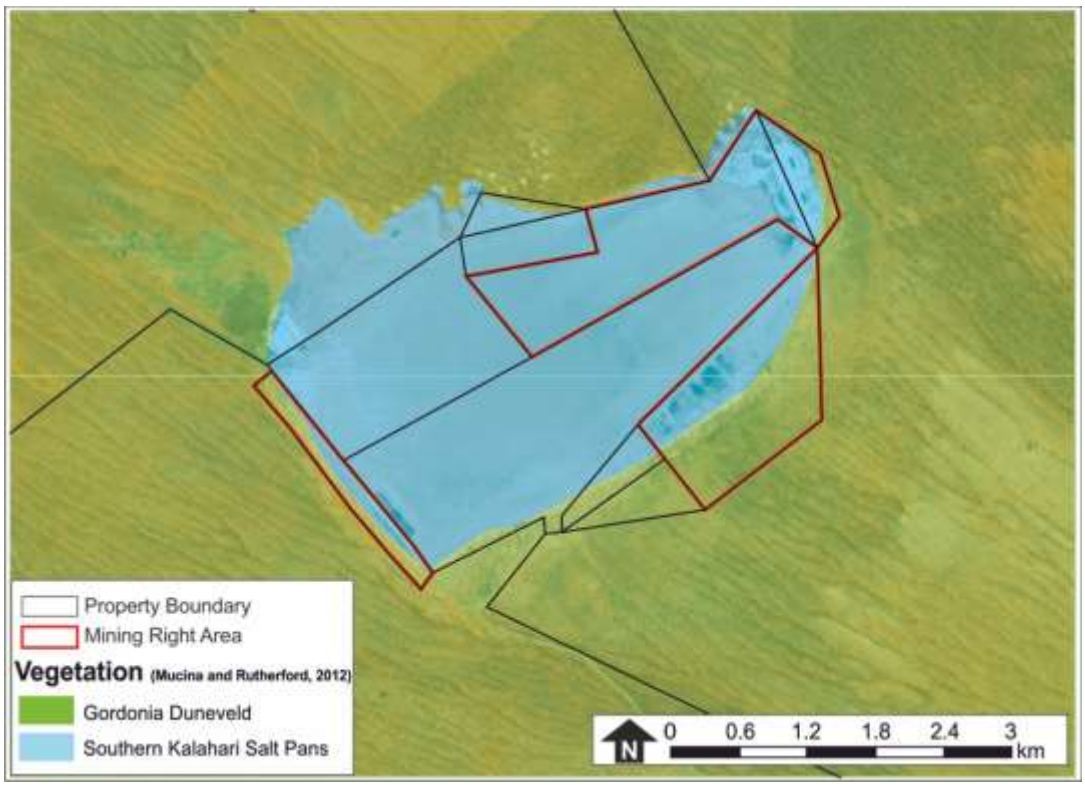


Figure 7: Vegetation Classification (Mucina and Rutherford)

Figure 8 shows the CBA mapping according to SANBI's 2016 mapping. It shows that the off pan activities are located on "Other Natural Area" classification whilst on pan activities are in Ecological Support Area. None of the activities are located in a CBA.

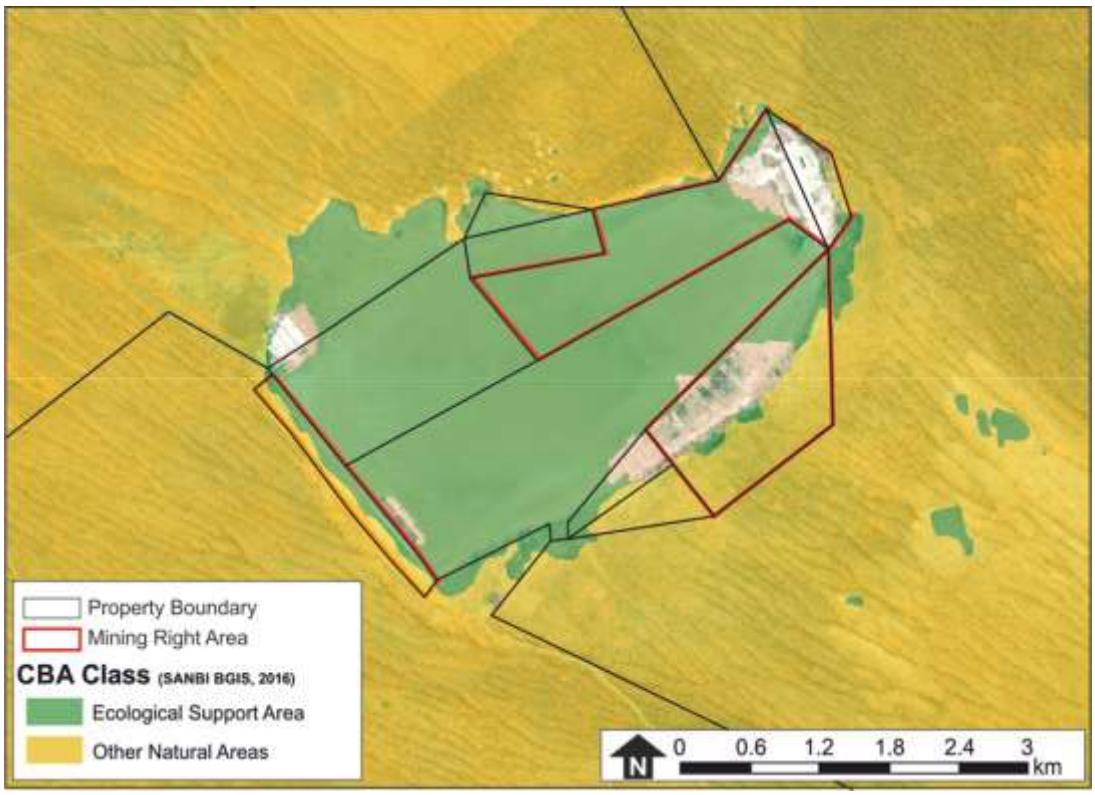


Figure 8: CBA Data - 2016 NC CBA Mapping

There are a number of Swart Haak (*Acacia milifers* subs. *Detinens*) specimens around the mining site. In the salty soils the *Salsola calluna* (Rooi loot ghanna) is common. Although an alien species, it is not recommended that the plant be removed due its ability to bind the soils around the pan (besides it is a source of food for local fauna). There are no sensitive or endangered plant species on or around the site (EMP, 2009).

12.1.6 Animal Life

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

It takes very little force to crush dry branchiopod eggs and no increase in roads on the pan should occur. Intact egg banks might be protected by the surrounding soil matrix to some extent, but disturbances are expected to expose the egg bank, making the eggs more vulnerable to destruction. It is not certain what macroinvertebrates are present on these pans, but a precautionary approach must be adopted

12.1.7 Surface Water

The pan is located in Quaternary Basin D42D. There are no water courses, dams, drainage channels, streams, rivers or wetlands on the site (although the pan is classified as a wetland in terms of NFEPA mapping). The NFEPA data identified the pan as wetlands and classified it not FEPA (Figure 8). The closest NFEPA identified river is the Molopo river to the east of the pans

The hypersaline environment makes these pans physically, chemically and biologically distinct from most other inland wetland systems.

So, given the disturbance of a water course (i.e. pan surface) by the mining it is incumbent on the applicant to lodge Water Use Licence Application. This application is already in progress. There have been some issues with this application but the status thereof will be reported on in more detail in the draft EIA/EMP.

No other surface water features are disturbed by the salt mining activities.

Nature and extent of existing impact	Duration	Significance	Extent to which impact can cause or be:		
			reversed	irreplaceable loss of resource	avoided, managed or mitigated
Loss of pan function: Disturbance by pond development and processing and stockpiling totals approx. 75.7ha (out of total pan area of 1 108ha)	Life of mine	Insignificant	Yes	No	Must be rehabilitated post mining

12.1.8 Ground Water

The pan is located in Quaternary Basin D42D. Notwithstanding the general authorisation for that basin, the holder is required to obtain WUL for the abstraction of groundwater. This application is already in progress.

The continued abstraction of groundwater may have Medium negative cumulative impacts in the face of climate changes and potential drop in the water table. If this is monitored, then the impacts can be reduced to Low significance. There is a risk that over abstraction of groundwater affects the water table and must be prevented.

The impact of continued groundwater abstraction from the pan confines is governed by the following additional factors:

- Over 30 years of abstraction which has already taken place of this renewable resource
- The pumping only takes place to depths of 20-30m and only impacts on a pan based “perched” water table and not a regional aquifer which will be at a much deeper level
- The absence of boreholes surrounding the site
- The very poor quality of the water precluding any use as drinking, stock watering or cultivation.

Portion 18 of Groot Witpan 327 has been included in this application as an area where additional pumps may be located. No evaporation ponds or logistical facilities will be developed on Portion 18.

Water Use Licence:

Note that the Water Use Licence application has been lodged, but additional information has been requested. This process is still underway (despite the extended period) and been undertaken by outside consultants. Refer copy of letter below acknowledging receipt of application:

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Private Bag X5912, Upington, 8800
Louisvale Road
Tel: (054) 338 5800, Fax: (054)334 0205

Enquiries: Alexia Hlengani

Email: HlenganiA@dws.gov.za
Reference:

Industrial Salt (Pty) Ltd
P. O Box 7
Upington
8800

ATTENTION: Mr. Debbie Fordham

Dear Mr. Debbie Fordham

ACCEPTANCE OF WATER USE LICENCE APPLICATION MADE IN TERMS OF SECTION 40 OF THE NATIONAL WATER ACT, 1998 (ACT 36 of 1998), ORANGE WATER MANAGEMENT AREA: INDUSTRIAL SALT (PTY) LTD

The Department of Water and Sanitation confirm that your application submitted on 12 February 2020 has met minimum requirements and has been accepted for processing.

Should the Department require additional information during the processing of your water use license application, you will be notified in writing. Failure to submit the requested additional information may lead to the rejection of your water use license application. Enquiries with regard to the processing of your application can be made with Alexia Hlengani at telephone number 082 819 4687.

Yours faithfully

MR KOBUS STRAUDERS
ACTING PROVINCIAL HEAD: NORTHERN CAPE REGION
DATE: 14/02/2020

NATIONAL DEVELOPMENT PLAN
Our Future - make it work

12.1.9 Air Quality (Dust)

(a) Dust standard applied.

NEM:AQA

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

A Standard for the acceptance dust fall rate is set out in Table 1 for residential and non-residential areas.

Restriction Area	Dust fall rate (D) (mg.m-2.day-1 , 30-day average)	Permitted frequency of exceeding dust fall rate
Residential	D < 600	Two within a year, no sequential months
Non- Residential	600 < D < 1 200	Two within a year, no sequential months

SANS1929:2004

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 outlines 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 m² day-1 over a 30-day averaging period. Dust deposition shall be evaluated against a four-band scale as presented in Table 9.

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

Band number	Band description label	DUSTFALL RATE (D) (*mg* /m² /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"

At present, the ambient dust levels are low and any existing dust impact is the result of:

- Occasional vehicles on unsurfaced roads in the area
- Wind generated dust on a regional level (especially during dry times)

Dust generation from this site is very low and no dust impact will occur on any surrounding land user or land use.

12.1.10 Noise

(a) Standards to be applied

National standards / recommendations:

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

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

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

Expected community response

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

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

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

(b) Noise sources on site

The following equipment/activities generate noise. Remember that all of these activities currently take place and there have been no complaints in respect of noise (and none are anticipated):

i) Earthmoving equipment during harvesting and loading of salt to plant and dispatch vehicles
ii) Noise of haul trucks
iii) General traffic generated noise

12.1.11 Traffic

As there will be no change in delivery traffic no traffic impact statement or impact study is relevant.

12.1.12 Surrounding land use

The site is extremely isolated with the closest surrounding farmstead located several kilometres from the existing sand mine. The closest public road is the unsurfaced road between the R360 north of Upington and Noenieput to the west. The R360 is the closest tar road some 3km east as the crow flies (but 7km by road).

12.2 Description of specific environmental features and infrastructure on the site.

Refer Figures 1-10, Paragraph 12.1 1 to 12.1.12.

12.3 Environmental and current land use map.

Refer figures as follows:

Figure 1:	Locality Plan
Figure 2:	Application components
Figure 3:	Regulation 2 (2) drawing
Figure 4:	Existing Site Layout Plan for the Northern Section (previously called the Industrial Salt Section)
Figure 5:	Existing Site Layout Plan for the Southern Section (previously called the Gordonia Salt Section)
Figure 6:	Surrounding Landownership
Figure 7:	Vegetation Classification (Mucina and Rutherford)
Figure 8:	CBA Data - 2016 NC CBA Mapping

13 Impacts and risks identified including the nature, significance, consequence, extent, duration & probability of the impacts

Note that in the Draft Scoping Report, only the potential impacts typical for such activities and those that have been shown through mining which has taken place at this site for several decades have been identified. This was and will continue to 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. Note that in the table below the following applies:

Impact occurred at establishment and is finalised
Establishment Phase negative impact which still occurs
Operational negative impact which currently takes place and will continue
Beneficial impact (will not be assessed further in order to reduce length of report)

Activity	Topography	Soil/ Topsoil	Visual	Land Capability	Vegetation	Surface Water	Ground Water	Animal Life	Noise	Air Quality (Dust)	Social/ Economic	Archaeology/ Cultural	Hydrocarbon	Traffic /Access
1. ESTABLISHMENT ACTIVITIES (Completed and approved in terms of 2 x existing approved EMPs)														
1.1. Clearing of logistical facility area outside of pan edge (Currently 2 areas i.e. at northern and southern ponds)														
1.2. Establishment of logistical facilities including residences, office, workshop, generator facility, etc.														
1.3. Establishment of plant and stockpiling area on pan. (Currently 2 areas i.e. at northern and southern ponds)														
1.4. Establishment of bunded fuel tanks. There are 3 tanks (main tank behind workshop and smaller tanks at generator and crusher)														
1.5. Excavation of material from outside pan to construct pond walls - Done														
1.6. Development of dam walls for ponds on pan - Done														
2. OPERATIONAL PHASE ACTIVITIES (Currently occurring in terms of 2 x approved EMP)														
2.1. Borehole pumping water virtually continuously from middle of pan into concentration ponds (via on surface pipes)														
2.2. Brine is collected concentration ponds.														
2.3. From these concentration ponds the brine is pumped into evaporation ponds. Evaporation ponds contain brine on the pan surface.														
2.4. Evaporated salt scraped off surface by scraper														
2.5. Scraped salt loaded by front end loader to haul truck														
2.6. Salt hauled to drying area off pan by truck														
2.7. Salt allowed to dry in logistical facility / stockpiling area														
2.8. Dried salt sent through sorting assembly. Excess brine sent to Concentration Pond.														
2.9. Sorted salt sent through cyclone for final moisture removal. Excess brine sent to Concentration Pond														
2.10. Waste Salt Handling														
2.11. Vehicles using unsurfaced roadways														
2.12. Use of diesel														
2.13. Use of small workshop														
2.14. Potable water trucked in as required (minor volumes)														
2.15. Toilet to French Drain														
2.16. General overall impacts of the operation (from specialist report).														
3. DECOMMISSIONING PHASE ACTIVITIES														

Activity	Topography	Soil/ Topsoil	Visual	Land Capability	Vegetation	Surface Water	Ground Water	Animal Life	Noise	Air Quality (Dust)	Social/ Economic	Archaeology/ Cultural	Hydrocarbon	Traffic /Access
3.1. Remove final evaporated salt														
3.2. Remove / flatten all evaporation pond side walls.														
3.3. Backfill buffer and concentration pond with existing stockpiled material														
3.4. Remove all structures foundations and footings (unless required by landowner)														
3.5. Rip surface of logistical facility and stockpiling area to 30 -45cm deep														
3.6. Allow to revegetate naturally														
4. AFTERCARE PERIOD														
4.1. Remove alien vegetation, if present														
4.2. Monitor revegetation success and continue														
4.3. Conduct final performance assessment														
4.4. Lodge closure Application														

Note that the following table will only discuss negative impacts (those highlighted in Orange and Red).

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
1. ESTABLISHMENT ACTIVITIES	**(Completed and approved in terms of 2 x existing EMPs)**							
1.1. Clearing of logistical facility area outside of pan edge	(Currently 2 areas i.e. at northern and southern ponds)	Refer Photos 3, 4 and 5						
1.1.1. Soil	Soil compacted over in maneuvering and activity areas	±8.6ha	Life of mine	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.1.2. Visual	Disturbance visible	From within basin confines	Life of Mine	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.1.3. Land Capability	Area not available for small stock and game grazing	±8.6ha	Until revegetation	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.1.4. Vegetation / Animal Life	Area cleared of vegetation/ habitat	±8.6ha with ±900m of pan / dune interface	Until revegetation	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.2. Establishment of logistical facilities including residences, office, workshop, generator facility, etc		Refer Photos 2-5 and 11						
1.2.1. Visual	Facilities and buildings visible	From within basin confines	Life of Mine	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.3. Establishment of plant and stockpiling area on pan. (Currently 2 areas i.e. at northern and southern ponds)		Refer Photos 3 & 4						
1.3.1. Land Capability	Area not available to function as a pan	±11.8ha	Until rehabilitation	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.3.2. Visual	Disturbance visible	From within basin confines	Life of Mine	Ongoing	Insignificant	Yes	No	Can be rehabilitated

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
1.4. Establishment of bunded fuel tanks. There are 3 tanks (main tank behind workshop and smaller tanks at generator and crusher)		Refer Photo 2						
1.5. Excavation of material from outside pan to construct pond walls - Done								
1.5.1. Topography	Some sand used to develop walls on pan. Concentration pond material also used to develop walls	The sand source was obtained through general levelling of off-pan activity areas. Not noticeable as an excavation anymore	Permanent	Definite	Insignificant	Yes. But will not require reversal	No	Not applicable. Has been managed.
1.5.2. Soil	Sandy material mixed with clayey pan material in construction of pond walls	All pond walls	Life of mine	Has occurred	Insignificant	Yes	No	Must be mitigated
1.5.3. Visual	Disturbance visible	From within basin confines	Life of Mine	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.5.4. Land Capability	Portion of pan not available to function as pan	±63.9ha	Until decommissioning rehabilitation	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.5.5. Vegetation	Described in line item 1.1.4							
1.6. Development of dam walls for ponds on pan – Done		Refer Photo 6 and 12						

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
1.6.1. Topography	Pond walls up to 1.5m high at most	To contain 36.3ha in ±20 evaporation ponds	Until decommissioning rehabilitation	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.6.2. Visual	Disturbance visible	From within basin confines	Life of Mine	Ongoing	Insignificant	Yes	No	Can be rehabilitated
1.6.3. Land Capability	Portion of pan not available to function as pan	63.9ha of which 33.0ha are ponds[3]	Until decommissioning rehabilitation	Ongoing	Moderate / Insignificant	Yes	No	Can be rehabilitated
1.6.4. Pan surface water	Portion of pan not available to function as pan	±63.9ha	Until decommissioning rehabilitation	Ongoing	Moderate/ Insignificant	Yes	No	Can be rehabilitated
2. OPERATIONAL PHASE ACTIVITIES	**(Currently occurring in terms of 2 x approved EMP)**							
2.1. Borehole pumping water virtually continuously from middle of pan into concentration ponds (via on surface pipes) and possible establishment of additional pump sites on Portion 18 and 20 if required		Refer Photo 1						
2.1.1. Groundwater	Groundwater currently pumped from ±15 boreholes on the pan[4]	±1500kl per day during summer and 750kl per day during winter.	Life of mine	Definite	Assumed insignificant given the number of years it has taken place with continued recharge	Not applicable	No	Must be managed in accordance with WUL conditions

[3] Excludes plant and stockpiling area of 11.8ha on pan

[4] This is currently subject to Water Use Licence Application which will be fully reported on in upcoming draft EIA/EMP

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
2.1.2. Land Capability	Pump installations on pan surface	Minimal area. Assume 3m² per site plus electrical supply – see photo 1	Life of mine	Definite	Insignificant	Yes	No	Can be managed
2.2. Brine is collected concentration ponds.								
2.3. From these concentration ponds the brine is pumped into evaporation ponds.	Evaporation ponds contain brine on the pan surface.	Refer Photo 12						
2.3.1. Land Capability	Portion of pan not available to function as pan	Evaporation pond surface area = 33ha (in total disturbance of ±63.9ha)[5].	Life of mine	Ongoing	Moderate / Insignificant	Yes	No	Must be rehabilitated
2.4. Evaporated salt scraped off surface by scraper								
2.4.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
2.4.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting

[5] Excluding 11.8ha on pan plant and logistical facility area

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
2.4.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place to prevent occurrence
2.5. Scraped salt loaded by front end loader to haul truck								
2.5.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
2.5.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting
2.5.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place to prevent occurrence
2.6. Salt hauled to drying area off pan by truck								
2.6.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
2.6.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting
2.6.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place to prevent occurrence
2.7. Salt allowed to dry in logistical facility / stockpiling area		Refer Photo 4 Right						
2.7.1. Topography	Stockpiles of salt	Up to 3m in height	The stockpiles are very temporary but there will be stockpiles for life of mine	Definite	Insignificant	Yes	No	Will be removed
2.8. Dried salt sent through sorting assembly. Excess brine sent to Concentration Pond.		Refer Photo 7						
2.8.1. Noise	Noise generated by plant	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	None feasible
2.8.2. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place to prevent occurrence

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
2.9. Sorted salt sent through cyclone for final moisture removal. Excess brine sent to Concentration Pond		Refer Photo 8						
2.9.1. Noise	Noise generated by plant	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	None feasible
2.9.2. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place to prevent occurrence
2.10. Waste Salt Handling		Refer Photo 9						
2.10.1. Land Capability	Small low stockpiles which can usually be recycled or sold as very low grade products	<1ha to 1.5m high	Until used or until decommissioning	Probably	Insignificant	Yes	No	Requires post mining rehabilitation if still in place
2.11. Vehicles using unsurfaced roadways		Refer Photo 5 & 10						
2.11.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
2.11.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
2.11.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place to prevent occurrence
2.11.4. Traffic	Trucks using public roads	Up to 1 truck per working hour	Life of mine	Definite	Insignificant	No	No	Must be manged: Obey road rules
2.12. Use of diesel								
2.12.1. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place
2.13. Use of small workshop								
2.13.1. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place
2.14. Potable water trucked in as required (minor volumes)								
2.15. Toilet to French Drain								
2.15.1. Groundwater	Possible contamination of groundwater resource in case of leak	Very local	Until biological filtering renders leak harmless	Very unlikely	Insignificant (Minor volumes)	Yes	No	Avoided
2.16. Overall general impacts identified in Specialist Aquatic Study								
2.16.1. Loss and disturbance of aquatic vegetation & biota	Physical disturbance of aquatic habitat by vegetation clearing, soil disturbance and altering the geomorphological profile and indirect impact of disturbance of pan habitat due to encroachment/ colonization of habitat by invasive alien plants.	Already occurred an no expansion proposed in this regard	Life of mine	Unlikely	Insignificant	Partially	No	High

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
2.16.2. Soil and geomorphological modifications	The excavations and backfilling associated with the evaporation pan maintenance alter the geomorphological profile of the pan and disturb the soil profile. These areas alter the characteristics of the pan as they increase the extent of surface water. Soil disturbance is the alteration in the physical characteristics of the ecosystem as a result of excavation, abstraction, and backfilling mobilising sediments and disturbing the soil profile. The disturbed areas also result in a salt crust on the pan surface until dissolved again by rain and could impact any macroinvertebrates present. These impacts can indirectly result in the deterioration of aquatic ecosystem integrity	Site only	Long term	Likely	Insignificant	Barely	No	Low

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
2.16.3. Altered water quality and quantity	Water and/or soil disturbance causes -ve changes in the physical, chemical biological character / quality of water. Indirectly result in possible deterioration in aquatic ecosystem integrity and a reduction in, or loss of species of conservation concern. Mining mobilises sediments and cause a direct impact on water quality parameters. These are considered to be easy to mitigate provided the volume abstracted is sustainable. Additionally, waste and pollution are prevented as per the EMPr. The aquifer is vulnerable to pollution from surface and sub-surface sources. However, the mining area is located within a natural area and the potential for surface to groundwater contamination is low. The mining activities are not intensive. The brine is abstracted from groundwater as the pan is very rarely inundated. Therefore, the impact of the volume abstracted would impact groundwater characteristics (which was not assessed in this study). It is likely that the mining will slightly increase the flow of water within the pan towards the abstraction areas but will not alter the direction of water movement	Site Only	Medium Term	Probable	Insignificant	Partly	No	High
3. DECOMMISSIONING PHASE ACTIVITIES								
3.1. Remove final evaporated salt								

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
3.1.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
3.1.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting
3.1.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place
3.2. Remove / flatten all evaporation pond side walls.								
3.2.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
3.2.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting
3.2.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place
3.3. Backfill buffer and concentration ponds with existing stockpiled waste salt								

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
3.3.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
3.3.2. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place
3.4. Remove all structures foundations and footings (unless required by landowner)								
3.4.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
3.4.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting
3.4.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place
3.5. Rip surface of logistical facility and stockpiling area to 30 -45cm deep								

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
3.5.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	No	No	Managed/ mitigated through ensuring silencers are in operation
3.5.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Duration of activity for life of mine	Definite	Insignificant (None on surrounding land users)	If required, could take place	No	Dust could be allayed by wetting
3.5.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant (if cleared)	Fully reversible	No	Hydrocarbon management plan must be put in place
3.6. Allow to revegetate naturally	Traffic generated during collection and delivery of material	Local / to Upington	Life of Mine	Definite	Insignificant (and will not change from current levels)	Yes	No	Safety
3.7. Additional impacts of decommissioning rehabilitation identified by specialists Aquatic Study								
3.7.1. Loss and disturbance of aquatic vegetation & biota	The impact of alien invasive plant encroachment, if not addressed, will proceed beyond the decommissioning phase. Also, during decommissioning, there is the possibility that vegetation is disturbed during the removal of infrastructure	Site Only	Very short	Unlikely	Insignificant	Barely	No	Low

Activity	Nature of impact	Extent	Duration	Probability	Significance	Extent to which impact can cause or be:		
						reversed	irreplaceable loss	avoid, manage/ mitigate
3.7.2. Altered water quality and quantity	During the decommissioning phase there is the potential for water pollution due to machinery spillage and soil disturbance whilst clearing infrastructure and rehabilitating the pan surface. The sediments and salts mobilised by soil movement to recontour and rehabilitate will resulting in mixing with groundwater and change characteristics temporarily. However, following rehabilitation, after some time, the water quality and quantity will improve.	Site only	Very short	Highly unlikely	Insignificant	Partly	No	Low
3.7.3. Soil disturbance	The temporary excavations and backfilling associated with the rehabilitation of the abstraction sumps, boreholes, and holding ponds, evaporation pans will alter the geomorphological profile of the pan and disturb the soil surface. There areas alter the characteristics of the pan as they increase the extent of surface water. However, it is necessary to disturb the pan surface in order to recontour and rehabilitate the disturbed areas of the pan.	Site Only	Medium	Highly Likely	Insignificant	Barely	No	Low
4. AFTERCARE PERIOD								
4.1. Remove alien vegetation, if present	Potential Hydrocarbon leaks	Local	Until clean-up	Possible	Insignificant	Fully reversible	No	Hydrocarbon management plan must be put in place
4.2. Monitor revegetation success and continue								
4.3. Conduct final performance assessment								
4.4. Lodge closure Application								

14 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 was included in the draft Scoping report which was made available to all identified Interested and Affected Parties. Any relevant responses received would then have informed 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

15 The positive & negative impacts that the activity & alternatives will have on the affected environment and the community.

The existing and proposed future mining has the following **negative impacts** (in no particular order) on the environment and community:

Groundwater Regime:

Any impact on surrounding users of groundwater must be avoided. Fortunately there are no boreholes within the confines of the Grootwitpan basin. In the normal course of events, excessive abstraction would cause drawdown and "downstream" impacts on quantity (and possibly quality).

The impact of continued groundwater abstraction from the pan confines is insignificant given:

- Over 30 years of abstraction which has already taken place of this renewable resource.
- The pumping only takes place to depths of 20-30m and only impacts on a pan based "perched" water table and not a regional aquifer which would be at a much deeper level.
- The absence of boreholes surrounding the site.
- The very poor quality of the water precluding any use as drinking, stock watering or cultivation.

The potential for groundwater pollution is summarised as follows from the specialists report:

"Regarding groundwater pollution, the shallow, unconfined nature of the aquifer, makes it vulnerable to pollution from surface and sub-surface sources. However, the mining area is located within a natural area with very little to no agricultural or industrial activities which would cause pollution. The potential for groundwater surface to groundwater contamination is low. The mining activities itself are not intensive, with only a few heavy vehicles and pumps on site".

Impact on Vegetation / Off-Pan Biodiversity and Land Capability:

Any impact which would have occurred on vegetation has already occurred. Such impact is the disturbance of 8.6ha for logistical facilities and accommodation on the sandy banks/ slopes above the pan. This development has also led to the "unavailability" of approximately 1km of pan/ dune hinterland interface. This impact has however been quantified as insignificant given:

- The pan circumference is over 16km in length
- The activities do not result in the disturbance of any corridor and movement for fauna is not restricted except in the case of perhaps the 1km length disturbed by the logistical facilities
- The 8.6ha lost to wilderness is absolutely negligible in the scale of the surrounding duneveld.

Impact on pan functioning and On-Pan Land Capability

The fact is that Grootwitpan's functioning as a pan has not been negatively impacted by the activities which have taken place. The total on pan disturbance as a result of this operation is in the order of 75ha out of over 1 000ha pan surface.

Topography:

There has been insignificant impact on topography due to:

- Removal of sand for development of pond walls
- Digging of concentration ponds
- Development of low pond walls on the flat dam surface
- Location of temporary salt stockpiles

Noise and dust:

Very limited impact and will not impact on any surrounding land use or user

Possible Visual Impact:

It is likely that visual impact of the operation would take place to any persons within the confines of the Grootwitpan basin, but the important point is that the basin sees very little traffic and is very rarely accessed.

Hydrocarbon Impact

The potential exists for impact from Hydrocarbon pollution and measures are in place to avoid such impact as well as interventions required should such hydrocarbon leak ever take place.

The only **positive impact** is the socio economic impact which accrues through employment opportunities (direct and indirect), availability of salt and income to the mining company and landowner.

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

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

Impact	Possible Mitigation	Level of risk
Topography: Off Pan impact	Shape remaining / residual edges to mimic natural contours so that no slope exceeds 1:3	None.
Topography: On Pan impact: Objective to leave pan surface flat as per pre-mining condition	Backfill buffer and concentration ponds with excess/ waste salt. Spread evaporation pond walls and allow natural processes to level the pan. If removed from pan then such removed material will require burial in sands and cover with sandy material.	Post Mining Risk: Low, if spread. Post Mining Risk: High - if material is removed from pan surface and buried then such cover material will always be subject to wind erosion and exposure of the very salty buried material.
Groundwater:	Adhere to prescriptions of the Water Use Licence when obtained	Risk is low as demonstrated by the past several decades of mining which has already taken place at this site.
Topsoil / Soil: No topsoil was removed and stockpiled prior to logistical facility area development	After removal of all facilities, the compacted sand must scarified and allowed to revegetate naturally	Risk is very low given that there is very little to differentiate the orthic A horizon (upper sand layer deplete of nutrients) and the lower lying sands in the normal course of events. These are in any event often mixed during droughts when mixing will occur through shifting sand dunes
Land Capability	Return the site to serve as pan/ wilderness / grazing function after full rehabilitation of the site.	Level of risk: Low Linked to low risk in respect of soil as described above and rehabilitation and removal of all activities and facilities post mining
Vegetation / Animal Life	Don't allow unnecessary access into surrounding veld No planting will be necessary post mining	Level of risk: Low

Impact	Possible Mitigation	Level of risk
	No poaching or trapping of animals is permitted. Ensure staff report any snare or poaching noted.	
	Alien / exotic plant management must take place (except in the case of the *Salsola)*	
Dust impact from the operation	Can be controlled with use of water or other dust allaying agents, but will probably not be required.	Minimal risk given isolation of site. Must be controlled in terms of employee health regulations
	Limit speed on internal roads as well as access roads to the site	
	If dust result in any complaints from surrounding parties (highly unlikely), then a dust monitoring programme must be established and best options installed to eliminate any future dust from that source.	
Noise	The impacts of noise must limited more because of employee health reasons than for any impact on surrounding land users or land use	Minimal risk given isolation of site. Must be controlled in terms of employee health regulations
	All vehicles must be equipped with working silencers	
Waste / Hydrocarbon impact	Any transfer of fuel must take place using suitable funnels and pumping equipment	Risk is low given small scale of the activities.
	Staff to be trained in respect of hydrocarbon pollution and contamination clearing methodologies to be employed	
	Any regular servicing of plant and equipment to take place at the workshop or at head office site	
	Separate waste streams and handle accordingly	
Heritage Impact	None required. No further disturbance of any virgin areas is anticipated. Refer Appendix 9 for specialist input in this regard.	None.

16.1 Motivation where no alternative sites were considered.

Not applicable.

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

The continued use of this site has been informed by the following factors:

a) The presence of salty brine in the groundwater allowing for the continued salt production. Remember that not all pans have the ability to provide brine of sufficient quality.

b) It is an existing site and all logistical and other facilities are in place.

c) The environmental impacts are known to be insignificant (with mitigation).

d) Surrounding land uses and users do not preclude the use of the site for salt mining.

17 Description of the process undertaken to identify, assess & rank the impacts & risks the activity will impose on the preferred site through the life of the activity.

(Including a description of all environmental issues and risks that were identified during the environmental impact assessment process and an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

The process undertaken to identify, assess and rank the impacts and risks consisted of 4 steps as follows:

Step 1: Usually this is initiated by the determination of the exact nature of the disturbances that would take place in a spatial sense as well as in respect of activities typical of mining based on EAP's experience in this regard in similar operations. However, this step was not required given the pre-existence of all activities. The site layout was assessed for suitability into the future and found to be appropriate. This programme does eliminate the potential (but unlikely) requirement for additional facilities on the Gordonia section (which is being incorporated into this Industrial Section).

Step 2: Determination of impacts of each activity / disturbance that takes place at the current activity with a provisional rating of significance, duration, etc. based on experience of the EAP and that seen in the veld / on site.

Step 3: Such information was presented in tabular format for ease of reference as well as ensuring that no activities or disturbances could inadvertently be "left out" of future discussion in the draft reporting.

Step 4: The draft Scoping report was distributed amongst State Departments as well as NGO,s Parastatals and the broader public to test the identification, assessment and ranking of the impacts and risks that the activities would impose based on comments received from all parties.

Step 5: Obtaining specialist input in certain aspects of the environment which could conceivably be significantly impacted upon and updating initial expected impacts if

necessary. Note that to date the only specialist study conducted has been the Aquatic/ Freshwater Ecology study. SAHRA has requested an Archaeological and Palaeontological study. However it is noted that all disturbances have already taken place decades ago and there is no possibility of additional disturbance of heritage artefacts. In addition the screening tool (Appendix 8) notes that the Relative Archaeological and Cultural Heritage theme sensitivity is LOW. A specialist has been tasked with submitting an Application for Exemption for the studies requested by the Heritage Authorities. In the unlikely event of the Heritage Authorities insisting on such studies then these will be distributed for comment. Refer Appendix 9 for copies of Specialist reports in this regard.

17.1 Description of all environmental issues and risks that were identified during the environmental impact assessment process.

The issues that were identified are described fully under their relevant headings and tables in Part 16 and will not be repeated in this para in full. However, in list form the issues and risks related to:

- Topography: Off Pan impact
- Topography: On Pan impact
- Groundwater
- Topsoil / Soil
- Land Capability
- Vegetation / Animal Life
- Dust impact from the operation
- Noise
- Waste / Hydrocarbon impact
- Heritage Impact

17.2 Assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures

- For significance of each issue and risk – Refer table in para 13
- For indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures – Refer Table in Part 13
- Actual mitigation measures are described in Para 34.

17.3 Assessment of each identified potentially significant impact and risk

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

ACTIVITY whether listed or not listed. & POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**Significance if not mitigated**	**MITIGATION TYPE** (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**Significance, if mitigated**
1. **ESTABLISHMENT ACTIVITIES**			
1.1. Clearing of logistical facility area outside of pan edge			
1.1.1. Soil	Moderate	Remedy through post-mining rehabilitation	Insignificant
1.1.2. Visual	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.1.3. Land Capability	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.1.4. Vegetation / Animal Life	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.2. Establishment of logistical facilities including residences, office, workshop, generator facility, etc			
1.2.1. Visual	Insignificant	Remedy through post mining removal	Insignificant
1.3. Establishment of plant and stockpiling area on pan. (Currently 2 areas i.e. at northern and southern ponds)			
1.3.1. Land Capability	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.3.2. Visual	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.4. Establishment of bunded fuel tanks. There are 3 tanks (main tank behind workshop and smaller tanks at generator and crusher)			
1.5. Excavation of material from outside pan to construct pond walls - Done			
1.5.1. Topography	Insignificant	Remedy through post mining removal	Insignificant
1.5.2. Soil	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.5.3. Visual	Insignificant	Remedy through post mining removal	Insignificant
1.5.4. Land Capability	Insignificant	Remedy through post-mining rehabilitation	Insignificant

ACTIVITY whether listed or not listed. **& POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**Significance if not mitigated**	**MITIGATION TYPE** (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**Significance, if mitigated**
1.5.5. Vegetation	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.6. Development of dam walls for ponds on pan – Done			
1.6.1. Topography	Moderate	Remedy through post mining removal	Insignificant
1.6.2. Visual	Insignificant	Remedy through post-mining rehabilitation	Insignificant
1.6.3. Land Capability	Moderate / Insignificant	Remedy through post mining removal	Moderate / Insignificant
1.6.4. Pan surface water	Moderate/ Insignificant	Remedy through post-mining rehabilitation	Moderate/ Insignificant
2. **OPERATIONAL PHASE ACTIVITIES**			
2.1. Borehole pumping water virtually continuously from middle of pan into concentration ponds (via on surface pipes) and possible establishment of additional pump sites on Portion 18 and 20 if required			
2.1.1. Groundwater	Assumed insignificant given the number of years it has taken place with continued recharge	Control through management and monitoring	None
2.1.2. Land Capability	Insignificant	Remove pumps and electrical connections post mining	Insignificant
2.2. Brine is collected concentration ponds.			
2.3. From these concentration ponds the brine is pumped into evaporation ponds.			
2.3.1. Land Capability	Moderate / Insignificant	Remedy through post-mining rehabilitation	Insignificant
2.4. Evaporated salt scraped off surface by scraper			
2.4.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
2.4.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)

ACTIVITY whether listed or not listed. **& POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**Significance if not mitigated**	**MITIGATION TYPE** (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**Significance, if mitigated**
2.4.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
2.5. Scraped salt loaded by front end loader to haul truck			
2.5.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
2.5.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)
2.5.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
2.6. Salt hauled to drying area off pan by truck			
2.6.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
2.6.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)
2.6.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
2.7. Salt allowed to dry in logistical facility / stockpiling area			
2.7.1. Topography	Insignificant	Remedy through post mining removal	Insignificant
2.8. Dried salt sent through sorting assembly. Excess brine sent to Concentration Pond.			
2.8.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
2.8.2. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)

ACTIVITY whether listed or not listed. **& POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**Significance if not mitigated**	**MITIGATION TYPE** (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**Significance, if mitigated**
2.9. Sorted salt sent through cyclone for final moisture removal. Excess brine sent to Concentration Pond			
2.9.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
2.9.2. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
2.10. Waste Salt Handling			
2.10.1. Land Capability	Moderate	Remove / Level	Insignificant
2.11. Vehicles using unsurfaced roadways			
2.11.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
2.11.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)
2.11.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
2.11.4. Traffic	Insignificant	None required	Insignificant
2.12. Use of diesel			
2.12.1. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
2.13. Use of small workshop			
2.13.1. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
2.14. Potable water trucked in as required (minor volumes)			
2.15. Toilet to French Drain			
2.15.1. Groundwater	Insignificant (Minor volumes)	Control through management and monitoring	Insignificant (Minor volumes)

ACTIVITY whether listed or not listed. **& POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**Significance if not mitigated**	**MITIGATION TYPE** (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**Significance, if mitigated**
2.16. Overall general impacts identified in Specialist Aquatic Study			
2.16.1. Loss and disturbance of aquatic vegetation & biota	Insignificant	Avoid further impact through monitoring and awareness	Insignificant
2.16.2. Soil and geomorphological modifications	Moderate	Control further impact through monitoring and awareness	Insignificant
2.16.3. Altered water quality and quantity	Moderate	Avoid through pollution prevention and limit use to sustainable yields	Insignificant
3. **DECOMMISSIONING PHASE ACTIVITIES**			
3.1. Remove final evaporated salt			
3.1.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
3.1.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)
3.1.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
3.2. Remove / flatten all evaporation pond side walls.			
3.2.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
3.2.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)
3.2.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
3.3. Backfill buffer and concentration ponds with existing stockpiled waste salt			

ACTIVITY whether listed or not listed. **& POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**Significance if not mitigated**	**MITIGATION TYPE** (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**Significance, if mitigated**
3.3.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
3.3.2. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
3.4. Remove all structures foundations and footings (unless required by landowner)			
3.4.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
3.4.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)
3.4.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
3.5. Rip surface of logistical facility and stockpiling area to 30 -45cm deep			
3.5.1. Noise	Insignificant (None on surrounding land users)	Control through noise control (if feasible)	Insignificant (None on surrounding land users)
3.5.2. Dust	Insignificant (None on surrounding land users)	Control through dust control if required	Insignificant (None on surrounding land users)
3.5.3. Hydrocarbon	Moderate to insignificant dependent on level of leak	Control and remedy through Hydrocarbon management protocol.	Insignificant (if cleared)
3.6. Allow to revegetate naturally			
3.7. Additional impacts of decommissioning rehabilitation identified by specialists Aquatic Study			
3.7.1. Loss and disturbance of aquatic vegetation & biota	Insignificant	Avoid further impact through monitoring and awareness	Insignificant
3.7.2. Altered water quality and quantity	Insignificant	Avoid through pollution prevention	Insignificant

ACTIVITY whether listed or not listed. **& POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**Significance if not mitigated**	**MITIGATION TYPE** (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**Significance, if mitigated**
3.7.3. Soil disturbance	Moderate	Remedy through rehabilitation methodology	Insignificant
4. **AFTERCARE PERIOD**			
4.1. Remove alien vegetation, if present			
4.2. Monitor revegetation success and continue			
4.3. Conduct final performance assessment			
4.4. Lodge closure Application			

17.4 Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	**RECOMMENDATIONS OF SPECIALIST REPORTS**	**RECOMMENDATIONS INCLUDED IN EIA (Mark with an X where applicable)**	**REFERENCE**
Archaeological	SAHRA has requested an Archaeological and Palaeontological study. However it is noted that all disturbances have already taken place decades ago and there is no possibility of additional disturbance of heritage artefacts. In addition the screening tool (Appendix 8) notes that the Relative Archaeological and Cultural Heritage theme sensitivity is LOW. A specialist has been tasked with submitting an Application for Exemption for the studies requested by the Heritage Authorities. In the unlikely event of the Heritage Authorities insisting on such studies then these will be distributed for comment. Refer Appendix 9 for copies of Specialist reports in this regard.	NA	
Aquatic Habitat Assessment	The boundary of the mining area must be clearly demarcated and shown to staff in order to prevent any additional disturbances on the pan. Any unnecessary intrusion into these areas is prohibited. No new roads should be created.	X	Para 36.2 and Para 38
	Machinery and vehicles within the pan must be limited to the absolute minimum and the existing access routes to the pumps and already disturbed areas must be utilised as far as possible	X	Para 34.1
	Use of the borehole water must be kept to an absolute minimum	X	Para 36.2
	The water quality should be tested yearly and assessed for any unnatural changes	X	Para 36.2

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	RECOMMENDATIONS INCLUDED IN EIA (Mark with an X where applicable)	REFERENCE
	Excavations must not exceed the minimum depth needed for effective mining of the brine.	X	No further disturbance contemplated
	Regarding the protection of the groundwater, although the potential impact for the area is very low, the following measures are recommended to ensure the successful continuation of future mining and expansions: - All machinery must be in excellent condition and there must be NO oil/fuel leaks whatsoever from equipment. Measure must be in place to prevent this, such as drip trays underneath parked machinery/equipment - If a spill does occur, it must be immediately reported to the relevant authorities and immediately remediated	X	Para 34.3
	The entire pan must be protected from direct or indirect spills of pollutants, e.g. sediment, refuse, sewage, cement, oils, fuels, chemicals, wastewater etc. Should any spills of hazardous materials occur on the site or in the storage area, the relevant clean-up specialists must be contacted immediately. In the event of a spillage that cannot be contained and which poses a serious threat to the local environment, the following Departments must be informed of the incident in accordance with Section 30 of the National Environmental Management Act, Act 107 of 1998, within forty-eight (48) hours: - The Local Authority; - The Department of Mineral Resources - Department of Water and Sanitation	X	Para 34.3
	All solid waste generated during the construction process (including packets, plastic, rubble, cut plant material, waste metals etc.) must be placed in the waste collection area and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent the skips / bins. Burying of waste, rubble on site is prohibited.	X	Para 34.3
	Any maintenance of mining infrastructure must be undertaken as sensitively as possible to prevent adverse impacts to the environment during repairs	X	Para 34.3
	A monitoring programme shall be in place, not only to ensure compliance with the EMPr throughout the mining process	X	Para 36

18 Environmental impact statement

18.1 Summary of the key findings of the environmental impact assessment

The point to remember in this case is that all impacts have already occurred, with the exception of the following on-going impacts:

1) *Groundwater*: This is an existing impact that has taken place for several decades. If the impact was significant, the operation would not have been sustainable and there would have been regional/ sub-regional impact already taking place. Note that updated Water Use Licence application is currently underway (as per para 12.1.8.
2) *Noise and dust impacts* are particularly low at this site given the small scale of activities. Furthermore the operational activities do not generally result in dust or noise impact. The construction phase did, and the decommissioning phase probably will, result in more dust and noise impact, but even those will be insignificant impacts.
3) *Pan functioning:* Disturbance by pond development and processing and stockpiling totals approx. 75.7ha (out of total pan area of 1 108ha). In addition a total of max 1km of pan fringe is disturbed, out of total of 16km. No corridors are affected by the development that has been in place for several decades now.

Refer 15 for further discussion on the positive and negative impacts.

There has been very little public input despite the wide and transparent public participation that has taken place. The only comments received form parties other than State Departments have been from surrounding salt mining companies (one with no objection and the other requiring additional information, duly supplied herein).

The aspect which does require finalization is the updated WUL application currently being undertaken by other consultants.

18.2 Final Site Map

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

Refer Figures 4 and 5. Such figures also show the overall measured disturbance areas.

18.3 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.

Objectives are non-specific / less measureable aims of the rehabilitation/impact management programme.

Outcomes are the measurable effects the rehabilitation /impact management must accomplish.

18.3.1 Impact Management objectives are as follows:

1) To minimise impact on biodiversity operation at the site
2) To ensure that the proposed operation does not contravene policies of local / municipal SDF, IDF and other policy documentation
3) Elimination of any significant impact on surface water and groundwater regime
4) Limit any environmental nuisance factors resulting from salt mining at this site
5) To have a high level of internal and independent monitoring to ensure that impact remain minimal
6) To ensure that the post mining landscape and site condition mimics the natural environment.

18.3.2 Impact Management outcomes are as follows:

1) Ensure that mining disturbance does not "sprawl" unnecessarily beyond current footprint, with the exception of the proposed pump stations on the south of the pan.
2) General site husbandry must be of the highest order and management must be fully *au fait* with content and measures prescribed in the final EIA/EMP.
3) Limit noise and dust generation to standards imposed by legislation. If noise or dust become source of complaint, then monitoring is to be put in place
4) Decommissioning rehabilitation must aim to restore the site to its pre-mining environment

18.4 Final proposed alternatives.

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

Not applicable yet (and unlikely to become applicable).

19 Aspects for inclusion as conditions of Authorisation.

The following conditions must be included as conditions of authorisation:

1) All aspects and measures prescribed in the EMP must be strictly applied.
2) ECO must be appointed for purposes of monitoring.
3) Any additional specialist studies (unlikely) required during the formulation of the Water Use Licence must be supplied to the EAP and the DMR.

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

None known.

21 Opinion as to whether activity should / should not be authorised

21.1 Reasons why the activity should be authorized or not.

The activity should be authorised given the following:

1) This application is in effect the amendment to allow for the consolidation of two mining rights and a prospecting Right held by sister companies and there is no plan to increase activities above and beyond those currently taking place with the exception of probably 2 pump stations in the south (in the Prospecting Right area).
2) The site has been operating as a salt mine for several decades with no discernable significant impact.
3) It is highly unlikely that the continuation of activities will result in any significant impact
4) Provided the decommissioning activities take place in accordance with the proposed mitigation measures, there should be no residual impact of the operation.

21.2 Conditions that must be included in the authorization

21.2.1 Specific conditions to be included into the compilation and approval of EMPr

The following conditions must be included as conditions of authorisation:

- All aspects and measures prescribed in the EMP must be strictly applied.
- ECO must be appointed for purposes of monitoring.
- Any specialist studies required (unlikely at this stage) during the formulation of the Water Use Licence must be supplied to the EAP and the DMR.

21.2.2 Rehabilitation requirements

None, except to state that all prescriptions of the EMP must be met including the ongoing nature of rehabilitation behind advancing mining.

22 Period for which the Environmental Authorisation is required.

30 years - This mine has an unlimited lifespan but the maximum allowable Mining Right period is for 30 years.

23 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 in respect of the EMPr. There was no Basic Assessment.

24 Financial Provision

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

R647 198

24.1 Explain how the aforesaid amount was derived.

The proposed consolidation will result in the aggregation of **existing** Rehabilitation Fund Guarantees. These are as follows:

1) Industrial Salt Section – R431 527
2) Gordonia Section – R215 671

This results in a total amount of R647 198 in terms of calculations done in 2022. Given that there is no change to the physical disturbance at this site, the rehabilitation fund quantum can merely be increased by 6% per annum.

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

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

Yes, the Mining Work Programme which accompanied the application showed through detailed cash flow forecast that ongoing rehabilitation could be funded from operating expenditure. The amount above will continue be advanced as an additional Bank Guarantee (to the existing guarantee).

25 Deviations from the approved scoping report and plan of study.

25.1 Deviations from the methodology used in determining the significance of potential environmental impacts and risks.

(Provide a list of activities in respect of which the approved scoping report was deviated from, the reference in this report identifying where the deviation was made, and a brief description of the extent of the deviation).

None

25.2 Motivation for the deviation.

Not applicable.

26 Other Information required by the competent Authority

26.1 Compliance with the provisions of sections 24(4)(a), (b) read with section 24 (3) (a) and (7) of NEMA (Act 107 of 1998). The EIA report must include the:-

26.1.1 Impact on the socio-economic conditions of any directly affected person.

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

Socio-economic impact occurs as a result of the following parties' socio-economic status being altered:

- Landowner: Positive impact in respect of surface rental and / or other income as a result of the mining.
- Mining Company and employees: Guaranteed income for duration of the project.
- Consumer: Guaranteed continued supply of salt from this source
- The applicant company is bound by prescriptions of the Social and Labour Plan to contribute to the community's skills development and must also implement a Local Economic Development project which meets the satisfaction of the DMR and local authority.
- The Social and Labour Plan also prescribes skills development for staff and community members.

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

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

The Scoping Report was lodged on SHARIS. SAHRA had requested an Archaeological and Palaeontological study. However it is noted that all disturbances have already taken place decades ago and there is no possibility of additional disturbance of heritage artefacts. In addition the screening tool (Appendix 8) notes that the Relative Archaeological and Cultural Heritage theme sensitivity is LOW. A specialist has been tasked with submitting an Application for Exemption for the studies requested by the Heritage Authorities. In the unlikely event of the Heritage Authorities insisting on such studies then these will be distributed for comment. Refer Appendix 9 for copies of Specialist reports in this regard.

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

The alternatives are considered in part 9, 14 and 15 under the relevant template headings.

PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

28 Details of the EAP,

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

Refer Para 1.

29 Description of the Aspects of the Activity

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

Yes. Refer table in Part A: Part 4 and 5.

30 Composite Map

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

Refer Figure 4 and 5.

31 Description of Impact management objectives including management statements.

31.1 Determination of closure objectives.

(Ensure the closure objectives are informed by type of environment)

The overall objective is to leave the site in a condition that it can form part of the surrounding wilderness area. In terms of meeting this closure objective the following is required:

1) The site must be shaped to mimic natural contours (including the on-pan disturbances).
2) All disturbances must be treated appropriately and all buildings, facilities and infrastructure must be removed, except those building required for retention by the landowner.
3) There must be no impact on the local surface and groundwater regime
4) Leave the site with no trace of any pollutant or risk to the future environment

31.2 The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity.

The full Environmental Management System will consist of:

- Implementation of measures as prescribed in this text (especially part 6 and 34).
- Environmental Awareness and Induction Training of staff (Appendix 8).
- Monitoring (Refer Part 36) through:
    - On site in-house monitoring (ECO or Mine Manager).
    - Environmental Audit every 2 years by independent party.
- Emergency Action Plans for Environmental incidents.
- Inspections by DMR/DEA environmental officers as legislated.

31.3 Potential risk of Acid Mine Drainage.

(Indicate whether or not the mining can result in acid mine drainage).

None

31.4 Steps taken to investigate, assess, and evaluate the impact of acid mine drainage.

NA

31.5 Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage.

NA

31.6 Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage.

NA

31.7 Volumes and rate of water use required for the mining, trenching or bulk sampling operation.

NA

31.8 Has a water use licence has been applied for?

In process. Refer Para 12.1.8.

32 Impacts to be mitigated in their respective phases

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

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
1. ESTABLISHMENT ACTIVITIES					
1.1. Clearing of logistical facility area outside of pan edge					
1.1.1. Soil: Impact already occurred	Clearing of topsoil –	8.6ha	Either no topsoil was removed or such topsoil has blown away over the decades. Fortunately the mobile nature of the sands and the fact that the topsoil is just Kalahari dune sand means that treatment of hardened topsoil through ripping will be sufficient rehabilitation	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.1.2. Visual: Impact continues	Views of disturbance area from within basin - Insignificant	Local Basin	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.1.3. Land Capability: Impact continues	Disturbed portion not available as wilderness / grazing area	8.6ha	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.1.4. Vegetation / Animal Life: : Impact continues	Disturbed portion not available as wilderness / grazing area	8.6ha	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.2. Establishment of logistical facilities including residences, office, workshop, generator facility, etc					
1.2.1. Visual	Views of disturbance area from within basin - Insignificant	Local Basin	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
1.3. Establishment of plant and stockpiling area on pan. (Currently 2 areas i.e. at northern and southern ponds)					
1.3.1. Land Capability	Disturbed portion not available as wilderness / pan area	11.8ha	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.3.2. Visual	Views of disturbance area from within basin - Insignificant	Local Basin	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.4. Establishment of bunded fuel tanks. There are 3 tanks (main tank behind workshop and smaller tanks at generator and crusher)					
1.5. Excavation of material from outside pan to construct dam walls for ponds on pan- Done					
1.5.1. Topography: Impact already completed	Very limited excavation from outside of pan	Less than 1500m² excavation	Backfill if required or slope edges and round any sharp edges to mimic natural vegetation	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.5.2. Soil: Impact already completed	Soil used to develop walls	Bounds 33ha pan surface area	Shape excavation to mimic natural contours and rip	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.5.3. Visual	Views of disturbance area from within basin - Insignificant	Local Basin	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.5.4. Land Capability	Disturbed portion not available as wilderness / grazing area	Less than 1500m² excavation	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.5.5. Vegetation	Disturbed portion not available as wilderness / grazing area	Less than 1500m² excavation	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
1.6. Development of dam walls for ponds on pan – Done					
1.6.1. Topography: Impact completed	Low walls on pan	±1-1.5m in height	Remove or flatten	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.6.2. Visual: Impact continues	Views of disturbance area from within basin - Insignificant	Local Basin	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.6.3. Land Capability: Impact Continues	Pan cannot function as pan in areas of disturbance	±33ha pond area on pan	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
1.6.4. Pan surface water: Impact continues	Pan cannot function as pan in areas of disturbance	±33ha pond area on pan	Linked to decommissioning rehabilitation and revegetation of the disturbed area	Decommissioning Rehabilitation Measures	During closure / decommissioning
2. **OPERATIONAL PHASE ACTIVITIES**					
2.1. Borehole pumping water virtually continuously from middle of pan into concentration ponds (via on surface pipes) and possible establishment of additional pump sites on Portion 18 and 20 if required					
2.1.1. Groundwater	Abstraction of brine to evaporate in ponds	Max capacity at present = 132 000m³	To be further determined by WULA currently underway	WUL imposed standards	Life of mine
2.1.2. Land Capability	Very small electric pumps placed on surface of pond	Less than 3m² per station	Remove	Decommissioning Rehabilitation Measures	During closure / decommissioning or as required
2.2. Brine is collected concentration ponds.					
2.3. From these concentration ponds the brine is pumped into evaporation ponds.					

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
2.3.1. Land Capability	Concentration ponds in pan surface	5 000m²	To be backfilled with waste salt as part of decommissioning rehabilitation	Decommissioning Rehabilitation Measures	During closure / decommissioning
2.4. Evaporated salt scraped off surface by scraper					
2.4.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
2.4.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
2.4.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.5. Scraped salt loaded by front end loader to haul truck					
2.5.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
2.5.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
2.5.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.6. Salt hauled to drying area off pan by truck					

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
2.6.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
2.6.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
2.6.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.7. Salt allowed to dry in logistical facility / stockpiling area					
2.7.1. Topography	Heap of salt placed by roving conveyor	Local	Will be sold or levelled during decommissioning rehabilitation	Decommissioning Rehabilitation Measures	During closure / decommissioning
2.8. Dried salt sent through sorting assembly. Excess brine sent to Concentration Pond.					
2.8.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
2.8.2. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.9. Sorted salt sent through cyclone for final moisture removal. Excess brine sent to Concentration Pond					

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
2.9.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
2.9.2. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.10. Waste Salt Handling					
2.10.1. Land Capability	Low heaps of low quality salt	Within on-pan disturbance area	Could be blended into high quality salt, could be sold as low quality salt – must be backfilled into buffer and concentration ponds if not sold at decommissioning stage	Decommissioning Rehabilitation Measures	During closure / decommissioning
2.11. Vehicles using unsurfaced roadways					
2.11.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
2.11.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
2.11.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.11.4. Traffic	Occasional trucks and small vehicles using access road	Local	Maintain safe speeds and obey relevant traffic laws. Ensure signage in place	Rod traffic laws	Life of mine
2.12. Use of diesel					

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
2.12.1. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.13. Use of small workshop					
2.13.1. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
2.14. Potable water trucked in as required (minor volumes)					
2.15. Toilet to French Drain					
2.16. Groundwater	Possible contamination of groundwater resource in case of leak	Very local	Contractor clearing	Contract	Life of mine
2.17. Overall general impacts identified in Specialist Aquatic Study					
2.17.1. Loss and disturbance of aquatic vegetation & biota	See line item 2.17.1 in Para 13	Site only	Monitoring, avoidance and Environmental Awareness	EMP prescriptions	Continuously
2.17.2. Soil and geomorphological modifications	See line item 2.17.1 in Para 13	Site only	Monitoring and Hydrocarbon Management	EMP prescriptions	Continuously
2.17.3. Altered water quality and quantity	See line item 2.17.1 in Para 13	Site only	Monitoring and Hydrocarbon Management	EMP prescriptions	Continuously
3. DECOMMISSIONING PHASE ACTIVITIES					
3.1. Remove final evaporated salt					
3.1.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
3.1.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
3.1.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
3.2. Remove / flatten all evaporation pond side walls.					
3.2.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
3.2.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
3.2.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
3.3. Backfill buffer and concentration pond with existing stockpiled waste salt					
3.3.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
3.3.2. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
3.4. Remove all structures foundations and footings (unless required by landowner)					
3.4.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
3.4.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
3.4.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
3.5. Rip surface of logistical facility and stockpiling area to 30 - 45cm deep					
3.5.1. Noise	Noise generated by earthmoving equipment and haul trucks	Local	Ensure vehicular silencers are operational. Reduce speed on all roads	Recommended standards in SANS 0103-1983 – refer para 12.1.10	Whilst active
3.5.2. Dust	Dust generated by earthmoving equipment and haul trucks	Local	Dust mitigation measures as per para 34.4	Recommended standards in NEMA:QA – Refer para 12.1.9	Whilst Active
3.5.3. Hydrocarbon	Potential Hydrocarbon leaks	Local	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	EMP prescriptions	Continuously
3.6. Allow to revegetate naturally					

Activity	Nature of impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
3.7. Additional impacts of decommissioning rehabilitation identified by specialists Aquatic Study					
3.7.1. Loss and disturbance of aquatic vegetation & biota	Refer Line item 3.7.1 in Para 13	Site only	Monitoring, avoidance and Environmental Awareness	EMP prescriptions	Continuously during closure
3.7.2. Altered water quality and quantity	Refer Line item 3.7.2 in Para 13	Site only	Monitoring and Hydrocarbon Management	EMP prescriptions	Continuously during closure
3.7.3. Soil disturbance	Refer Line item 3.7.3 in Para 13	Site only	Monitoring and Hydrocarbon Management	EMP prescriptions	Continuously during closure
4. **AFTERCARE PERIOD**					
4.1. Remove alien vegetation, if present					
4.2. Monitor revegetation success and continue					
4.3. Conduct final performance assessment					
4.4. Lodge closure Application					

33 Impact Management Outcomes

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). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
1. **ESTABLISHMENT ACTIVITIES**		
1.1. Clearing of logistical facility area outside of pan edge		
1.1.1. Soil: Impact already occurred	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.1.2. Visual: Impact continues	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective

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). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
1.1.3.	Land Capability: Impact continues	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.1.4.	Vegetation / Animal Life: : Impact continues	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.2.	Establishment of logistical facilities including residences, office, workshop, generator facility, etc		
1.2.1.	Visual	Remedy through post mining removal	Rehabilitation standard and end use objective
1.3.	Establishment of plant and stockpiling area on pan. (Currently 2 areas i.e. at northern and southern ponds)		
1.3.1.	Land Capability	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.3.2.	Visual	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.4.	Establishment of bunded fuel tanks. There are 3 tanks (main tank behind workshop and smaller tanks at generator and crusher)		
1.5.	Excavation of material from outside pan to construct dam walls for ponds on pan- Done		
1.5.1.	Topography: Impact already completed	Remedy through post mining rehabilitation	Rehabilitation standard and end use objective
1.5.2.	Soil: Impact already completed	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.5.3.	Visual	Remedy through post mining removal	Rehabilitation standard and end use objective
1.5.4.	Land Capability	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.5.5.	Vegetation	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.6.	Development of dam walls for ponds on pan – Done		
1.6.1.	Topography: Impact completed	Remedy through post mining removal	Rehabilitation standard and end use objective
1.6.2.	Visual: Impact continues	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
1.6.3.	Land Capability: Impact Continues	Remedy through post mining removal	Rehabilitation standard and end use objective
1.6.4.	Pan surface water: Impact continues	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
2.	**OPERATIONAL PHASE ACTIVITIES**		

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). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
2.1. Borehole pumping water virtually continuously from middle of pan into concentration ponds (via on surface pipes) and possible establishment of additional pump sites on Portion 18 and 20 if required		
2.1.1. Groundwater	Control through management and monitoring	Impact avoided
2.1.2. Land Capability	Remove pumps and electrical connections post mining	Rehabilitation standard and end use objective
2.2. Brine is collected concentration ponds.		
2.3. From these concentration ponds the brine is pumped into evaporation ponds.		
2.3.1. Land Capability	Remedy through post-mining rehabilitation	Rehabilitation standard and end use objective
2.4. Evaporated salt scraped off surface by scraper		
2.4.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
2.4.2. Dust	Control through dust control if required	Dust level standard not to be breached
2.4.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.5. Scraped salt loaded by front end loader to haul truck		
2.5.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
2.5.2. Dust	Control through dust control if required	Dust level standard not to be breached
2.5.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.6. Salt hauled to drying area off pan by truck		
2.6.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
2.6.2. Dust	Control through dust control if required	Dust level standard not to be breached
2.6.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.7. Salt allowed to dry in logistical facility / stockpiling area		
2.7.1. Topography	Remedy through post mining removal	Rehabilitation standard and end use objective

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). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
2.8. Dried salt sent through sorting assembly. Excess brine sent to Concentration Pond.		
2.8.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
2.8.2. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.9. Sorted salt sent through cyclone for final moisture removal. Excess brine sent to Concentration Pond		
2.9.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
2.9.2. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.10. Waste Salt Handling		
2.10.1. Land Capability	Remove / Level	Rehabilitation standard and end use objective
2.11. Vehicles using unsurfaced roadways		
2.11.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
2.11.2. Dust	Control through dust control if required	Dust level standard not to be breached
2.11.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.11.4. Traffic	Enforcement of traffic rules	Impact avoided
2.12. Use of diesel		
2.12.1. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.13. Use of small workshop		
2.13.1. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
2.14. Potable water trucked in as required (minor volumes)		
2.15. Toilet to French Drain		
2.15.1. Groundwater	Control through management and monitoring	Impact avoided
2.16. Overall general impacts identified in Specialist Aquatic Study		
2.16.1. Loss and disturbance of aquatic vegetation & biota	Control through management and monitoring	EMP Prescription

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). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
2.16.2. Soil and geomorphological modifications	Control through management and monitoring	EMP Prescription
2.16.3. Altered water quality and quantity	Control through management and monitoring	EMP Prescription
3. **DECOMMISSIONING PHASE ACTIVITIES**		
3.1. Remove final evaporated salt		
3.1.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
3.1.2. Dust	Control through dust control if required	Dust level standard not to be breached
3.1.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
3.2. Remove / flatten all evaporation pond side walls.		
3.2.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
3.2.2. Dust	Control through dust control if required	Dust level standard not to be breached
3.2.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
3.3. Backfill buffer and concentration ponds with existing stockpiled waste salt		
3.3.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
3.3.2. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
3.4. Remove all structures foundations and footings (unless required by landowner)		
3.4.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
3.4.2. Dust	Control through dust control if required	Dust level standard not to be breached
3.4.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
3.5. Rip surface of logistical facility and stockpiling area to 30 -45cm deep		
3.5.1. Noise	Control through noise control (if feasible)	Noise level standard not to be breached
3.5.2. Dust	Control through dust control if required	Dust level standard not to be breached
3.5.3. Hydrocarbon	Control and remedy through Hydrocarbon management protocol.	Impact avoided
3.6. Allow to revegetate naturally		

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). E.g. Modify through alternative method. Control through noise control, Control through management and Monitoring, through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
3.7.	Additional impacts of decommissioning rehabilitation identified by specialists Aquatic Study		
3.7.1.	Loss and disturbance of aquatic vegetation & biota	Control through management and monitoring	EMP Prescription
3.7.2.	Altered water quality and quantity	Control through management and monitoring	EMP Prescription
3.7.3.	Soil disturbance	Control through management and monitoring	EMP Prescription
4.	**AFTERCARE PERIOD**		
4.1.	Remove alien vegetation, if present		
4.2.	Monitor revegetation success and continue		
4.3.	Conduct final performance assessment		
4.4.	Lodge closure Application		

34 Impact Management Actions

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

1) Post Mining Rehabilitation of on-pan disturbances as per para 34.1 below
2) Post Mining Rehabilitation of off-pan disturbances (Refer para 34.2)
3) Domestic and Industrial Waste Management and Hydrocarbon pollution prevention must take place in accordance with the methodology in para 34.3 below.
4) Dust reduction measures to be implemented are contained in para 34.4

34.1 Post Mining Rehabilitation of on-pan disturbance areas

During the operation of the mine machinery and vehicles within the pan must be limited to the absolute minimum and the existing access routes to the pumps and already disturbed areas must be utilised as far as possible, in order to limit the volume of post mining rehabilitation required.

On pan disturbances include Plant and infrastructure, Waste Salt, Salt Product stockpiles, Buffer and Concentration pond excavations, Levee /pond walls, Pump stations. The proposed final decommissioning rehabilitation of these is as follows:

1) *Infrastructure and Plant*: All infrastructure and plant must be removed from the site. They retaining wall on the pan edge must be removed.
2) *Waste Salt (if any)*: Waste salt is actually low quality salt and there is a market for the material, albeit very low demand. All efforts must be made to sell or dispose of the material. Any remnant material must first be backfilled into the buffer and / or concentration ponds and any on-pan depressions, then if there is any remaining, that salt must be spread as thin as feasible over the open surface.
3) *Buffer ponds / Concentration pond excavations and depressions* on pan will be backfilled by waste salt. If backfill still required after that then pond/ levee wall material will be used to fully backfill these depressions.
4) *Pump stations*: All pump stations and associated infrastructure must be removed from the pan surface.
5) *The pond / levee walls*: These are to be, as far possible, removed and used in backfilling of buffer / concentration ponds and /or shaping of off-pan disturbances. However, the vast majority of the pond /levee wall material will be spread as thinly as possible over the pan surface.

34.2 Post Mining Rehabilitation of off-pan disturbance areas

There are 3 aspects to the off-pan rehabilitation of this site. These will only take place as part of decommissioning rehabilitation. They are the removal of structures and infrastructure, shaping of the disturbance areas, topsoil rejuvenation / revegetation.

1) Removal of structures/ infrastructure

Prior to decommissioning rehabilitation, the landowner must make final decision on which structures to retain. All structures / infrastructure (including pipes and cables) not required must be demolished and removed from site. Inert building rubble can be used to backfill any off-pan excavations or for shaping, provided it is covered with at least 1m of sand.

2) *Shaping of disturbance areas*

During the course of mining it has been necessary to develop some excavations or steep slopes in the sand. The rehabilitation of these areas requires that no slopes be left steeper than 1:3 and that all sharp edges are rounded. The resultant sand sloped areas must be ripped.

3) *Topsoil rejuvenation / revegetation*

Unfortunately, no topsoil has been retained for final rehabilitation of this site. Topsoil may have been removed prior to the construction phase but such topsoil was unlikely to remain in this arid often windy environment without specific intervention. However, this is not as significant a loss at it would be in other environments. In this case the surrounding consists of often mobile Kalahari sand dunes and the topsoil consists largely of exactly the same material as the underlying sands with windblown ephemeral seedbank.

Once all buildings and structure not required have been demolished and removed from site, the resultant hardened area need only be ripped to expose the sandy layer. The ripping action will capture windblown seeds.

The aftercare programme must include inspections to check on revegetation of the ripped area. Should revegetation not match surrounding vegetation within 1 year, then specialist intervention must be obtained.

34.3 Hydrocarbon Management and Domestic and Industrial Waste Management Protocol

Policy : Fuels / Lubricant Management

The holder currently manages their own fuels and lubricants on site with supply by contractor and collection of used oil by "used oil company". This system is inclusive of:

- Receipt and storage of fuels at the main tank
- Fuel supply and transport to all facilities from the main fuel tank.
- Lubricant receipt and storage
- Collection and temporary storage of used oils, contaminated filters, pipes, etc. prior to disposal at a suitably licensed disposal site. Used oils are currently collected by recycling company.
- Temporary storage of such in demarcated areas in the workshop.

In order to achieve the above with due regard for proper environmental protection, the following programme shall apply and facilities are in place and must bne retained / maintained.

Fuel Receipt, Storage and Dispensing.

In the management of fuel supply, receipt, storage and use the following procedures will be followed, cautions taken to properly manage this operational sector:

- The fuel delivery transport contractor will be cautioned to adhere to safe driving speeds and drive cautiously on the arduous gravel roads to the site.
- The existing fuel tanks are as shown in photo 2. The following applies:
    - A bund capable of holding 1.1 x the full capacity of the tanks within it has been developed.
    - A concreted floor has been developed.
    - A concreted service apron sufficiently large to catch fuel spills during receipt and supply of fuel is required.
    - Such apron must be dished concrete to lead rain-water or wash-water to drain pit (sump) for collection of oily-run-off and suitable decontamination / disposal thereof as shown hereafter.
- During dispensing of fuel to other facilities (plants) or field vehicles via tanker, the dispensing vehicle is to be fitted with suitable pumps and funnel extensions to reduce the risk of spillage in the transfer of fuels.

Workshop

On-site repairs: All scheduled mobile plant repairs which are to take place on the mine will take place in the workshop. The workshop is already on site with a constructed concrete floor (refer photo11). The apron is constructed with oil trap where separated oil is collected and disposed of in the oil recycling container. Any oil spills on the concreted apron or floor below the tank is to be treated with OT8 or similar oil decontaminant as per the product instructions. Waste oils from servicing of vehicles must be stored of in the waste oil collection facility.

The collection of used oils and disposable spares is to be conducted as follows:

- Place all used disposable spares in open drums and store such drums in demarcated “used oils” storage area in the workshop.
- Also continue contract with used oil company (such as Oilkol) to place their used oil container in this area from which they (Oilkol) will periodically collect such used oils and contaminated spares for recycling or legal disposal.
- All oils are to be drained from equipment prior to placement of equipment in the salvage yard

Emergency repairs on site:

In the event of a breakdown 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 bin for return to the used oil and lubricant storage area.
- Used filters are not to be buried at the site of repair.
- In the event of soil contamination, the soils are to be treated with a suitable decontaminant such as the OT8 product range or Spillsorb or similar product.

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

- Deleterious effects of oil / fuel on the environment
- Neutralisation of oil leaks on the concrete apron,
- The operation of the oil trap (including the storage of trapped oil); and
- Use of OT8 / Spillsorb products.

General Provisions

- All operators are to check their equipment for leaks and report such leaks on a daily basis.
- No used oils are to be used as dust suppressants on manoeuvring areas.

Domestic Waste handling

Domestic waste is collected in bins around the site. When full, this must be disposed of off-site at the nearest suitable facility. Note that no waste disposal on site in trenches is permitted without the proposer authorisation.

General Provisions

- All operators are to check their equipment for leaks and report such leaks on a daily basis.
- No used oils are to be used as dust suppressants on maneuvering areas.
- All receptacles must be inaccessible to animals.

Reporting

The entire pan must be protected from direct or indirect spills of pollutants, e.g. sediment, refuse, sewage, cement, oils, fuels, chemicals, wastewater etc. Should any spills of hazardous materials occur on the site or in the storage area, the relevant clean-up specialists must be contacted immediately. In the event of a spillage that cannot be contained and which poses a serious threat to the local environment, the following Departments must be informed of the incident in accordance with Section 30 of the National Environmental Management Act, Act 107 of 1998, within forty-eight (48) hours:

- The Local Authority;
- The Department of Mineral Resources
- Department of Water and Sanitation

34.4 Dust Reduction Measures

The wetting of haul roads and activity areas by water cart could be considered should dust ever become an issue.

Although it is unlikely that dust would ever impact on any surrounding land use or user, dust can be continually monitored and analysed through the use of a DustWatch system at any location which is the source of a complaint in this regard (should such complaint be received). Such system consists of a series of directional dust monitoring units. The four-bucket units are used to monitor prevailing wind directions with opposing winds as controls. This allows for an assessment of import / export fall-out dust quantification and standard services include the regular sample collection, filtration and data analysis as well as data reporting of the findings (Monthly Fallout & Trends Analysis).

The required dust control, in the highly unlikely event that dust is determined to be arising from the site, will depend on the source of the dust but will generally be controlled by wetting or revegetation.

35 Financial Provision

35.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under Reg 22(2)(d).

The overall objective is to leave the site in a condition that it can form part of the surrounding wilderness area. In terms of meeting this closure objective the following is required:

1) The site must be shaped to mimic natural contours (including the on-pan disturbances).
2) All disturbances must be treated appropriately and all buildings, facilities and infrastructure must be removed, except those building required for retention by the landowner.
3) There must be no impact on the local surface and groundwater regime
4) Leave the site with no trace of any pollutant or risk to the future environment

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

Yes.

35.3 Rehabilitation plan describing and showing the scale and aerial extent of the main mining activities and the anticipated mining area at the time of closure

Refer Figures 9 and 10 overleaf.

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

Figures 9 and 10 below clearly shows the compatibility of the rehabilitation plan with the closure objective.

35.5 Confirm financial provision will be provided as determined.

The calculated financial provision will, subject to DMR approval, be provided by way of Bank Guarantee.

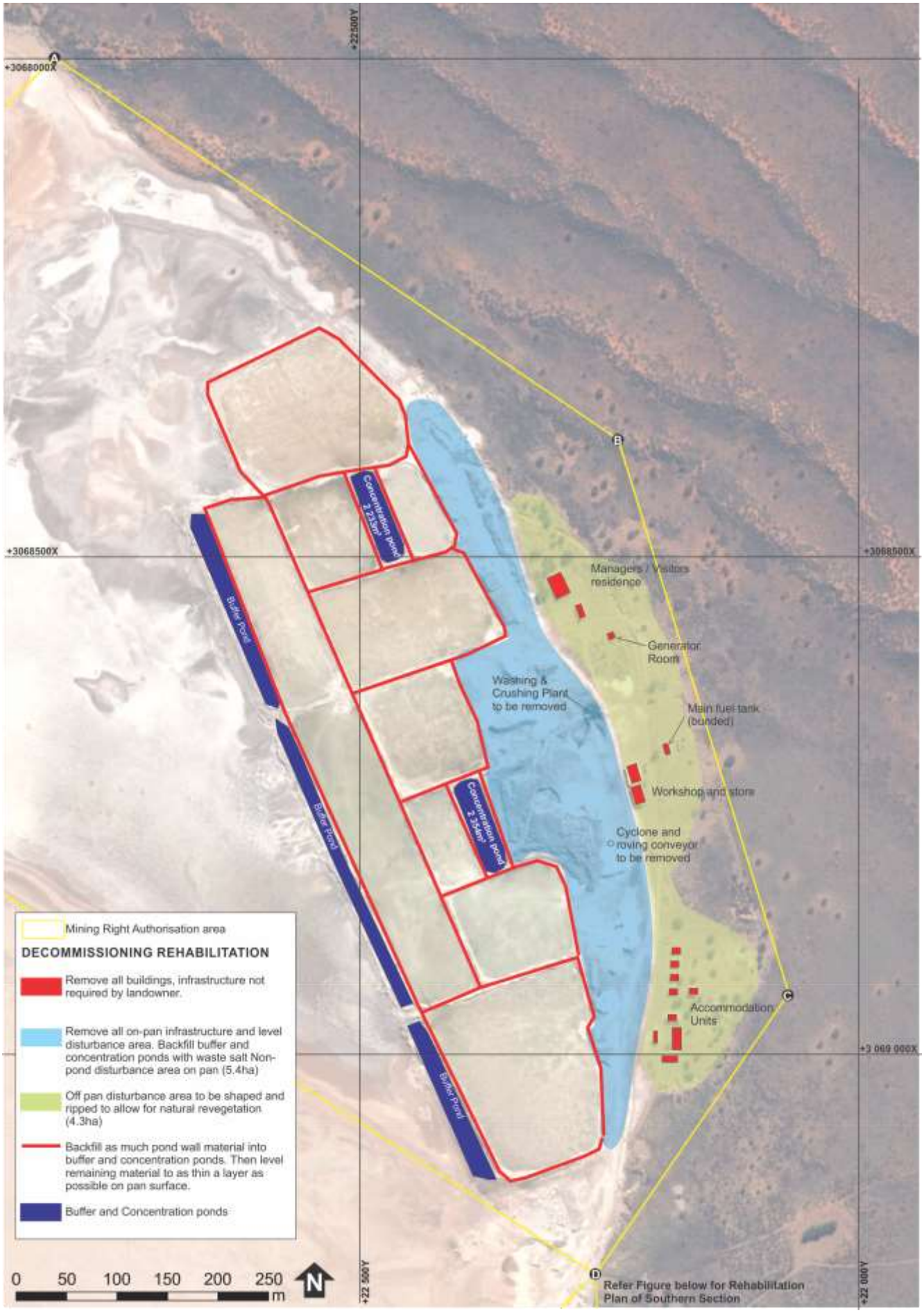


Figure 9: Rehabilitation plan showing measured areas and compatibility with proposed end use (Northern Area)

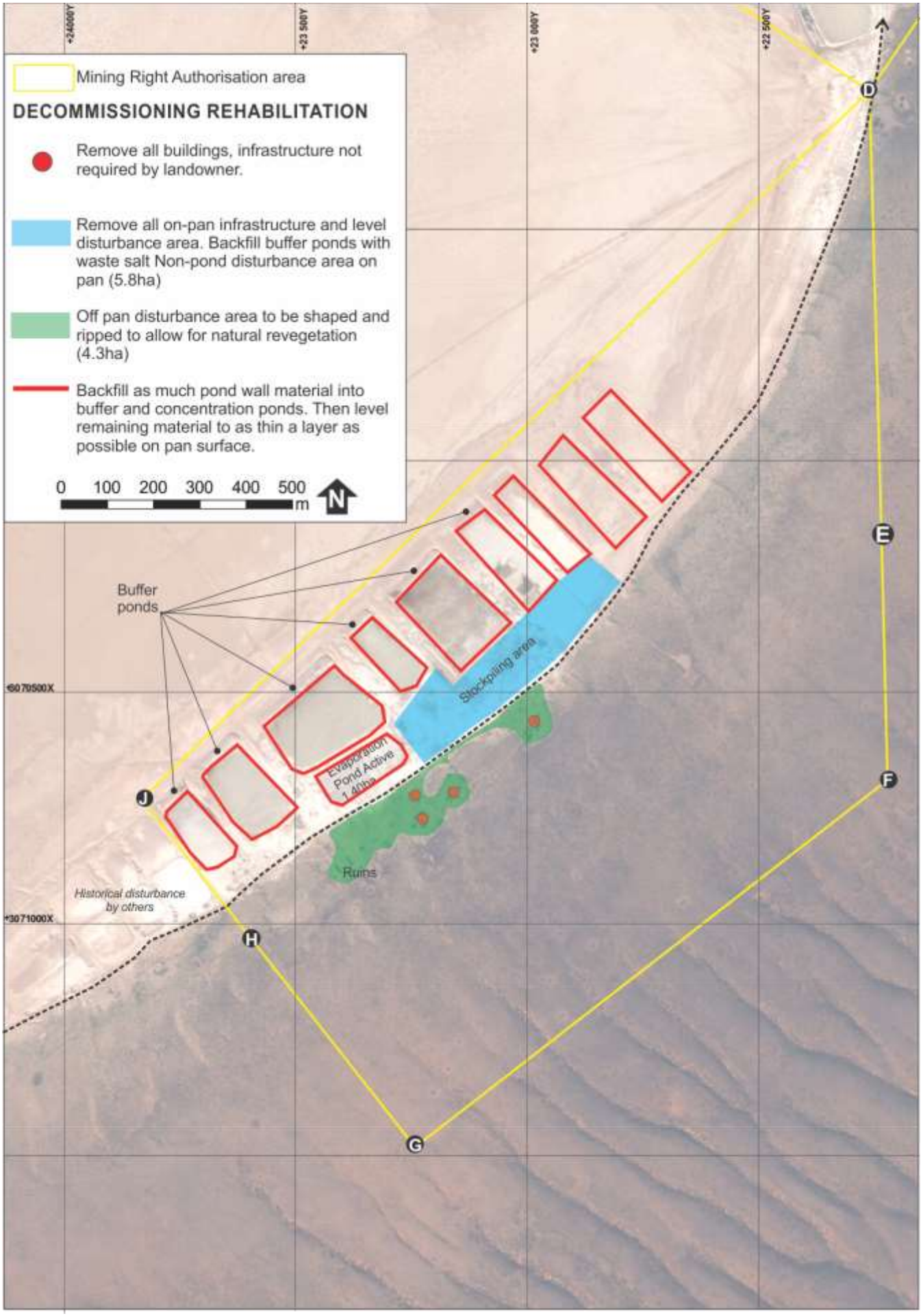


Figure 10: Rehabilitation plan showing measured areas and compatibility with proposed end use (Southern Area)

36 Mechanisms for monitoring compliance and performance assessment.

36.1 Components, Principles and Roles of Monitoring System

In order to ensure that all aspects of the operation are monitored effectively, the following components will be put in place:

1. *Legally required Environmental Audit*: All mines are required by law to conduct Environmental Audits every 2 years or as per EMP prescribed interval. Such audits are compiled in terms of Reg 34 and Appendix 7 of NEMA and must be compiled by independent party.
2. *Appointment of ECO*: It is required that an ECO be appointed for the site. Such ECO need not be in the permanent employ of the applicant but must visit the site regularly and monitor the site for signs of environmental transgression.
3. *Internal Monitoring and its formalisation*: Internal monitoring is required in terms of the content of para 36.2 below. The issue that typically arises out of the system is that no formal record of internal monitoring takes place. It is required that management design forms/ reports containing details of the monitoring as required in terms of the table below. These must be made available to the DMR, the ECO and independent Environmental Auditor.
4. Note further that the requirement for monitoring must be impressed upon all *staff* members during their *environmental training*. Specific staff members must be assigned areas of responsibility in terms of monitoring and their reporting must form part of the formal reporting by the mine manager.

36.2 Table showing monitoring actions per impact

Table A

In order to reduce the length of this table the following monitoring actions are common for all Noise, Air Quality and Hydrocarbon impact generating activities:

Source activity & Impacts requiring monitoring programmes	Mitigation Measures	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
Noise	Ensure vehicular silencers are operational. Reduce speed on all roads	None, except to ensure vehicle silencers are in operation	Drivers	Continuously
Air Quality / Dust	Dust mitigation measures as per para 34.4	• Visual monitoring of dust direction (and volume) • If complaint is received from any quarter, then formal monitoring with permanent DustWatch type system must take place at site of complaint	Staff, Mine Manager	Continuously
Hydrocarbon	Hydrocarbon / Industrial/Domestic Waste Management Protocol as per para 34.3	Any leaks or non-functioning to be reported to management immediately	To be conducted by operators on occurrence	Implement specification in Para 34.3 if shortcomings identified.

Table B

Source activity & Impacts requiring monitoring programmes	Mitigation Measures	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. ESTABLISHMENT ACTIVITIES				
1.1. Clearing of logistical facility area outside of pan edge	Not applicable. This has already occurred.			
1.2. Establishment of logistical facilities including residences, office, workshop, generator facility, etc	Not applicable. This has already occurred			

Source activity & Impacts requiring monitoring programmes	Mitigation Measures	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
1.3. Establishment of plant and stockpiling area on pan. (Currently 2 areas i.e. at northern and southern ponds)	Not applicable. This has already occurred			
1.4. Establishment of bunded fuel tanks. There are 3 tanks (main tank behind workshop and smaller tanks at generator and crusher)	Not applicable. This has already occurred			
1.5. Excavation of material from outside pan to construct dam walls for ponds on pan- Done	Not applicable. This has already occurred			
1.6. Development of dam walls for ponds on pan – Done	Not applicable. This has already occurred			
2. OPERATIONAL PHASE ACTIVITIES				
2.1. Borehole pumping water virtually continuously from middle of pan into concentration ponds (via on surface pipes) and possible establishment of additional pump sites on Portion 18 and 20 if required				
2.1.1. Groundwater	Monitor volumes and quality of groundwater abstracted	Volumes to be monitored and reported to DWS as required. Water quality be tested yearly and assessed for any unnatural changes	Mine manager to record volumes of water abstracted and ensure it is within ambit of allowable use	To be reported on in 2 yearly independent Audit as well as defined by WULA
2.2. Brine is collected concentration ponds.	No extension of existing ponds or development of new concentration ponds without amendment of Mining Work Programme	Infield extent of activities to be compared to permitted extent of disturbances	Independent assessor during audit	Every 2 years

Source activity & Impacts requiring monitoring programmes	Mitigation Measures	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
2.3. From these concentration ponds the brine is pumped into evaporation ponds.	No extension of existing ponds or development of new evaporation ponds without amendment of Mining Work Programme	Infield extent of activities to be compared to permitted extent of disturbances	Independent assessor during audit	Every 2 years
2.4. Evaporated salt scraped off surface by scraper				
2.4.1. Noise	Refer Table A above			
2.4.2. Dust				
2.4.3. Hydrocarbon				
2.5. Scraped salt loaded by front end loader to haul truck				
2.5.1. Noise	Refer Table A above			
2.5.2. Dust				
2.5.3. Hydrocarbon				
2.6. Salt hauled to drying area off pan by truck				
2.6.1. Noise	Refer Table A above			
2.6.2. Dust				
2.6.3. Hydrocarbon				
2.7. Salt allowed to dry in logistical facility / stockpiling area				
2.8. Dried salt sent through sorting assembly. Excess brine sent to Concentration Pond.				
2.8.1. Noise	Refer Table A above			
2.8.2. Hydrocarbon				
2.9. Sorted salt sent through cyclone for final moisture removal. Excess brine sent to Concentration Pond				

Source activity & Impacts requiring monitoring programmes	Mitigation Measures	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
2.9.1. Noise	Refer Table A above			
2.9.2. Hydrocarbon				
2.10. Waste Salt Handling	Maximise sale of waste salt (even if at reduced profit)	Continue searching for market	Mine manager	As required
2.11. Vehicles using unsurfaced roadways				
2.11.1. Noise	Refer Table A above			
2.11.2. Dust				
2.11.3. Hydrocarbon				
2.11.4. Traffic	Maintain safe speeds and obey relevant traffic laws. Ensure signage in place			
2.12. Use of diesel				
2.12.1. Hydrocarbon	Refer Table A above			
2.13. Use of small workshop				
2.13.1. Hydrocarbon	Refer Table A above			
2.14. Potable water trucked in as required (minor volumes)				
2.15. Toilet to French Drain				
2.15.1. Groundwater	Contractor clearing			
3. **DECOMMISSIONING PHASE ACTIVITIES**				
3.1. Remove final evaporated salt	Ensure all saleable product is removed from site (except residual waste salt)	Ensure all saleable product is removed from site (except residual waste salt)	Mine manager and / or contractor appointed to conduct decommissioning rehabilitation. To be checked also by independent EAP post decommissioning measures	Decommissioning period and post decommissioning audit
3.1.1. Noise	Refer Table A above			
3.1.2. Dust				
3.1.3. Hydrocarbon				

Source activity & Impacts requiring monitoring programmes	Mitigation Measures	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
3.2. Backfill into concentration and buffer ponds (after backfilling with waste salt as per 3.3 below) and then flatten all residual evaporation pond side walls).	This is a mitigation measure	Ensure the mitigation measure takes place	Mine manager and / or contractor appointed to conduct decommissioning rehabilitation. To be checked also by independent EAP post decommissioning measures	Decommissioning period and post decommissioning audit
3.2.1. Noise	Refer Table A above			
3.2.2. Dust				
3.2.3. Hydrocarbon				
3.3. Backfill buffer and concentration ponds with existing stockpiled waste salt	This is a mitigation measure	Ensure the mitigation measure takes place	Mine manager and / or contractor appointed to conduct decommissioning rehabilitation. To be checked also by independent EAP post decommissioning measures	Decommissioning period and post decommissioning audit
3.3.1. Noise	Refer Table A above			
3.3.2. Hydrocarbon				
3.4. Remove all structures foundations and footings (unless required by landowner)	This is a mitigation measure	Ensure the mitigation measure takes place	Mine manager and / or contractor appointed to conduct decommissioning rehabilitation. To be checked also by independent EAP post decommissioning measures	Decommissioning period and post decommissioning audit
3.4.1. Noise	Refer Table A above			
3.4.2. Dust				
3.4.3. Hydrocarbon				
3.5. Rip surface of logistical facility and stockpiling area to 30 -45cm deep	This is a mitigation measure	Ensure the mitigation measure takes place	Mine manager and / or contractor appointed to conduct decommissioning rehabilitation. To be checked also by independent EAP post decommissioning measures	Decommissioning period and post decommissioning audit
3.5.1. Noise	Refer Table A above			
3.5.2. Dust				

Source activity & Impacts requiring monitoring programmes	Mitigation Measures	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
3.5.3. Hydrocarbon				
3.6. Allow to revegetate naturally				
4. **AFTERCARE PERIOD**				
4.1. Remove alien vegetation, if present				
4.2. Monitor revegetation success and continue				
4.3. Conduct final performance assessment				
4.4. Lodge closure Application				

37 Indicate the frequency of the submission of the performance assessment report.

Environmental Audit reporting is required once every 2 years.

38 Environmental Awareness Plan

38.1 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" to be presented to staff at induction or once per annum for existing staff. Provisional course content is included in Appendix 5.

38.2 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 5 as well as proposed monitoring in part 36.

39 Specific information required by the Competent Authority

The following reporting must take place:

1) Annual update of the Rehabilitation fund quantum calculation (on the anniversary of the last one)
2) Environmental Audit Report once every 2 years (including monitoring results).
3) In addition, the applicant is required to report on Mining Charter requirements, Social and Labour Plan Progress reports annually and to review of SLP every 5 years.

40 UNDERTAKING

The EAP herewith confirms the:

a) Correctness of the information provided in the reports
b) Inclusion of comments and inputs from stakeholders and I&Aps
c) Inclusion of inputs and recommendations from the specialist reports where relevant and
d) Acceptability of the project in relation to the finding of the assessment and level of mitigation proposed.

UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I, Craig Donald herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.

Signature of the EAP
DATE: 18 October 2022

UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Craig Donald herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with Interested and Affected Parties and stakeholders has been correctly recorded and reported herein.

Signature of the EAP
DATE: 18 October 2022

Appendix 1:

CV and Experience of EAP

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

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 served to highlight any shortcomings in the EMP.

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

In addition, the work also entails annual updates of Rehabilitation Quantum calculations for almost all of the approved Mining Rights in the list below. These calculations 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
- Salt at Gemsbok Horn (North of Upington) – Transalt (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 mine - 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 one 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
- 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)

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)

"<u>One Environmental System</u>" applications (Post 8 December 2014) all conducted in terms of NEMA EIA process:

- 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 Hoorn (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 – 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

<u>Section 24G Applications:</u>

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

Appendix 2:

Declaration of Independence of EAP

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: 26 | 07 | 2015

SOUTH AFRICAN POLICE SERVICE
VISPOL HEAD
2015 -07- 26
SOMERSET WEST
AMAPOLISA OMZANTSHI AFRICA

SAPS MAIN ROAD Somerset West 021 8501303

APPENDIX 3:

Copy of correspondence sent
(Including newspaper advert and poster)

Ons onthou

Ons onthou Mandela
jaar na jaar
in sy verjaarsdag maand
gee sewe- en sestig minute
van ons tyd
op een dag aan iemand
op sy verjaarsdag
laat iemand verdruk
'n bietjie lag

ons onthou sy woorde
ons onthou sy dade
ons onthou sy moed
hy het geveg
sewe en twintig jaar
getronk vir ons bestaansreg
hy het uitgekom,
maar sy vyand vergewe
laat lewe laat blom

ons onthou, Madiba
se dans passie
se lus vir die lewe
se omgee
se nooit baklei
ons onthou vir hom
wat van jou en my

deur Gert Jakobs

NOTICE OF AMENDMENT OF EXISTING MINING RIGHT APPLICATION by INDUSTRIAL SALT (Pty) Ltd & CALL FOR COMMENTS: Salt Mining on Portions 10, 13, 18 and 20 of farm Groot Witpan No 327 (Gordonia RD)

Please be advised that Application for Amendment of existing Mining Right has been lodged by Industrial Salt (Pty) Ltd to the Department of Mineral Resources: Northern Cape. Such application is made in terms of Section 102 of the Mineral and Petroleum Resources Development Act (Act 28 of 2002, as amended) for:

- Abandonment of a Mining Right held by Gordonia Salts (Pty) Ltd (on Portion 10) and Incorporation of that Right into the northern Industrial Salt (Pty) Ltd Mining Right Area (on Portion 13)
- Expansion of the Mining Right area to the NW to incorporate additional pan area on Portion 18 and Portion 20 of Groot Witpan 327.

A copy of the Draft Scoping Report of the proposed operation is available for public scrutiny at the following libraries in Upington (Paballelo Library (5 Kaizer Cres), Sandile Present Library (5 Carlton St), Public Library (Mark St)). A digital copy can be made available by Email from the contact details below.

The existing operation probably triggers the following listed activities in terms of Government Notices 983, 984 and 985 amended in 2017 under the National Environmental Management Act (Act 107 of 1998, as amended). Note the listed activities have been paraphrased here:

Listing 983: Activity 12: The development of dams where the dam water surface area exceeds 100 m²; or infrastructure or structures with a physical footprint of 100m² or more where such development occurs within a water course or within 32m of a watercourse

Listing 983: Activity 19: The excavation of soil, sand, shells, shell grit, pebbles or rock of more than 10m³ from a watercourse

Listing 983: Activity 22: The decommissioning of any activity requiring a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

Listing 983: Activity 27: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.

Listing 984: Activity 15: The clearance of an area of 20 hectares or more of indigenous vegetation.

Listing 984: Activity 17: Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, and / or the primary processing of a mineral resource.

Listing 985: Activity 4: The development of a road wider than 4m with a reserve less than 13,5m.

Listing 985: Activity 10: The development and related operation of facilities or infrastructure for the storage of a dangerous good with a combined capacity of 30 but not exceeding 80m³.

In order to be identified and registered as an interested and / or affected party (I&AP) and/or to provide comment on the Draft Scoping Report, you are invited to submit your name, contact information and interest in the matter and /or comments, in writing, to reach the address below within 30 days of this publication. Note that only registered Interested and Affected Parties will be kept abreast of the application status in future as well as receiving copies of all relevant documentation. There will be further opportunity to comment on this application, if you register as an I&AP:

Site Plan Consulting PO Box 28 Strand 7139. Tel: (021)854 4260.
Fax: (021) 854 4321. Email: craig@siteplan.co.za.
Contact person: Craig Donald.

Radiostasie bereik nou meer

GEMSBOK-UPINGTON: Radio Riverside het verlede week, aangekondig dat die stasie sy uitsending gebied sal uitbrei na die Kai !Garib Munisipale gebied vanaf Augustus 2020.

Hierdie mylpaal val saam met die 21-jaar vieringe van die stasie wat in Oktober 2020 sal plaasvind.

Gemeenskappe in die Kai !Garib-munisipale gebied het die radiostasie genader om na die uitsending uit te brei na Kai !Garib, sodat hulle aktief kan deelneem aan die aktiwiteite van die stasie.

Radio Riverside het 'n aansoek na die reguleerder - ICASA (Onafhanklike Kommunikasie-owerheid van Suid-Afrika) gedoen om die stasie toestemming en bykomende frekwensie te gee om hierdie gemeenskappe te bedien. Die lisensie is vroeër vanjaar toegeken en Radio Riverside sal in die nuwe gebiede op 98.6 FM uitgesaai word.

Die radiostasie het strategiese vennote geïdentifiseer om te help met die realisering van hierdie langtermyn doelwit van die stasie en die rolspelers.

Stasiebestuurder, Thabang Pusoyabone, saam met raadsvoorsitter van Radio Riverside, Vernon Mfusi

Riverside het met Kai !Garib Munisipaliteit, Scatec Solar en die Departement van Paaie en Openbare Werke ooreengekom om saam te werk om hierdie droom 'n realiteit te maak.

Die departement van Paaie en Openbare Werke sal die terrein voorsien vir die oordragtoerusting, terwyl Scatec Solar verantwoordelik is vir die transmissietoerusting wat op die bykomende perseel geïnstalleer sal word om met die hoofterrein in Upington te skakel.

Die Kai !Garib-munisipaliteit het 'n gebou geïdentifiseer wat aan die radiostasie toegewys sal word en 'n nuwe satellietateljee in Kakamas opgerig gaan word.

Die doel van hierdie satellietateljee is om te verseker dat die gemeenskappe van die munisipaliteit direkte en maklike toegang tot die radiostasie het en dat sommige van die programme vanaf die satellietateljee uitgesaai sal word.

Die raadsvoorsitter van Radio Riverside, Vernon Mfusi, ontvang die saamwerk ooreenkoms vanaf die Kai !Garib burgemeester Marius Louw.

Gemeenskapsradio is wanneer plaaslike mense hul eie programme vervaardig en uitsaai en aan die aktiwiteite van die stasie deelneem.

Die raadsvoorsitter van Radio Riverside, Vernon Mfusi, sê die uitbreiding van die sein is 'n geleentheid vir plaaslike jeug, organisasies, regeringsdepartemente wat in die Kai !Garib Munisipaliteit gevestig is om ook deel te neem deur middel van inhoudsproduksie en -uitsending met behulp van die satellietateljee, sodat programmeringsinhoud gemeenskappe insluit wat na Radio Riverside luister en bedien.

Die burgemeester van die munisipaliteit, Marius Louw, het tydens die ondertekening van die ooreenkoms tussen die radiostasie en die munisipaliteit gesê dat ingeligte en geontwikkelde gemeenskappe die bevordering van demokrasie verseker.

Volgens die stasiebestuurder, Thabang Pusoyabone sal die stasie na verwagting vroeg in Augustus 2020 in werking tree en ander ontwikkelings sal voortduur.

GROBLERSHOOP & KEIMOES

Die volgende ouers word versoek om Marilize du Plessis op Selnr 078 061 5310 te skakel of die **Kindersorgkantoor** in Bultstraat, **Groblershoop** te besoek in verband met die beplande pleegsorgplasing van hulle kind(ers):

- Ben Ludick
- Karinies Dandy

Die volgende ouers word versoek om Lizeth Nakari van **Kindersorg Keimoes** op Selnr 062 215 8254 te skakel in verband met die verlenging van hulle kind(ers) se pleegsorgplasing:

- Arrie Lubbe
- Abie Basson
- Penelope Maasdorp
- John Reun
- Chantel van Neel
- Antonius Afrikaner
- Petrus Julie
- Dina Witbooi
- Serina van Wyk
- Berenice Tieties

CHILD WELFARE SOUTH AFRICA

Kinderhofverrigtinge gaan in die **Keimoes Kinderhof** gehou word met die oog op die verlenging van die pleegsorg van die kinders van:

- Oorlede Julinda Eiman
- Oorlede Jinewiv Eiman
- Berenice Tieties

Die vaders van hierdie kinders word versoek om Lizeth Nakari by bostaande nommer te kontak.

DIE MAS BOERDERY (EDMS) BPK
Familie besigheid, gevestig net buite Kakamas beskik tans oor die volgende voldag pos:

LONE KLERK & AKKREDITASIE ADMIN KLERK

Die ideale kandidaat vir hierdie pos moet vlot tweetalig wees en oor goeie kommunikasievaardighede beskik. 'n Matrieksertifikaat en ondervinding in 'n soortgelyke betrekking met deeglike administratiewe en rekenaarvaardighede, veral MS Office, is 'n vereiste vir hierdie pos.

Die suksesvolle kandidaat sal saam met die kantoorspan en boekhouer werk en sal direk aan die boekhouer/sekretaresse en die direksie verantwoording doen.

Die suksesvolle kandidaat sal primêr verantwoordelik wees vir die loonadministratiewe funksie asook verwante plaas akkreditasies en dit sluit die volgende in:

- oplaai van inligting op die lonestelsel op 'n weeklikse basis.
- byhou van personeelrekords en arbeidverwante kontrakte.
- uitbetaling van lone.
- Globalgap, SIZA en ander plaasverwante oudits.
- alle ander ad hoc finansiële en administratiewe take in die kantoor, wynkelder en pakstoor.
- nagaan en rekonsiliasie van voertuie se logboeke asook dieselboeke vir SARS.

Ons bied 'n mededingende vergoedingspakket aan vir hierdie pos.

Rig u CV en dekbrief vóór 09:00 op Maandag, 10 Augustus 2020 aan Diria De Klerk by ons kantoor:
U kan die dokumente per e-pos stuur na accounts@diemas.co.za

Diensaanvaarding: So spoedig moontlik.
Indien u geen terugvoering binne 2 weke na die sluitingsdatum vir aansoeke ontvang nie, kan u aanvaar dat u aansoek onsuksesvol was.

Thank you for your service

Stellenbosch physiotherapy students currently doing their practical learning hours at DHSH thank the frontline workers with small gifts and demonstrations of PPE donning and doffing (putting on and taking off) techniques

Seun na grootskaalse soektog terug gevind

GEMSBOK-POSTMASBURG: Die 13-jarige Ruujon Greeff wat Woensdag by die Postmasburg polisiestasie as vermis aangemeld is, is nou veilig en by die huis.

Dit volg na 'n grootskaalse soektog geloods is toe hy deur sy ma, wie hom laat daardie middag laas gesien het, hom Woensdag by die polisiekantoor as vermis aangemeld het.

Volgens inlgting het hy 'n swartsak gepak en gesê hy gaan vir sy tannie in Groenwater kuier. Hy is deur twee boerboelhonde vergesel

Volgens brig. Mohale Ramatseba, polisiewoordvoerder, is die seun en sy honde in Groenwater opgespoor. Hy is nou by sy ma en sal mediese sorg ontvang.

Lt.kol. Andries Witbooi, stasiebevelvoerder op Postmasburg, het die gemeenskap bedank wat bygedra het tot die seun se hereniging met sy familie.

Die polisie doen verder 'n beroep op die gemeenskap om nie te lank te wag om iemand as vermis aan te meld nie.

Ma en seun is, na afloop van 'n grootskaalse soektog, dieselfde dag herenig. - Foto verskaf

NOTICE OF AMENDMENT OF EXISTING MINING RIGHT APPLICATION by INDUSTRIAL SALT (Pty) Ltd & CALL FOR COMMENTS: Salt Mining on Portions 10, 13, 18 and 20 of farm Groot Witpan No 327 (Gordonia RD)

Please be advised that Application for Amendment of existing Mining Right has been lodged by Industrial Salt (Pty) Ltd to the Department of Mineral Resources: Northern Cape. Such application is made in terms of Section 102 of the Mineral and Petroleum Resources Development Act (Act 28 of 2002, as amended) for:

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- *Listing 985: Activity 10*: The development and related operation of facilities or infrastructure for the storage of a dangerous good with a combined capacity of 30 but not exceeding 80m³.

In order to be identified and registered as an interested and / or affected party (I&AP) and/or to provide comment on the Draft Scoping Report, you are invited to submit your name, contact information and interest in the matter and /or comments, in writing, to reach the address below by no later than 25 August 2020. Note that only registered Interested and Affected Parties will be kept abreast of the application status in future as well as receiving copies of all relevant documentation. There will be further opportunity to comment on this application, if you register as an I&AP:

Site Plan Consulting PO Box 28 Strand 7139. Tel: (021)854 4260. Fax: (021)854 4321. Email: craig@siteplan.co.za. Contact person: Craig Donald.

KENNISGEWING VAN AANSOEK OP WYSIGING VAN BESTAANDE MYNREG : INDUSTRIËLE SALT (Edms) Bpk & OPROEP VIR OPMERKINGS: Sout Mynwerksaamhede op Gedeeltes 10, 13, 18 en 20 van die plaas Groot Witpan No 327 (Gordonia RD).

Neem asseblief kennis dat aansoek om wysiging van bestaande Mynboureg deur Industrial Salt (Pty) Ltd by die Departement van Minerale Hulpbronne: Noord-Kaap ingedien is. Sodanige aansoek word gedoen ingevolge artikel 102 van die Wet op die Ontwikkeling van Minerale en Petroleumhulpbronne (Wet 28 van 2002, soos gewysig) vir:

- Verlating van 'n mynreg wat deur Gordonia Salts (Edms) Bpk (op Gedeelte 10) en die inlywing van daardie reg in die noordelike Industrial Salt (Pty) Ltd se Mynregte-gebied (op Gedeelte 13)
- Uitbreiding van die Mynbou-regsgebied na die NW om addisionele pan area op Gedeelte 18 en Gedeelte 20 van Groot Witpan 327 in te sluit.

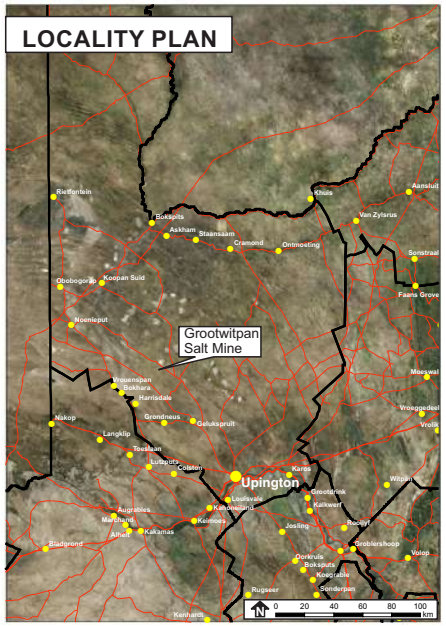
'n Afskrif van die Konsep Omvangsbepalingsverslag van die voorgestelde operasie is beskikbaar vir openbare ondersoek in die volgende biblioteke in Upington (Paballelo Biblioteek (5 Kaizer Cres), Sandile Present Biblioteek (5 Carlton St), Openbare Biblioteek (Mark St))). 'n Digitale afskrif kan per e-pos beskikbaar gestel word uit die onderstaande kontakbesonderhede.

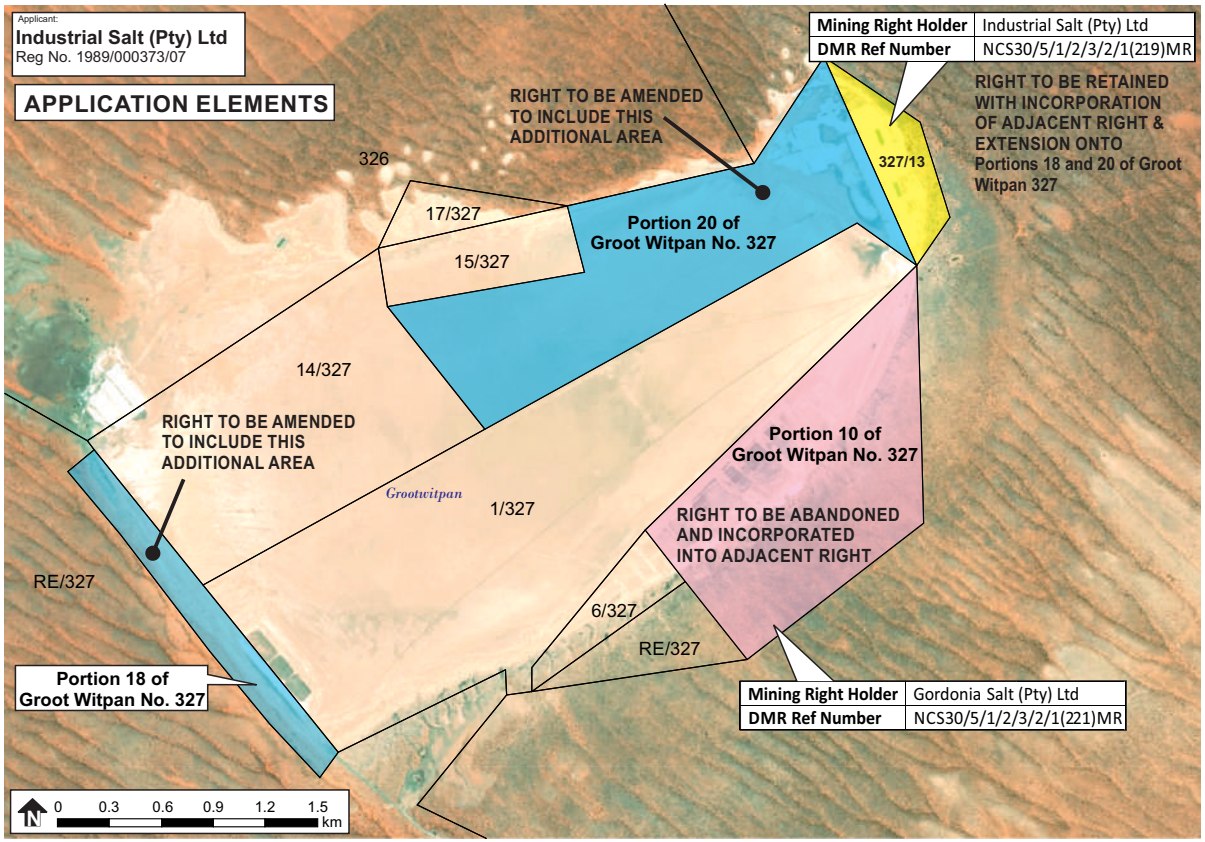
Die bestaande operasie veroorsaak waarskynlik die volgende genoteerde aktiwiteite ingevolge Regeringskennisgewings 983, 984 en 985 wat in 2017 gewysig is kragtens die Wet op Nasionale Omgewingsbestuur (Wet 107 van 1998, soos gewysig). Let op dat die genoemde aktiwiteite hier geparafraseer is:

- *Lys 983: Aktiwiteit 12*: Die ontwikkeling van damme waar die damwateroppervlakte meer as 100 m² is; of infrastruktuur of strukture met 'n fisiese voetspoor van 100 m² of meer, waar sodanige ontwikkeling binne 'n waterloop of binne 32 m van 'n waterloop plaasvind.
- *Lys 983: Aktiwiteit 19*: Die uitgrawing van grond, sand, skulpe, dopkorrel, klippies of rots van meer as 10m³ vanaf 'n waterloop
- *Lys 983: Aktiwiteit 22*: Die ontmanteling van enige aktiwiteit wat 'n sluitingsertifikaat vereis ingevolge artikel 43 van die Wet op die Ontwikkeling van Minerale en Petroleumhulpbronne, 2002 (Wet No. 28 van 2002).
- *Lys 983: Aktiwiteit 27*: Die opruiming van 'n gebied van 1 hektaar of meer, maar minder as 20 ha inheemse plantegroei.
- *Lys 984: Aktiwiteit 15*: Die opruiming van 'n gebied van 20 ha of meer inheemse plantegroei.
- *Lys 984: Aktiwiteit 17*: Enige aktiwiteit wat die bedrywighede insluit wat die aktiwiteit insluit wat 'n mynreg vereis soos beoog in artikel 22 van die Wet op die Ontwikkeling van Minerale en Petroleumhulpbronne, 2002 (Wet No. 28 van 2002), met inbegrip van infrastruktuur, en / of die primêre verwerking van 'n minerale hulpbron.
- Lys 985: Aktiwiteit 4: Die ontwikkeling van 'n pad wyer as 4 m met 'n reservaat minder as 13,5m.
- Lys 985: Aktiwiteit 10: Die ontwikkeling en verwante werking van fasiliteite of infrastruktuur vir die berging van gevaarlike goed (diesel) met 'n gesamentlike kapasiteit van 30 maar hoogstens 80 m³.

Om geïdentifiseer en geregistreer te word as 'n belanghebbende en / of geaffekteerde party (B&GP) en / of om kommentaar te lewer op die Konsep Omvangsbepalingsverslag, word u uitgenooi om u naam, kontakinligting en belangstelling in die aangeleentheid en / of opmerkings skriftelik in te dien, nie later as 25 Augustus 2020 na die onderstaande adres. Let daarop dat slegs geregistreerde belanghebbende en geaffekteerde partye in die toekoms op hoogte sal bly van die aansoekstatus en ook afskrifte van alle relevante dokumente sal ontvang.

Site Plan Consulting Posbus 28 Strand 7139, sal u geleentheid hê om kommentaar op hierdie aansoek te lewer. Tel: (021) 854 4260. Faks: (021) 854 4321. E-pos: craig@siteplan.co .za. Kontakpersoon: Craig Donald.



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20.07.2020

Reference

J du Toit
52 Karakoel Street
Laboria
Upington
8801

INSURED PARCEL
PA 473 655 875 ZA
A BOOK COPY

Dept Environment & Nature Conservation
Private Bag X6120
Kimberley
8301
Attn: Head of Department

INSURED PARCEL
PA 473 655 813 ZA
A BOOK COPY

Dept Environmental & Nature Conservation
Private Bag X16
Springbok
8240
Attn: Head of Department

INSURED PARCEL
PA 473 655 756 ZA
A BOOK COPY

Dept. Water & Sanitation
Private Bag X6101
Kimberley
8300
Attn: Mr A Abrahams

INSURED PARCEL
PA 473 655 699 ZA
A BOOK COPY

Dept Water and Sanitation
28 Beaconsfield Rd
Kimberley
8300
Ms V Ramugondo

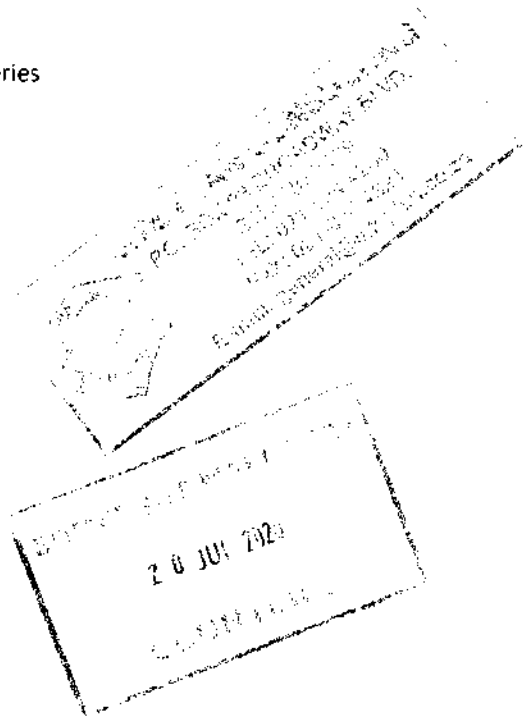
INSURED PARCEL
PA 473 656 014 ZA
A BOOK COPY

Dept Agriculture, Forestry & Fisheries
Private Bag X5018
Kimberley
8300
Attn: Head of Department

INSURED PARCEL
PA 473 655 950 ZA
A BOOK COPY

Dawid Kruiper Municipality
Civic Centre
Mutual Street
Upington
8801
Attn: Municipal Manager

INSURED PARCEL
PA 473 655 892 ZA
A BOOK COPY



SITE PLAN CONSULTING
ENVIRONMENTAL GEOLOGY. ENVIRONMENTAL IMPACT. STRATEGIC MANAGEMENT. MINE PLANNING. GIS MANAGEMENT / TRAINING
Shop 5 Goedehoop Shopping Centre, Broadway Boulevard Strand, 7140
PO Box 28 Strand 7139
Tel: 021 - 854 4260 Fax: 021 - 854 4321

Jacob du Toit
52 Karakoel St
Laboria
Upington 8801

21 July 2020

Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

This letter serves the following functions:

1. To inform you that an application to amend an existing Mining Right has been lodged at the Department of Mineral Resources: Northern Cape. Such application is made in terms of the provisions of Section 102 of the Mineral and Petroleum Resources Development Act.
2. To invite you to register as Interested and / or Affected Party.
3. To inform you that a draft Scoping Report has been prepared. Such report contains a brief project description and discusses the provisional expected impact of the operation on the social, built and natural environment. Such report is attached to this correspondence for your perusal.
4. To request that you provide any comments or objections that you may have to the contents of the Scoping Report.

The amendment entails

1. The abandonment of an existing adjacent Mining Right (on portion 10 of Groot Witpan) held by sister company, Gordonia Salts (Pty) Ltd, and incorporation of that Right into the existing Industrial Salt (Pty) Ltd Mining Right Area to allow for rationalised operational and administrative functioning of the project.
2. Expansion of the Mining Right area to the NW to incorporate additional pan area on Portions 18 and Portion 20 of Groot Witpan 327.

In order to be identified and registered as an interested and / or affected party (I&AP) and/or to provide comment on the Draft Scoping Report, you are invited to submit your name, contact information and interest in the matter and /or comments on the Scoping Report, in writing, to reach the address below within 30 days of this notice.
Site Plan Consulting -PO Box 28 Strand 7139. Tel: (021)854 4260. Fax: (021)854 4321. Email: craig@siteplan.co.za.
Contact person: Craig Donald

Note that only registered Interested and Affected Parties will be kept abreast of the application status in future as well as receiving copies of all relevant documentation. There will be further opportunity to comment on this application, if you register as an I&AP.

The proposed activities will most likely trigger the activities in terms of the National Environmental Management Act (Act 107 of 1998, as amended) as listed in Chapter 6 of the enclosed draft Scoping report

Yours Faithfully

Craig Donald.

SITE PLAN CONSULTING

ENVIRONMENTAL GEOLOGY, ENVIRONMENTAL IMPACT, STRATEGIC MANAGEMENT, MINE PLANNING, GIS MANAGEMENT / TRAINING
Shop 5 Goedehoop Shopping Centre, Broadway Boulevard Strand, 7140
PO Box 28 Strand 7139
Tel: 021 - 854 4260 Fax: 021 - 854 4321

Department of Environment and Nature Conservation: Northern Cape
Private Bag X6120
Kimberley,
8301

21 July 2020
Our ref: 2754

Head of Department

Dear Sir / Madam,

Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

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2. To invite you to register as Interested and / or Affected Party.
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PO Box 28 Strand 7139
Tel: 021 - 854 4260 Fax: 021 - 854 4321

Department of Environment and Nature Conservation: Northern Cape
Private Bag X16
Springbok
8240

21 July 2020
Our ref: 2754

Head of Department

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PO Box 28 Strand 7139
Tel: 021 - 854 4260 Fax: 021 - 854 4321

Department of Water and Sanitation
Private Bag X6101
Kimberley
8300

21 July 2020
Our ref: 2754

Att: Mr Abrahams

Dear Sir /Madam,

Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

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Shop 5 Goedehoop Shopping Centre, Broadway Boulevard Strand, 7140
PO Box 28 Strand 7139
Tel: 021 - 854 4260 Fax: 021 - 854 4321

Department of Water and Sanitation
28 Beaconsfield Road
Kimberley
8300

21 July 2020
Our ref: 2754

Att: Ms V Ramugondo

Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

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ENVIRONMENTAL GEOLOGY, ENVIRONMENTAL IMPACT, STRATEGIC MANAGEMENT, MINE PLANNING, GIS MANAGEMENT / TRAINING
Shop 5 Goedehoop Shopping Centre, Broadway Boulevard Strand, 7140
PO Box 28 Strand 7139
Tel: 021 - 854 4260 Fax: 021 - 854 4321

Department of Agriculture Forestry and Fisheries
Private Bag X5018
Kimberley
8300

21 July 2020
Our ref: 2754

Att: Head of Department

Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

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Shop 5 Goedehoop Shopping Centre, Broadway Boulevard Strand, 7140
PO Box 28 Strand 7139
Tel: 021 - 854 4260 Fax: 021 - 854 4321

Dawid Kruiper Municipality
Civic Center
Mutual Street
Upington
8801

21 July 2020
Our ref: 2754

Att: Municipal Manager: Mr E Ntoba

Dear Sir,

Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

This letter serves the following functions:

1. To inform you, as surrounding landowner (of Remainder of Elands Kop Been 326 (Gordonia RD))and commenting authority, that an application to amend an existing Mining Right has been lodged at the Department of Mineral Resources: Northern Cape. Such application is made in terms of the provisions of Section 102 of the Mineral and Petroleum Resources Development Act.
2. To invite you to register as Interested and / or Affected Party.
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Craig Donald.

STAR EXPRESS cc

REG. No. 1994/003000/23 • VAT No. 4810141343
P.O. Box 2676, SOMERSET WEST 7129
TEL: (021) 853 0430 • FAX: (021) 853 0446

1641534

PLEASE COMPLETE ALL SHADED AREAS

Acc No.	Date:	Shipper:	Shipper ref./Waybill No.
SITOO1			# 275&

SENDER: Site Plan	RECEIVER: Industrial Salt
ADDRESS: P O Box 28	STREET ADDRESS: 7 Tin Street
CITY: Strand CODE: 7139	CITY: Uptown CODE: 8801
CONTACT: C Dean TELEPHONE: 021 8541260	COUNTRY:
SPECIAL INSTRUCTIONS:	CONTACT: E Pieset TELEPHONE: 073 263 1619

QTY	DESCRIPTION OF CONTENTS	DIMENSIONS	VOL. Kg's	ACTUAL Kg's
1	Flyer			
	TOTAL			

INTERNATIONAL	
DOCUMENT COURIER	
SMALL PARCEL COURIER	
AIRFREIGHT	
ROAD FREIGHT	
OTHER	

DOMESTIC	
OVERNIGHT COURIER	
EARLY BIRD	
SAME DAY EXPRESS	
NEXT DAY	
ECONOMY CARGO	

SATURDAY	DEL	COLL
OTHER		
INSURANCE	YES	NO
INS. VALUE		
CUSTOMS VALUE		

TARIFF		
HANDLING		
SAME DAY SURCHARGE		
SAT. DELIVERY/ COLLECTION		
NON-DOCUMENT SURCHARGE		
INSURANCE		
IMPORT CUSTOMS DISBURSEMENTS		
OTHER		
SUB/TOTAL		
VAT		
TOTAL R		

I AGREE TO BE BOUND BY THE STANDARD TRADING CONDITIONS CONTAINED OVERLEAF

SENDER'S SIGNATURE	RECEIVED BY:	RECEIVER'S SIGNATURE:
SENDER'S NAME (PRINT)		RECEIVER'S NAME (PRINT)
	DATE: TIME:	DATE: TIME:

CONSUMER'S GUARANTEE: THE CONSIGNOR GUARANTEES PAYMENT TO THE CORPORATION FOR CONSIGNMENT CHARGES IN THE EVENT THAT THE CONSIGNEE FAILS TO PAY WITHIN 30 DAYS

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 11:06 AM
To: 'ruwayda.baulackey@dpw.gov.za'
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
Attachments: GWP Salt Draft Scoping_219MR.pdf

Dear Madam

This letter serves the following functions:

1. To inform you, as commenting authority and surrounding landowner (of Remainder and Portion 15 of farm Groot Witpan 327 (Gordonia RD)), that an application to amend an existing Mining Right has been lodged at the Department of Mineral Resources: Northern Cape. Such application is made in terms of the provisions of Section 102 of the Mineral and Petroleum Resources Development Act.
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Craig Donald.

SITE PLAN CONSULTING
Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 11:05 AM
To: 'tthebe@ncpg.gov.za'
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
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Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 11:03 AM
To: 'ramugondov@dws.gov.za'
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
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Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 11:02 AM
To: AbrahamsA@dws.gov.za
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
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You / Your department is registered as Interested and Affected Party and will be kept abreast of the application status in future as well as receiving copies of all relevant documentation. There will be further opportunity to comment on this application.

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Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 11:00 AM
To: 'Hannekehanekom@yahoo.com'; 'sbmaqolo@gmail.com'
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
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1. To inform you that an application to amend an existing Mining Right has been lodged at the Department of Mineral Resources: Northern Cape. Such application is made in terms of the provisions of Section 102 of the Mineral and Petroleum Resources Development Act.
2. To invite you to register as Interested and / or Affected Party.
3. To inform you that a draft Scoping Report has been prepared. Such report contains a brief project description and discusses the provisional expected impact of the operation on the social, built and natural environment. Such report is attached to this correspondence for your perusal.
4. To request that you provide any comments or objections that you may have to the contents of the Scoping Report.

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1. The abandonment of an existing adjacent Mining Right (on portion 10 of Groot Witpan) held by sister company, Gordonia Salts (Pty) Ltd, and incorporation of that Right into the existing Industrial Salt (Pty) Ltd Mining Right Area to allow for rationalised operational and administrative functioning of the project.
2. Expansion of the Mining Right area to the NW to incorporate additional pan area on Portions 18 and Portion 20 of Groot Witpan 327.

In order to be identified and registered as an interested and / or affected party (I&AP) and/or to provide comment on the Draft Scoping Report, you are invited to submit your name, contact information and interest in the matter and /or comments on the Scoping Report, in writing, to reach the address below within 30 days of this notice.
Site Plan Consulting -PO Box 28 Strand 7139. Tel: (021)854 4260. Fax: (021)854 4321. Email: craig@siteplan.co.za. Contact person: Craig Donald

Note that only registered Interested and Affected Parties will be kept abreast of the application status in future as well as receiving copies of all relevant documentation. There will be further opportunity to comment on this application, if you register as an I&AP.

The proposed activities will most likely trigger the activities in terms of the National Environmental Management Act (Act 107 of 1998, as amended) as listed in Chapter 6 of the enclosed draft Scoping report

Yours Faithfully

Craig Donald.

SITE PLAN CONSULTING
Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 10:58 AM
To: manager@kharahais.gov.za
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
Attachments: GWP Salt Draft Scoping_219MR.pdf

ATT: Municipal Manager

Dear sir / madam

This letter serves the following functions:

1. To inform you, as commenting authority and surrounding landowner (of Remainder of Elands Kop Been 326 (Gordonia RD))and commenting authority, that an application to amend an existing Mining Right has been lodged at the Department of Mineral Resources: Northern Cape. Such application is made in terms of the provisions of Section 102 of the Mineral and Petroleum Resources Development Act.
2. To invite you to register as Interested and / or Affected Party.
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Craig Donald.

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Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 10:56 AM
To: 'harry@kpsout.co.za'
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
Attachments: GWP Salt Draft Scoping_219MR.pdf

Dear Mr van Zyl

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Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 10:54 AM
To: 'jacob@kpsout.co.za'
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
Attachments: GWP Salt Draft Scoping_219MR.pdf

Dear Mr Du Toit

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Craig Donald

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Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, July 20, 2020 10:52 AM
To: 'mining@blaauwsgroup.co.za'
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.
Attachments: GWP Salt Draft Scoping_219MR.pdf

Dear Ms van Wyk

Our telephone conversation on Friday 17 July refers.

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Tel: 021 854 4260
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Cell: 084 511 1520

Craig Donald

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, August 24, 2020 1:48 PM
To: 'Ryan.oliver@drdlr.gov.za'
Subject: Land claims in respect of 4 farms in the Gordonia Registration District

Dear Mr Oliver

I am busy compiling an update to a mining Right application which impacts on the following farms in the Gordonia RD:

- Portion 13 of Groot Witpan No 327
- Portion 10 of Grootwitpan No 327
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Can you please check your records to determine whether any land claims are applicable to those land portions

Yours Faithfully

Craig Donald

SITE PLAN CONSULTING
Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

APPENDIX 4:

Copy of correspondence received

Craig Donald

From: Harry <harry@kpsout.co.za>
Sent: Wednesday, July 22, 2020 7:21 AM
To: 'Craig Donald'
Subject: RE: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

Hi Craig,

We would like to register as an affected party(I & AP).

We need the following:

- Special Studies
- Geohydrological Studies/Report
- Proof of application for amended Water Usage Licence
- The amount water usage which has been applied for

Regards
Harry

From: Craig Donald <craig@siteplan.co.za>
Sent: 20 July 2020 10:56
To: harry@kpsout.co.za
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

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Craig Donald

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Cell: 084 511 1520

Craig Donald

From: Pearl <mining@blaauwsgroup.co.za>
Sent: Wednesday, July 22, 2020 9:22 AM
To: 'Craig Donald'
Cc: 'Bertus Louw'
Subject: RE: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

Good morning Mr Donald

I discussed the email received with the relevant persons. Upington Supersout (PTY) LTD has no objection against the amendment of the existing Mining rights of Industrial and Gordonia Salt.

Regards

Pearl van Wyk
Administrative Manager Mining
Contact no.: 054-3375500
Email: mining@blaauwsgroup.co.za

From: Craig Donald <craig@siteplan.co.za>
Sent: Monday, 20 July 2020 10:52
To: mining@blaauwsgroup.co.za
Subject: Mining Right Amendment Application by Industrial Salt (Pty) Ltd in respect of Salt Mining on the "Grootwitpan" involving Portions 10, 13, 18 and 20 of Farm Groot Witpan No 327 (Gordonia): Call for comment on draft Scoping Report.

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Tel: 021 854 4260
Fax: 021 854 4321
Cell: 084 511 1520

Craig Donald

From: SP du Plessis <sarel@kpds.co.za>
Sent: Monday, July 27, 2020 8:34 AM
To: craig@siteplan.co.za
Subject: I&AP Industrial Salt
Attachments: Company Profile.pdf

Good morning Craig, I hope you are well. I would like have our company registered as an interest for dust suppression. Please see attached the company profile for your perusal.

Thank you and regards
SP du Plessis

KDS
Dust Suppression
Kgatelopele Dust Suppression
5 Bokmakierie str, Kathu
Cell: 082 459 4655
Local B-BEE level 2 Black owned SMME

Craig Donald

From: Ryan Oliver <ryan.oliver@drdlr.gov.za>
Sent: Monday, August 24, 2020 1:58 PM
To: Craig Donald
Subject: RE: Land claims in respect of 4 farms in the Gordonia Registration District

Noted

From: Craig Donald <craig@siteplan.co.za>
Sent: 24 August 2020 01:48 PM
To: Ryan Oliver <ryan.oliver@drdlr.gov.za>
Subject: Land claims in respect of 4 farms in the Gordonia Registration District

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Appendix 5:

Induction Training Guideline
Environmental Awareness Course

ENVIRONMENTAL INDUCTION TRAINING GUIDELINE
Grootwitpan Salt Mine:

September 2020

INTRODUCTION

Environmental management is a team effort. All management and staff are responsible for avoiding environmental damage/reducing environmental risk, and ensuring good environmental management.

The keys to achieving this are:

- Environmental Induction Training
  - Should a new staff member be employed from outside of the company or from another site within the company, then the site manager must briefly go through the environmental issues which would apply to that persons post as part of the induction of that person.
  - **Training:** Each and every employee must go through an environmental training process where at least the following items area covered:
    - The oil/fuel management company procedures must be explained to the employees. The reason for the procedures must also be explained (i.e. to not impact on groundwater, surface water, soil quality etc.).
    - The domestic and industrial waste management procedures & method must also form part of the training
    - The sensitivity of the pan environment.
    - Alien vegetation management in the Mining Right area and especially on the pan edges: How to recognize and remove such species
    - Restriction of activities to the currently disturbed areas with special restrictions to specific areas as may be demarcated by clearly visible posts. Reporting to supervisor or management if/when a demarcation post is broken or removed
    - Emergency management procedures such as dealing with oil spills or fires must also be drilled
    - Road safety in the case of the private farm roads with respect to speed limit adherence, caution when approaching tar road intersections, , awareness of other vehicles on all roads and special caution for children walking to the school and such children, etc

    Such training will, in this case, be carried out by the site manager or the designated Environmental Control Officer (ECO)
- Being aware of the environment (natural and built) and the need to protect them.
- Understanding and recognising the things to protect and the do's and don'ts.
- Knowing and appreciating the importance of the reporting procedures.
- Taking pride in good environmental housekeeping and good neighbour relations.

It is imperative that the site manager during monthly meetings (Environmental, health and safety meetings) emphasises the importance of minimising impact generation and reducing risk. Such awareness of impact and risk generators shall be a continuous monitoring function by all personnel engaged in the site activities who should report high impact generation or

increased risk levels the site supervisor/ quarry manager in order that intervention by temporary cessation of the activity can be considered by management until resolved.

1) Legal Requirements

- Requirement of the MPRDA:
  - to have an EIA/ EMP Environmental Management Plan available on site at all times ***(show the document, the approved EMP, to all staff in the induction and briefly note the items it covers).***
- Requirements of the Water Use Licence
  - Have a copy of the WUL and explain its relevance especially:
    - use of water.
    - discharge of sewage.
    - control of surface water.
    - quality of stormwater discharged from site.
    - avoidance of groundwater contamination by oils, sewage or other.
    - prevention of impact on groundwater aquifers
- National Environment Management Act. *If you don't work according to the EMP the mine will be classified as non-conforming and may:*
  - Result in loss of Mining Authorization or imposition of a fine.
  - Raise issues if/when applying for further mining rights or permits.

2) Targets:

- Understanding of what is contained in the EIA/ EMP and RMMP.
- Understanding of the context of this mine as it relates to surrounding legal/planning considerations.
- Buy-in and appreciation by staff of the need for environmental protection (especially as it pertains to site rehabilitation and staying away from No-Go areas).
- Good results in internal Reporting and Environmental Performance Assessments.
- Understanding the content and each person's responsibility as it pertains to implementation of guidelines and monitoring of potential impacts.

3) Why do we need Environmental Management?

A) It is an integral part of normal good management (Good Housekeeping) on the site, together with:
   - Safety of the employees.
   - Efficiency (Productivity).
   - Planning (specific activities in specific areas).
   - Avoidance of potential damage to adjacent properties or natural systems (no off-road vehicle turning in the veld etc.)

B) The mining is part of the larger environment and may have an impact in terms of:
   - Vegetation.
   - Visual impact (albeit distant) from surrounding land-users.
   - Dust generation.
   - Noise.
   - Safety, especially in use of farm gravel routes.

C) Any **NO GO/ fenced-off/ demarcated** areas must be respected:
- They are important to preserve sensitive areas (botanical or other).
- Point these areas out to staff on the ground (i.e. not just from the EIA/ EMP) as being **all areas outside of the mining permission or RMMP area**.

D) Integration of the mining with surrounding land uses / users requires that the following be limited through proper action by the staff:
- Excessive areas of disturbance.
- Lack of successful rehabilitation.
- Noise.

E) Define monitoring programme responsibilities in accordance with EIA/ EMP provisions
- Daily checking of equipment for oil leaks, reverse safety hooters/ safety lights and normal vehicle lights and management of systems by all staff.

4) Who does the damage to the Environment?

A) Management:
(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.
(v) by not maintaining good neighbourliness

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

C) General Staff:
(i) Use of the veld as a toilet (NOT ALLOWED) (Acquaint staff with the facilities provided).
(ii) Littering with lunch wrappings, bottles.
(iii) Short-cut walking paths.
(iv) Causing of fire or failure to report fire or threat of fire as soon as it is seen (whether generated by quarry activities or outsiders).

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

- Allocated and demarcated storage or dump areas:
  - Don't dump anywhere else!!
  - If in doubt ask first!!

- **Fenced off/No-go areas**

- **All areas outside of the Mining Permission Approved /Demarcated/ Fenced Area**
- Strictly no tolerance of staff movement onto adjacent farms without authorization.
- Don't enter these areas and don't drive into them.
- Haulage to take place only along selected/ prescribed access routes
-

- **Recognise NO GO areas and**
  - Don't disturb them.
  - Don't drive into them.
  - Don't walk through them.
  - Don't use them as toilet areas.

- **Oil, fuel or hydraulic leaks**
  - As soon as you see these, report them to the operator or the foreman/manager.

- **Know the on-site refuelling/ greasing and oil change procedure** if you are involved in it to know how to avoid pollution.

- **Acquaint yourself with the use of the hydrocarbon clean-up kit and where it is kept**

- **Report littering**

- **Recognise (know the difference between) domestic waste and industrial waste** and use correct procedures for their disposal.

- **Recognise the threat of fire**
  - Immediately report any threat of fire or fire if seen.
  - Strictly no fires permitted on site.

6) Fire Reporting Procedure and Oil, Fuel, Hydraulic Leaks

If you see a fire/leak starting take the following action:

- Make safe what you are doing at the time.
- Leave your task and report the fire/leak to the nearest supervisor / manager.

7) Heritage

Should any indication of human graves, or other strange phenomenon be unearthed, work should be halted immediately and the find reported to the quarry manager.

8) Other non-urgent environmental incidents reporting procedure

These include littering, unnecessary damage to vegetation, etc. Report these at end of shift or lunch time to supervisor/ manager who shall record environmental incidents in an incident book, to report on them during annual audits.

9) Penalties for Environmental Damage

Bring employee attention specifically to:

- Fines.
- Conditions in employment contract.
- Animal snaring, stock theft or fruit picking:
    a. Grounds for immediate dismissal.
    b. Will be reported to the police for prosecution.

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

CLOSURE PLAN

GROOTWITPAN SALT MINE: INDUSTRIAL SALT

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

NAME OF APPLICANT:	**Industrial Salt (Pty) Ltd**
CONTACT PERSON:	**Wilmot Prusent**
TEL NO:	**011 864 4900**
FAX NO:	**011 864 5493**
POSTAL ADDRESS:	**PO Box 1228, Upington, 8800**
PHYSICAL ADDRESS:	**4 Tin St, Upington, 8801**
FILE REFERENCE NUMBER SAMRAD:	**NC30/5/1/2/3/2/219MR**

Report #:2754/GWP/C
September 2020

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) – West Coast Calcretes

2 Introduction

This Closure Plan has been compiled using the stipulated content as per Appendix 5 of NEMA.

3 Closure objectives.

The main closure objective is that the "mining site should be rehabilitated to a state reconcilable with and where it will function as close as possible to the original salt pan". This can be expanded to include the following implicit objectives:

1) Remove / Level all levees and excavations on the surface of the salt pan
2) Remove all man-made structures and infrastructure from the banks of the pan associated with the salt mining
3) Leave the site with no trace of any pollutant or risk to the future environment

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

It is estimated that decommissioning rehabilitation will take at least 3 months to complete. The following is required in terms of monitoring, actions taken and reporting of the decommissioning rehabilitation toward closure:

1) Post operational phase Environmental Audit (before implementing decommissioning rehabilitation): The aim of this audit is to ensure that the measures as proposed in the EMP and this closure plan are still valid for the site. This audit is internal and is not required that it be distributed to the competent authority (although there is no reason why it cannot be if the holder so wishes).
2) This audit will inform any additional measures or specifics not contemplated in detail in the EMP.
3) Decommissioning rehabilitation is then conducted
4) Post decommissioning *Draft* Environmental Audit is then undertaken. Any shortcomings must be rectified, and the *Final* Environmental Audit is then compiled.
5) 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 following measures are prescribed in the decommissioning of this site (as per approved EMP):

1) All depression and mounds that were formed during the mining process should be levelled and filled in to resemble the natural profile of the original salt mine and dunes

2) All faces formed between mined and un-mined areas will be sloped to a gradient which does not exceed 1:3 and all sharp edges must be rounded and sloped as far as possible to blend in with surroundings.

3) Disturbance of slopes must be rehabilitated so that drainage can continue as was the case prior to mining activity

4) All compacted soil and roads or areas devoid of natural vegetation must be scarified or ripped and sloped into natural contours

5) French drains must be filled with dune sand and compacted.

6) All areas (especially the storage areas) must be cleared of any contaminated soils which must be bio-remediated or dumped at a suitable waste dump facility

7) If the roads are no longer required, they must be lifted, graded or ripped

8) All concrete structures, infrastructure, moveable structures, objects, waste material and equipment within the salt pan must be removed

9) All movable structures or objects on or around the pan shall be removed

10) There will be no domestic or other solid waste and scrap metal on site

11) All erosional features must be repaired in sustainable manner

12) All waste must be disposed of as described under waste disposal

13) All stockpiles must be removed from the site or used in backfill of excavations or for shaping

14) The service buildings / structures will be removed /demolished OR used as housing after closure. Land owner decision is required closer to the time.

15) But before any demolition takes place, an audit must be undertaken which includes and assessment on whether there are any hazardous materials which could lead to future environmental risk.

The landowner must be actively involved in decommissioning rehabilitation as there is little purpose in destroying infrastructure which could be used on the farm.

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
All depression and mounds that were formed during the mining process should be levelled and filled in to resemble the natural profile of the original salt mine and dunes	Noise (generated by earthmoving equipment)	Very Local	Mitigation	Ensure all silencers are operational	Insignificant. Definite. Negative. On occurrence
	Dust ((generated by earthmoving equipment)	Local. Seldom exceed pan edges	None required		Insignificant. Definite. Negative. On occurrence
	Hydrocarbon (Oil/ fuel leaks)	Local pan	Management required on occurence	Hydrocarbon management as per para _	Insignificant. Possible. Until cleanup.
	Land Capability (Return to pre-mining land capability)	Pan	NA	This is the rehabilitation measure	Current extent of on pan disturbances. Definite. Positive. Permanent
All faces formed between mined and un-mined areas will be sloped to a gradient which does not exceed 1:3 and all sharp edges must be rounded and sloped as far as possible to blend in with surroundings. **Disturbance of slopes must be rehabilitated so that drainage can continue as was the case prior to mining activity.**	Noise (generated by earthmoving equipment)	Very Local	Mitigation	Ensure all silencers are operational	Insignificant. Definite. Negative. On occurrence
	Dust ((generated by earthmoving equipment)	Local. Seldom exceed pan edges	None required		Insignificant. Definite. Negative. On occurrence
	Hydrocarbon (Oil/ fuel leaks)	Local pan	Management required on occurrence	Hydrocarbon management as per para _	Insignificant. Possible. Until cleanup.
	Land Capability (Return to pre-mining land capability)	Pan Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan disturbances. Definite. Positive. Permanent

Activity	Impact	Scale of impact	Avoidance, Management or Mitigation	Proposed Management / Mitigation Measures	Significance with mitigation, Probability & Duration of Impact
	Topography	Pan surrounds (but only previously disturbed areas)	NA	This is the aim of the rehabilitation measure	Current extent of on pan disturbances. Definite. Positive. Permanent
All compacted soil and roads or areas devoid of natural vegetation must be scarified or ripped and sloped into natural contours	Noise (generated by earthmoving equipment)	Very Local	Mitigation	Ensure all silencers are operational	Insignificant. Definite. Negative. On occurrence
	Dust ((generated by earthmoving equipment)	Local. Seldom exceed pan edges	None required		Insignificant. Definite. Negative. On occurrence
	Hydrocarbon (Oil/ fuel leaks)	Local pan	Management required on occurrence	Hydrocarbon management as per para _	Insignificant. Possible. Until cleanup.
	Land Capability (Return to pre-mining land capability)	Pan Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan disturbances. Definite. Positive. Permanent
	Topography	Pan surrounds (but only previously disturbed areas)	NA	This is the aim of the rehabilitation measure	Current extent of on pan disturbances. Definite. Positive. Permanent
French drains must be filled with dune sand and compacted. NB: This will only occur if the housing is not retained by the landowner at the time - Refer para 5 point 14. This assumes no housing is retained. If housing is retained then landowner will accept responsibility for operational aspects of the drain.	Groundwater	Local pan	Avoidance	This is the mitigation measure	No impact. Impact avoided
All areas (especially the storage areas) must be cleared of any contaminated soils which must be bio-remediated or dumped at a suitable waste dump facility	Hydrocarbon impact on surface and groundwater	Local	Avoidance	Removal of all contaminated soils	No impact. Impact avoided.

Activity	Impact	Scale of impact	Avoidance, Management or Mitigation	Proposed Management / Mitigation Measures	Significance with mitigation, Probability & Duration of Impact
If the roads are no longer required, they must be lifted, graded or ripped	Noise (generated by earthmoving equipment)	Very Local	Mitigation	Ensure all silencers are operational	Insignificant. Definite. Negative. On occurrence
	Dust ((generated by earthmoving equipment)	Local. Seldom exceed pan edges	None required		Insignificant. Definite. Negative. On occurrence
	Hydrocarbon (Oil/ fuel leaks)	Local pan / surrounds	Management required on occurrence	Hydrocarbon management as per para _	Insignificant. Possible. Until cleanup.
	Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan disturbances. Definite. Positive. Permanent
All concrete structures, infrastructure, moveable structures, objects, waste material and equipment within the salt pan must be removed	Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan and surrounding structures. Definite. Positive. Permanent
All movable structures or objects on or around the pan shall be removed	Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan and surrounding structures. Definite. Positive. Permanent
There will be no domestic or other solid waste and scrap metal on site	Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan and surrounding structures. Definite. Positive. Permanent
All erosional features must be repaired in sustainable manner	Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan and surrounding structures. Definite. Positive. Permanent
All waste must be disposed of as described under waste disposal	Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan and surrounding structures. Definite. Positive. Permanent
All stockpiles must be removed from the site or used in backfill of excavations or for shaping.	Noise (generated by earthmoving equipment)	Very Local	Mitigation	Ensure all silencers are operational	Insignificant. Definite. Negative. On occurrence
All depression and mounds that were	Dust ((generated by earthmoving equipment)	Local. Seldom exceed pan edges	None required		Insignificant. Definite. Negative. On occurrence

Activity	Impact	Scale of impact	Avoidance, Management or Mitigation	Proposed Management / Mitigation Measures	Significance with mitigation, Probability & Duration of Impact
formed during the mining process should be levelled and filled in to resemble the natural profile of the original salt mine and dunes	Hydrocarbon (Oil/ fuel leaks)	Local pan / surrounds	Management required on occurrence	Hydrocarbon management as per para _	Insignificant. Possible. Until cleanup.
	Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of stockpiles. Definite. Positive. Permanent
The service buildings / structures will be removed /demolished OR used as housing after closure. Land owner decision is required closer to the time.	IF Removed: Land Capability (Return to pre-mining land capability)	Pan and Surrounds	NA	This is the aim of the rehabilitation measure	Current extent of on pan and surrounding structures. Definite. Positive. Permanent
But before any demolition takes place, an audit must be undertaken which includes and assessment on whether there are any hazardous materials which could lead to future environmental risk	Noted				

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:

Fuel receipt, storage and dispensing:

For the sake of the precautionary approach assume that at the time of closure that there is no fuel storage facility on this site (for diesel). Diesel will then be brought in as required 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 at the mine and along the access road

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 holder's facility in Upington 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 any excavation 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 the holder's facility in Upington for disposal in terms of their company regional industrial waste handling methodology.

Staff Training and Awareness

All staff involved in the closure phase 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.
- No used oils are to be used as dust suppressants on maneuvering areas.
- All heavy vehicles will have drip trays.
- If spills do occur on the sand, 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 holders yard; 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.
- Suitable in-situ water treatment options like microbiological degradation must be implemented.
- 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 tis 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 this site does in theory have an infinite lifespan given the renewable resource that is the brine.

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:

NOTE that NO public participation was undertaken in respect of this document given that all aspects contained within this document are within the existing approved EMP (which was subject to all the necessary public participation at the time of assessment).

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 7:

Specialist Study:
Aquatic Habitat Assessment

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AQUATIC HABITAT ASSESSMENT:

SALT MINING AT KONGA AND GROOTWITPAN PANS, NORTHERN CAPE PROVINCE

PREPARED FOR:	Industrial Salt (Pty) Ltd Contact person: Mr Eric Present Tel: 054 331 1515 Email: eric@sunsalt.co.za	**PREPARED BY:** **DATE:**	Sharples Environmental Services Debbie Fordham Tel: 044 873 4923 Email: debbie@sescc.net October 2019

EXECUTIVE SUMMARY

Sharples Environmental Services cc (SES) has been appointed by *Industrial Salt (Pty) Ltd* to conduct an aquatic habitat risk assessment and Water Use Application for the salt mines at Grootwitpan and Konga pan. The pans are located off the R360 road approximately 100 km north of Upington. Salt mining in the area has been going on for decades. The salt produced supplies the industrial, agricultural and house markets. The salt mined at Grootwitpan and Konga contributes to the 100 000 tons of salt that is marketed by Sun Salt Services annually.

On Konga Pan there is only one mining area and 19 boreholes. On Groot Witpan there are two mining areas and 24 boreholes. Brine is collected through pumping subsurface water into holding ponds. The brine from the holding / concentration pond is pumped into evaporation ponds. The water evaporates and the salt crystals start to form on the surface. As soon as the layer of salt crystals is thick enough, the salt crystals are harvested scraper and front-end loader. All clumps of salt are removed or crushed and recycled. The finer salt crystals are washed in a rotating washer and crushed between rollers to remove some of the water. The sludge is pumped through a cyclone to remove excess moisture. The washed salt is left to dry and either bagged and loaded or loaded en masse onto carrier trucks and transported to market.

The study area falls under the jurisdiction of the Orange Catchment Management Agency. Grootwitpan and Konga pan are located in quaternary catchment D42D. The pans were identified by the NFEPA project and classified as not FEPA wetlands. The geology of the pans in the area is mainly from the Dwyka group. The surface of the pans is unvegetated and the catchment has sparse, salt tolerant vegetation. They have the typical circular shape of many salt pans. These arid drainage basins have an evaporation rate that significantly exceeds any hydrological inputs, by direct precipitation onto the pan surface and subsurface flows of water and have white salt precipitates. Due to the topographical position of the pans within the landscape it is likely that the groundwater regime dominates hydrological processes. The fauna of these ephemeral systems is not well-known, but the pans have been found to provide aquatic habitat for species that depend on brief periods of inundation for hatching, mating, feeding and refuge.

The pans obtained a PES score of ‘C’ which is indicative of a system that has deviated from the natural condition to a Moderate degree but the ecological functioning is largely unchanged. The pans obtained an overall ‘Moderate’ EIS Score. They are not formally protected, and the vegetation is not endangered, but some elements are sensitive to changes. They contribute substantially to society through the provision of salt which increases their importance. The recommended ecological

management category of both salt pans indicates that management should strive to maintain the systems in their present state without any further loss of integrity.

The environmental impacts are associated with an existing activity. There will not be any further environmental impacts, just a continuation of the same activities that have been undertaken for decades. The soils are already disturbed in the mining area. The continued abstraction of groundwater may have Medium negative cumulative impacts in the face of climate changes and potential drop in the water table. If this is monitored, then the impacts can be reduced to Low significance.

It takes very little force to crush dry branchiopod eggs and no increase in roads on the pan should occur. Intact egg banks might be protected by the surrounding soil matrix to some extent, but disturbances are expected to expose the egg bank, making the eggs more vulnerable to destruction. It is not certain what macroinvertebrates are present on these pans, but a precautionary approach must be adopted.

The impacts of the mining range from Medium significance should no mitigation measures be adopted. However, after mitigation, the impacts have a Low significance and are deemed as acceptable subject to the implementation of the mitigation measures and EMPr. The potential impact upon vegetation is considered to be completely avoidable. The modifications to soils and water characteristics are not completely avoidable but can be mitigated to acceptable levels of disturbance.

DECLARATION OF INDEPENDENCE

Independent Specialist Consultant

I, Debbie Fordham, declare that I:

- Act as an independent specialist consultant, in this application, in the field of wetland and riparian ecology;
- 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 Environmental Impact Assessment Regulations, 2014 (as amended);
- Have, and will have, no vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that have 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 amended Environmental Impact Assessment Regulations, 2017; and
- Will provide the competent authority with access to all the information at my disposal regarding the application, whether such information is favourable to the applicant or not. Provided I have been suitably remunerated for the work.

The following report has been prepared:

- As per the requirements of Section 32 (3) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) Environmental Impact Assessment Regulations 2017 as per Government Notice No. 326 Government Gazette, 7 April 2017.
- In accordance with Section 13: General Requirements for Environmental Assessment Practitioners (EAPs) and Specialists as well as per Appendix 6 of GNR 326 - Environmental Impact Assessment 2017 Regulations and the National Environmental Management Act, 1998.
- With consideration to Cape Nature's standard requirements for biodiversity assessments.
- In accordance with DEA&DP's Guideline on involving biodiversity specialists in the EIA process.
- Independently of influence or prejudice by any parties.

PROJECT TEAM

The author of this report is in agreeance with the 'Declaration of Independence'.

SPECIALIST	QUALIFICATIONS	ROLE	DETAILS
DEBBIE FORDHAM M.SC	M.Sc - Environmental Science BA (Hons) - Environmental Science BA - Environmental Science and Geography	Lead Author	Debbie is a qualified aquatic ecologist and environmental scientist. Debbie holds a BA (Environmental Science and Geography), BA (Hons) and M.Sc in Environmental Science from Rhodes University. She was awarded her Master of Science degree, by thesis, in Wetland Science, entitled: The origin and evolution of the Tierkloof Wetland, a peatland dominated by *Prionium serratum* in the Western Cape. She has specialised in aquatic habitat assessment and has produced numerous aquatic habitat impact assessment reports. She is well established in her specialist field and has worked in various provinces within South Africa.
CONSULTANT	**QUALIFICATIONS**	**ROLE**	**DETAILS**
MARITA BURGER HONS	BSc (Hons) – Environmental Science	Co-author	Marita is an environmental assessment practitioner. She holds a BSc in Environmental and Biological Sciences and a BSc Hons in Environmental Science. Her interests lie in GIS spatial analysis and mapping and the water use legislation under the National Water Act (1998). She has undertaken WULAs, GAs, and contributed to specialist reports.

INDEMNITY AND COPYRIGHT

The project deliverables, including the reported results, comments, recommendations and conclusions, are based on the author's professional knowledge as well as available information. The study is based on assessment techniques and investigations that are limited by time and budgetary constraints applicable to the type and level of survey undertaken. The author reserves the right to modify aspects of the report including the recommendations if and when new information may become available from on-going research or further work in this field, or pertaining to this investigation. The author has exercised reasonable skill, care and diligence in the provision of services, however, accepts no liability or consequential liability for the use of the supplied project deliverables and any information or material contained therein. The client, including their agents, by receiving these deliverables indemnifies Sharples Environmental Services cc (including its members, employees and sub-consultants) against any actions, claims, demands, losses, liabilities, costs, damages and expenses arising directly or indirectly from or in connection with services rendered, directly or indirectly by Sharples Environmental Services cc.

Report citation:
Sharples Environmental Services cc, 2019. Aquatic Habitat Impact Assessment: *Groot Witpan and Konga Salt Mining at Gordonia District, Northern Cape Province.* Prepared for Site Plan Consulting.

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GLOSSARY

Aquatic ecosystem: an ecosystem that is permanently or periodically inundated by flowing or standing water, or which has soils that are permanently or periodically saturated within 0.5 m of the soil surface.

Catchment: area from which water runs off into a specified wetland or aquatic ecosystem; a drainage basin

Depression: an inland aquatic ecosystem with closed (or near-closed) elevation contours, which increases in depth from the perimeter to a central area of greatest depth, and within which water typically accumulates. Dominant water sources are precipitation, groundwater discharge, interflow and (diffuse or concentrated) overland flow. Dominant hydrodynamics are (primarily seasonal) vertical fluctuations. Depressions may be flat-bottomed (in which case they are often referred to as 'pans') or round-bottomed, and may have any combination of inlets and outlets or lack them completely.

Delineation (of a wetland): the determination of the boundary of a wetland based on soil, vegetation and/or hydrological indicators.

Endorheic (*cf*. exorheic): as relates to a depression, inward-draining with no transport of water into downstream systems via subsurface or surface flow. Water leaves via evapotranspiration and infiltration only.

Evaporation: the loss of water from a free water surface or from the soil surface by vaporisation

Groundwater (*cf*. subsurface water): subsurface water in the saturated zone below the water table (i.e. the water table marks the upper surface of groundwater systems).

Indigenous vegetation: plants that are naturally occurring in a particular area

Intermittently inundated: holding surface water for irregular periods of less than one season (i.e. less than approximately 3 months), at intervals varying from less than a year to several years.

Present Ecological State: the current state or condition of an environmental resource in terms of its characteristics and reflecting change from its reference condition

Saline (as relates to salinity/conductivity): salty. Saline water is categorised as having a salinity (or TDS concentration) of 18 to 48 g/l, and/or a conductivity of 3 000 to 8 000 mS/m.

Unvegetated: without vegetation, consisting instead of bare substratum or open water

1 INTRODUCTION

Sharples Environmental Services cc (SES) has been appointed by *Industrial Salt (Pty) Ltd* to conduct an aquatic habitat risk assessment and Water Use Application for the salt mining activities at Grootwitpan and Konga salt pans in the Northern Cape. This Aquatic Habitat Risk Assessment report has been completed by Debbie Fordham, a wetland specialist and environmental assessment practitioner, to inform the water use process.

1.1 Location

The existing salt mining activities occur on Portion 10, 13 and 20 of the Farm Groot Witpan 327 and Portion 2 and 3 of the Farm Merries Pan 249 in the Northern Cape. The two salt pans are located in the Kalahari region of South Africa in the Gordonia District. Upington is the closest town at approximately 100 km and 140 km south of Grootwitpan and Konga pan respectively. The R360 road, that pass the pans to the east, connects the small town of Askham to Upington and is also a popular route for tourist travelling to the Kgalagadi Transfrontier Park. A site visit was conducted on 7 and 8 July 2019.

Figure 1: Grootwitpan and Konga pans in relation to the town of Upington.

1.2 Company background

Salt Refiners & Packers Holdings (Pty) Ltd is the controlling group of multiple companies, including Industrial Salt and Sun Salt Services. Industrial Salt is one of the producer companies and Sun Salt Services is responsible for the marketing and distribution of salt products.

According to Sun Salt Services, salt mining on the pans date back several decades. Originally, the sources of salt in South Africa were examined to determine if it could be used as salt supply for the production of chlorine gas for military use. Captain Nigel Sutherland was tasked with investigating the salt resources during the war. Subsequently, he and some of his friends acquired property with salt resources after the war. However, it was only after his death in 1954 that his son started to develop saltworks on the property. Since then there were multiple takeovers of the saltworks by different companies and expansion of the existing saltworks.

Sun Salt Services was registered in 1968 and tasked with sales of salt. This was part of an effort to unify producers in order to increase market exposure. Grootwitpan was added to the extent of activities under the management of Techemet Inc. Currently, Sun Salt Services markets product in excess of 100 000 tons per year and covers most sections of the South African salt market. This includes the industrial, agricultural and household markets.

South Africa produces salt mainly by solar evaporation of brine. The diagram (Figure 2) below was taken from the Department of Mineral Resources' 2007 report on the 'Structure of the Salt Industry'. Essentially the process entails the pumping of brine to hardened surfaces where evaporation occurs, and salt crystals remain. The coarse crystals are harvested and refined, packaged and distributed from processing plants (DMR, 2007). The Department of Mineral Resources' 2013 report on the 'Producers of salt in South Africa' states that Salt Refiners and Packers was the biggest producer of salt in 2012. It further indicates that Industrial Salt produces salt from pan brine and the product quality is Grade I and Grade II (DMR, 2013).

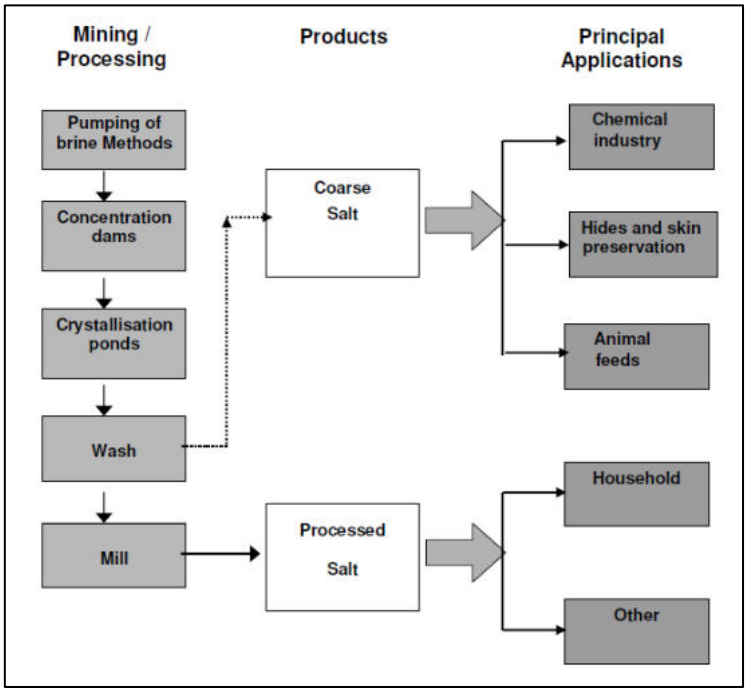

Figure 2: Salt production process through solar evaporation (DMR, 2007)

1.3 Salt production on the pans

On Konga Pan there is only one mining area and 19 boreholes. On Groot Witpan there are two mining areas, known as Industrial Salt section and Gordonia Salt section (since merged), and 24 boreholes.

Brine is collected through pumping into holding ponds. The brine from the holding / concentration pond is pumped into evaporation ponds. The water evaporates and the salt crystals start to form on the surface. As soon as the layer of salt crystals is thick enough, the salt crystals are harvested scraper and front-end loader. The harvested salt requires sorting. All clumps of salt are removed or crushed and recycled. The finer salt crystals are washed in a rotating washer and crushed between rollers to remove some of the water. The sludge is pumped through a cyclone to remove excess moisture. The washed salt is left to dry and either bagged and loaded or loaded en masse onto carrier trucks and transported to market. Note that all excess brine flows back into a holding pond.

Waste volumes are very low at the sites. The waste streams will be:

- Waste from personnel amenities
- Domestic Waste
- Industrial Waste (including Hydrocarbon Waste)

All waste is and will continue to be disposed off-site as prescribed in the EIA/EMP.

According to the Scoping and EIA Report by Site Plan Consulting (2020), the proposed rehabilitation of the site will entail the removal or flattening of the pond walls on the pan whilst off pan the rehabilitation will entail the removal of all logistical facilities, the ripping/scarifying of the affected surface and allowing for natural regrowth to occur so that the site can form part of the surrounding veld for grazing. The proposed rehabilitation methodology will result in a post mining land use which is very similar / same as current land use/ state of the surrounding land. All Mining Right's holders are responsible to annually update a calculation to determine the costs of Immediate Closure of the site. Such calculation is based on DMR Guideline and the value of the fund must be provided to the DMR either in form of cash or by Bank Guarantee or other. All mitigation and monitoring efforts aimed at minimising or preventing any negative impacts are contained in future EIA/EMP.

1.4 Legislative Context

The protection of water resources is essential for sustainable development and therefore many policies and plans have been developed, and legislation promulgated, to protect these sensitive ecosystems. The proposed project must abide by the relevant legislative requirements. Industrial Salt is currently an applicant for a water use authorisation and is undertaking the process with the Licencing Unit of the Orange Water Management Area to comply with the NWA (1998). SES cc has

been appointed to undertake the water use licencing application process on their behalf. Table 1 below shows an outline of the environmental legislation relevant to the project.

Table 1: Relevant environmental legislation

Legislation	Relevance
South African Constitution 108 of 1996	The constitution includes the right to have the environment protected
National Environmental Management Act 107 of 1998	Outlines principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state.
Environmental Impact Assessment (EIA) Regulations	The 2014 regulations have been promulgated in terms of Chapter 5 of NEMA and were amended on 7 April 2017 in Government Notice No. R. 326. In addition, listing notices (GN 324-327) lists activities which are subject to an environmental assessment.
The National Water Act 36 of 1998	Chapter 4 of the National Water Act addresses the use of water and stipulates the various types of licensed and unlicensed entitlements to the use of water. The potential water uses under Section 21 (NWA) that are associated with the proposed project are section 21 (a), (c) & (i).
General Authorisations (GAs)	Any uses of water which do not meet the requirements of Schedule 1 or the GAs, require a license which should be obtained from the Department of Water and Sanitation (DWS). The project will require a Water Use Authorisation in terms of Section 21 (c) and (i) of the National Water Act (NWA), Act 36 of 1998, as the activities are within the pans. Government Notice R509 of 2016 was issued as a revision of the General Authorisations (No. 1191 of 1999) for section 21 (c) and (i) water uses (impeding or diverting flow or changing the bed, banks or characteristics of a watercourse) as defined under the NWA. Determining if a water use licence is required is associated with the risk of impacting on that watercourse. A low risk of impact could be authorised in terms of a General Authorisations (GA). However, this does not apply to this activity.
National Environmental Management: Biodiversity Act No. 10 of 2004	This is to provide for the management and conservation of South Africa's biodiversity through the protection of species and ecosystems; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; and the establishment of a South African National Biodiversity Institute.
Government Notice 704 Motivation	Regulations on use of water for mining and related activities aimed at the protection of water resources
Mineral and petroleum resources development act, 2002	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".

Conservation of Agricultural Resources Act 43 of 1967	To provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith

1.5 Scope of Work

The Scope of Work in accordance with the specific Terms of Reference are described below:

- Desktop information gathering to contextualise the study area in terms of important biophysical characteristics and available aquatic conservation planning information
- Infield delineation and mapping of aquatic ecosystems likely to be impacted upon by the activity in terms of the Department of Water and Sanitation (DWAF 2008) *Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas.*
- Classification of the identified aquatic ecosystems in accordance with the '*National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa'* (Ollis *et al*., 2013) and *WET-Ecoservices* (Kotze *et al*. 2009).
- Advice on any aquatic habitat legislative requirements there may be (National Environmental Management Act (NEMA) and the National Water Act (NWA)) regarding the proposed activity.
- Description of the biophysical characteristics of the affected watercourses (such as hydrology, vegetation composition, geomorphological features, soils)
- Identification, prediction, and description of potential impacts of the proposed project on the delineated wetland/riparian areas and the significance of these impacts. This will include indirect, direct and cumulative impact assessment.
- Mitigation measures for the potential impacts.
- Rehabilitation guidelines for disturbed areas associated with the proposed project
- Monitoring protocol

2 STUDY AREA

The area has a dry, continental-type climate with most rainfall occurring in the late summer (Mucina and Rutherford, 2006). There is high annual rainfall variability and there are extremes in temperatures (with hot summers and cold winters). The evaporation rate far exceeds the precipitation of the area. The salt deposits usually form when evaporation exceeds precipitation and results in these closed basins becoming progressively more saline over time.

Both pans are located in quaternary catchment D42D (Figure 3) which falls under the jurisdiction of the Orange Catchments Management Agency. The catchment has a mean annual precipitation of only 45 mm and droughts in the area are common. The pans were in a desiccation phase which can last years.

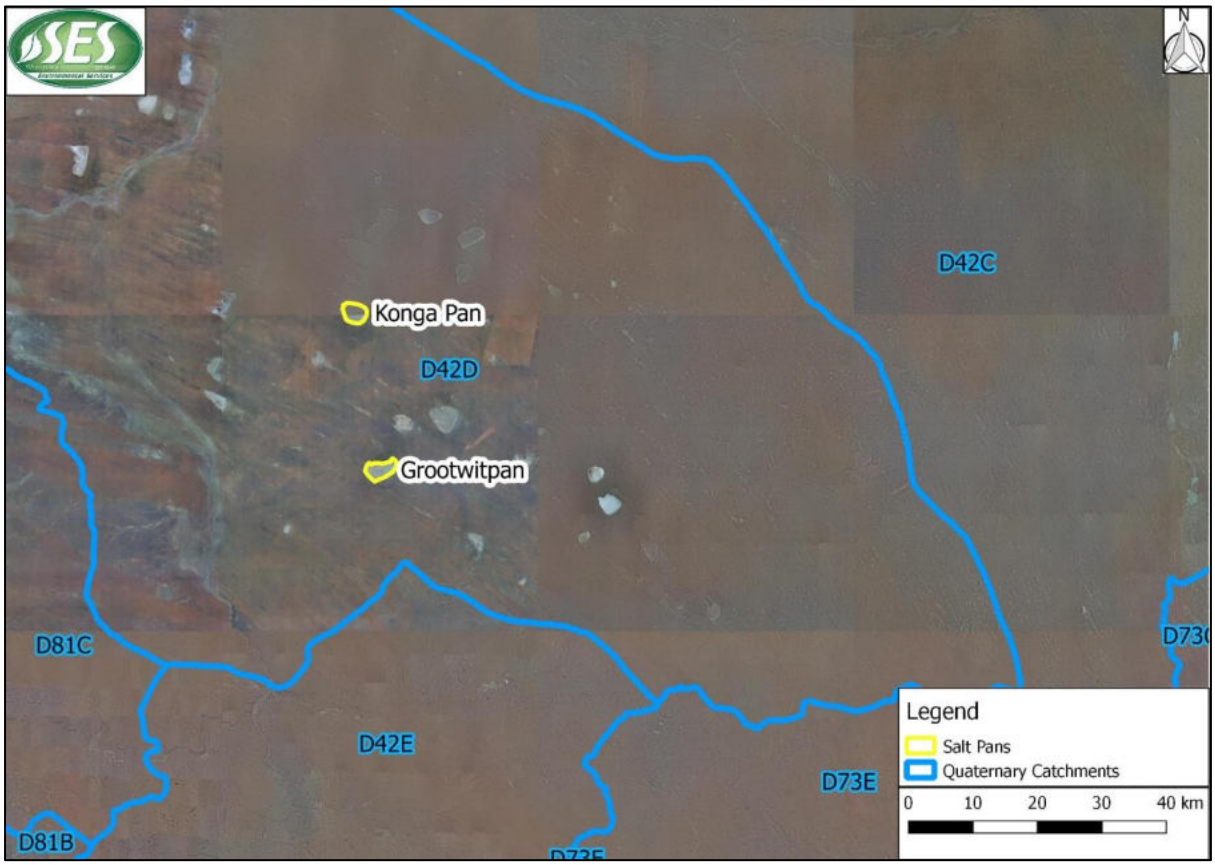

Figure 3: The salt pans in relation to quaternary catchments.

The pans are within the Southern Kalahari Ecoregion (Figure 4) and the Kalahari Duneveld Bioregion which forms part of the Savanna biome according to the Mucina and Rutherford 2018 Vegetation map. This vegetation map further shows that the area is comprised of Gordonia Duneveld (Figure 5). The older 2012 Vegetation map (Figure 6) indicate the areas surrounding the pans as Gordonia Duneveld but distinguish the salt pans as not being comprised of this vegetation group. The salt pans are identified as Southern Kalahari Salt Pans. The surface of the pans is unvegetated and the catchment has sparse, salt tolerant vegetation. The hypersaline environment makes these pans physically, chemically and biologically distinct from most other inland wetland systems.

The geology of the pans is comprised of shale of the Dwyka group that were deposited under marine conditions. Salt harvested from these pans generally has high sodium sulphate concentrations. This is likely due to the oxidation of iron sulphate to sulphate (DMR, 2007). Dwyka falls under the Karoo Supergroup and is described as diamictite with varved shale, mudstone with dropstone. Figure 7 show

that some of the pans were identified as part of the Dwyka group. Grootwitpan and Konga pan, however, were identified as part of the Kalahari group. This is likely to be a mapping error.

The NFEPA data identified both pans as wetlands and classified them not FEPA (Figure 8). The closest NFEPA identified river is the Molopo river to the east of the pans. According to the 2016 Critical Biodiversity Area (CBA) data for the Northern Cape, the pans are Ecosystem Support Areas. The areas around the pans are classified as Other Natural Areas (Figure 9). There are therefore no CBAs at or near the study areas.

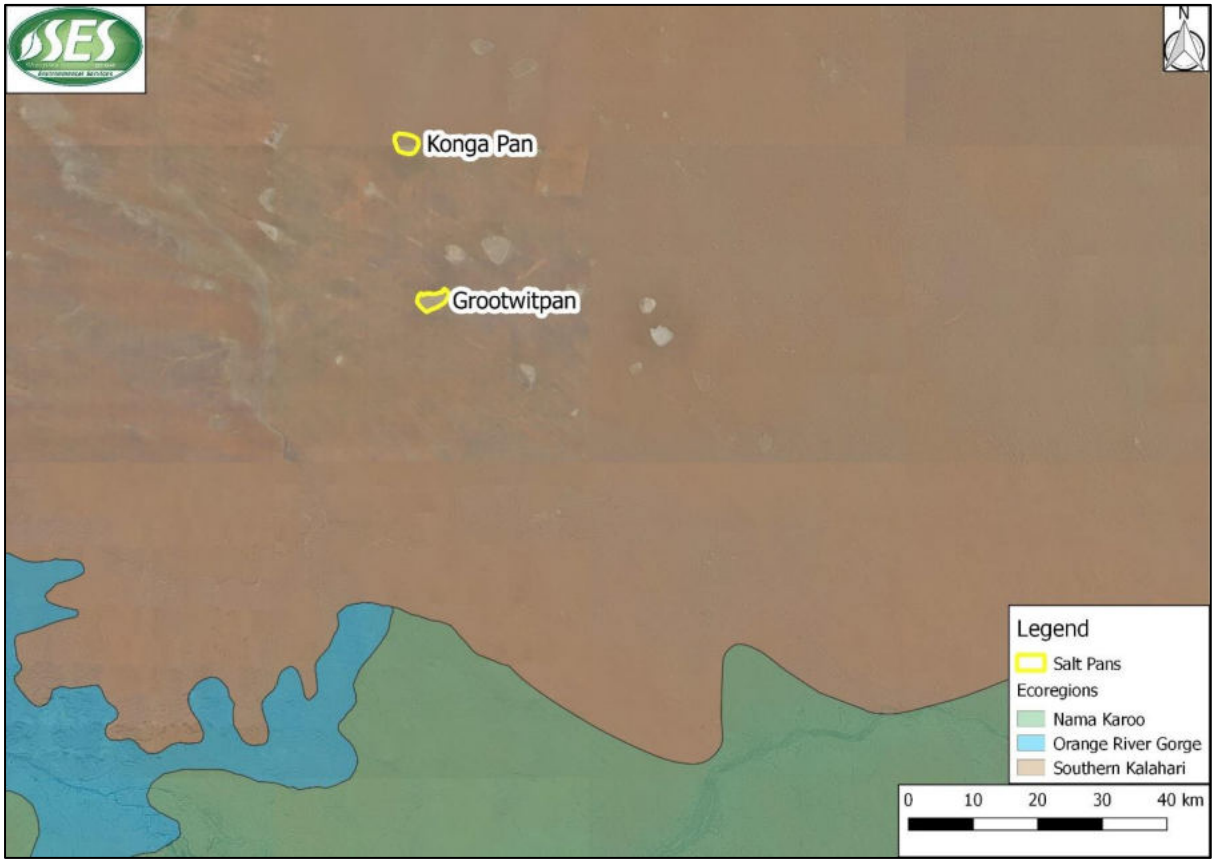

Figure 4: Map showing the salt pans in the Southern Kalahari ecoregion.

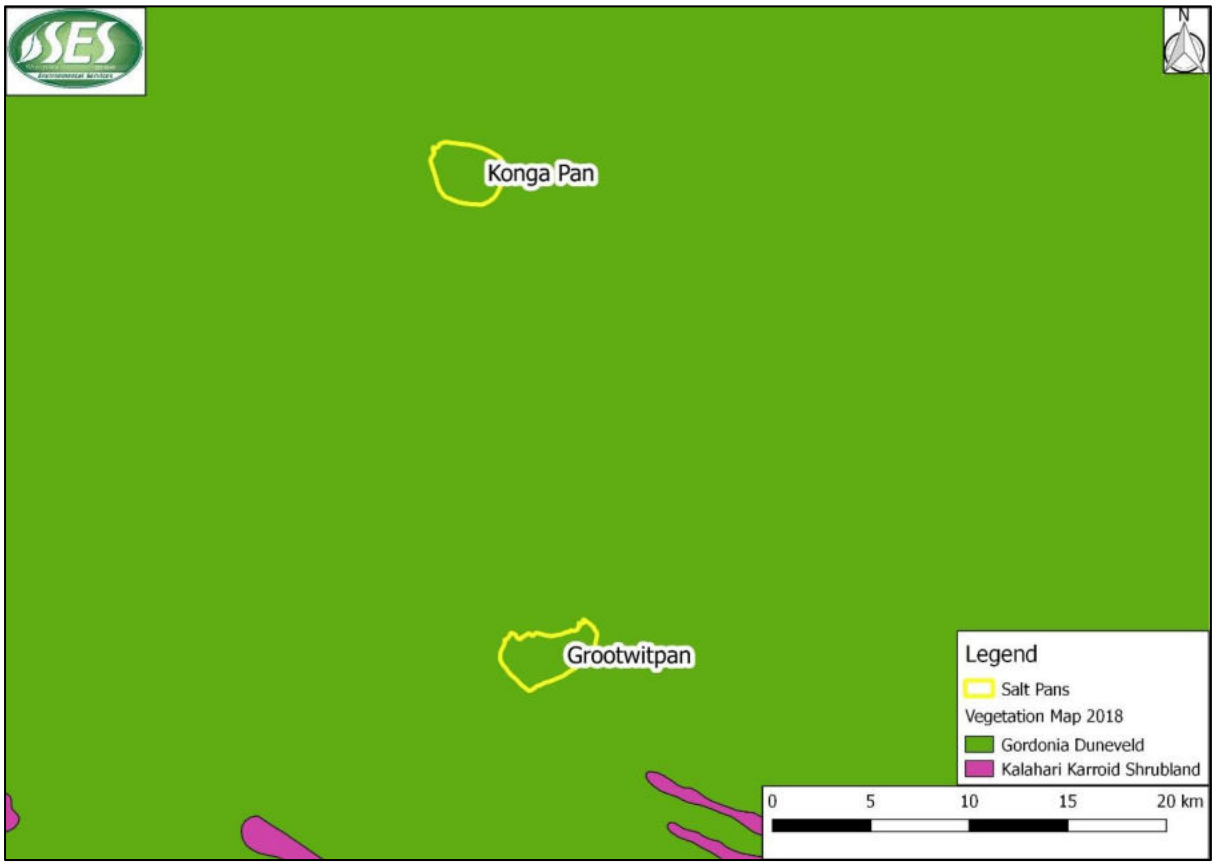

Figure 5: 2018 Vegetation map of the area.

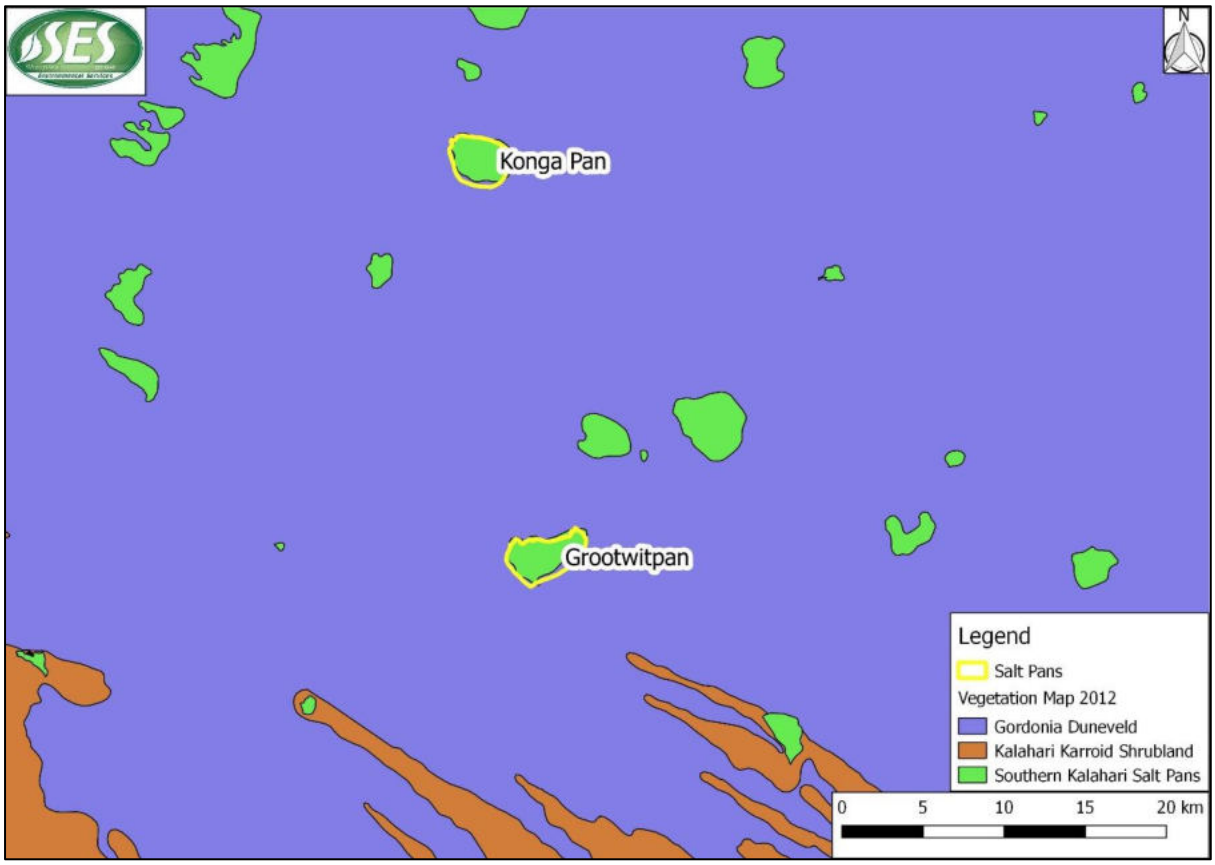

Figure 6: 2012 Vegetation map

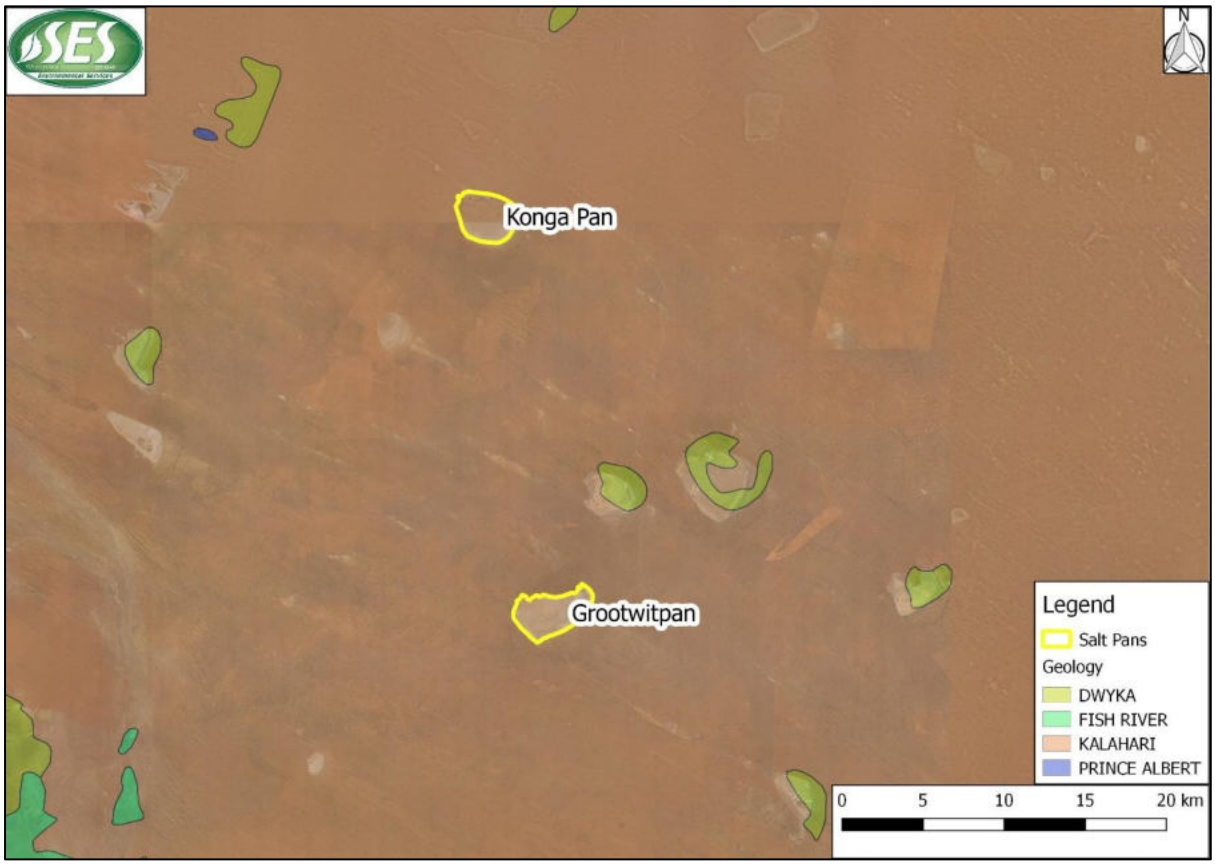

Figure 7: Geology map of the area of the pans.

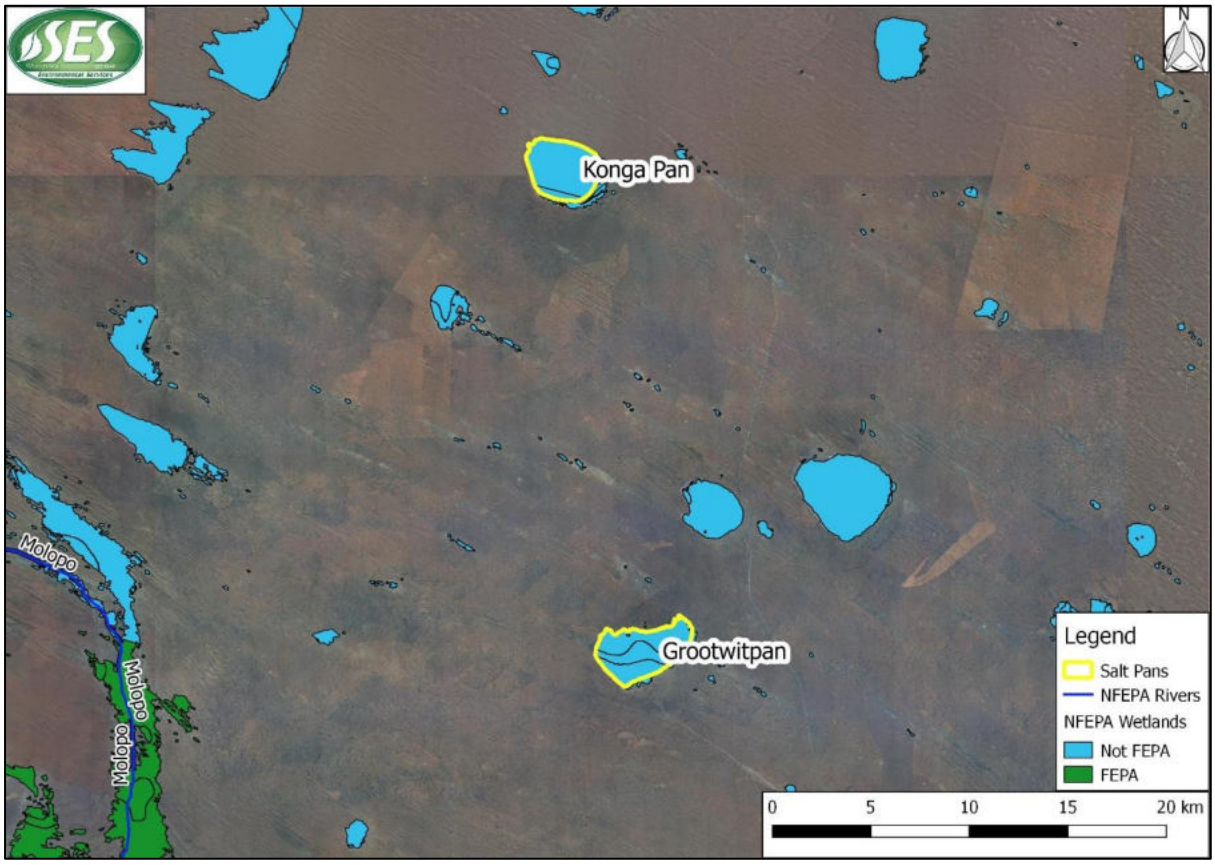

Figure 8: NFEPA map showing the wetlands and rivers close to the pans

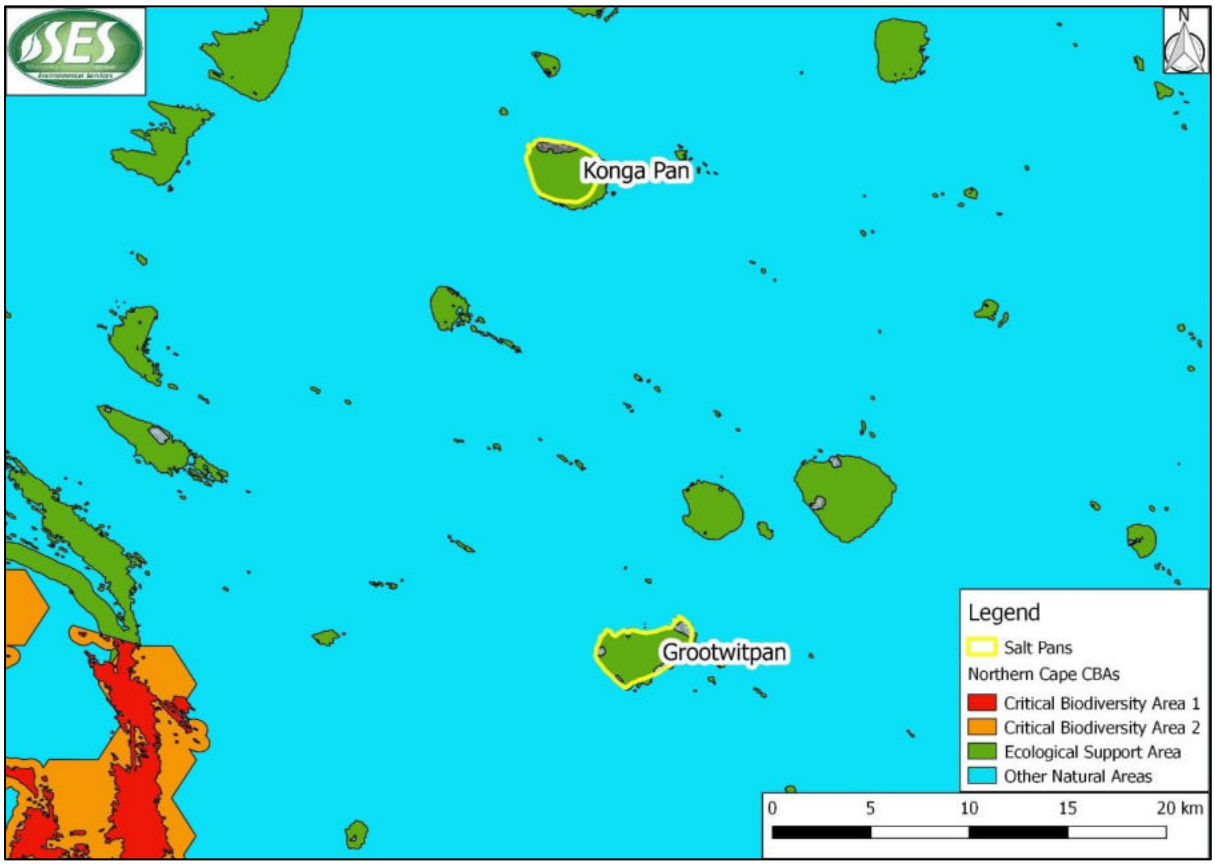

Figure 9: Northern Cape Critical Biodiversity Areas at the pans and surrounding areas.

The most commonly associated salts found in saltpans are sodium chloride, sodium carbonate, sodium sulphate, calcium sulphate and, occasionally, magnesium sulphate. It is a calcareous land type with surrounding soils being typical of arid areas in South Africa. The distribution of pans in South Africa appears to correspond with the presence of rocks of the Ecca Group of the Karoo Supergroup (Klerk *et al.* 2016).

Tectonic processes (e.g., faulting and down warping) and climatic disruption of pre-existing drainage systems, and the presence of susceptible substrates, are now accepted as the main reasons for the initiation of a pan. Thus, the most suitable loci for pans are most likely joints, fractures, faults or dyke intersections because the rock is already weakened at these areas and is thus susceptible to further weathering. At these sites' groundwater flows are concentrated, which enhances erosion and decomposition. This accelerated weathering promotes additional weathering through the release of salts (Klerk *et al.* 2016).

3 APPROACH AND METHODS

3.1 Screening assessment methods

- Desktop delineation was conducted in QGIS (v2.18.0) and Google Earth Pro using available imagery and datasets (Table 2).
- Various data sources were consulted to develop an understanding of the biophysical characteristics of the study area and its conservation context (Table 2).
- Infield verification and ground truthing of the pan was undertaken with a Garmin Montana 600 GPS. The site visit occurred on the 7 and 8th of July 2019 (Figure 10). The infield delineation was conducted in accordance with *A Practical Field Procedure for Identification and Delineation of Wetland and Riparian areas -Edition 1* (DWAF 2005) and specialist knowledge (Table 3).

Figure 10: Photograph of infield soil analysis via hand-held Dutch soil auger on Grootwitpan

- The delineated aquatic habitat was then classified in accordance with the 'National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa' (Ollis *et al.,* 2013) and WET-Ecoservices (Kotze *et al*. 2009) (Table 3).

3.2 Impact assessment methods

- The pan was assessed further using the appropriate tools (Table 3). The assessment was derived by evaluating the level of ecosystem functioning and ecological integrity/condition of the identified wetland habitat. Present Ecological State (PES), Ecological Importance and Sensitivity (EIS) and Recommended Ecological Category (REC) analyses were conducted for the impacted wetland. This is in order to establish a baseline of the current state of the systems.
- The anticipated impacts of the proposed mining on the associated aquatic habitat were identified and evaluated based on a significance rating scale encompassing factors such as spatial scale, magnitude, duration and significance of impacts.
- Recommendations for impact management and mitigation to avoid and reduce impacts were determined.

Table 2: Utilised data and associated source relevant to the proposed project

DATA	SOURCE
Google Earth Pro™ Imagery	Google Earth Pro™
DWS Eco-regions (GIS data)	DWS (2005)
South African Vegetation Map (GIS Coverage)	Mucina & Rutherford (2006)
National Biodiversity Assessment Threatened Ecosystems (GIS Coverage)	SANBI (2011)
Geology	Surveyor General
Contours (elevation) - 5m intervals	Surveyor General
NFEPA river and wetland inventories (GIS Coverage)	CSIR (2011)
NEFPA river, wetland and estuarine FEPAs (GIS Coverage)	CSIR (2011)
SANBI Northern Cape Critical Biodiversity Areas	SANBI (2016)

Table 3: Tools utilised for the assessment of water resources impacted upon by the proposed project.

METHOD/TOOL*	SOURCE	REFERENCE	ANNEXURE
Delineation of wetland and/or Riparian areas	*A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas.*	(DWAF 2005)	11.1
Classification of wetlands and/ or other aquatic ecosystems	*National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa & WET-Ecoservices*	(Ollis *et al*., 2013), Kotze *et al*., 2009)	11.2
Present Ecological State (PES) Assessment (Wetland)	*WET-Health Assessment*	(McFarlane *et al.* 2009)	11.3
Functional Importance Assessment (Wetland)	*WET-Ecoservices Assessment*	(Kotze *et al*., 2009)	11.4
Ecological Importance & Sensitivity (EIS) Assessment (wetland)	*DWAF Wetland EIS Tool*	(Duthie 1999)	11.5

4 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are relevant:

- The information and locations of the existing and proposed activities were extrapolated from information provided by the client and during meetings with the client and on site.
- Mining activities on the pans will likely continue at the current rate in the foreseeable future subject to the availability of sufficient brine.
- Aquatic ecosystems vary both temporally and spatially. Once-off surveys such as this are therefore likely to miss certain ecological information due to seasonality, thus limiting accuracy and confidence. Salt pans can be considered cryptic systems.

- Infield soil and vegetation sampling was only undertaken within a specific focal area around the proposed activity, while the remaining watercourses were delineated at a desktop level with limited accuracy.
- No detailed assessment of aquatic fauna/biota was undertaken.
- The vegetation information provided is based on observation not formal vegetation plots. As such species documented in this report should be considered as a list of dominant and/or indicator wetland/riparian species and only provide a very general indication of the composition of the wetland/riverine vegetation communities.
- Reference conditions are estimated. This limits the confidence with which the present ecological category is assigned. However, data collected during this study can serve as a point of departure for future monitoring.
- No geohydrological or hydropedology studies have been conducted as of yet, however, studies such as these may be required for the mining application, if prospecting is successful.
- The assessment of impacts and recommendation of mitigation measures was informed by the site-specific ecological concerns arising from the field survey and based on the assessor's working knowledge and experience with similar projects. The degree of confidence is considered good.

5 RESULTS

Following desktop and field analysis of the aquatic habitats, relevant to the proposed project, the subsequent results were obtained.

5.1 Identification and delineation

The aquatic habitats within the regulated area of the proposed activities were identified and mapped on a desktop level utilising available data, following which, the infield site assessment confirmed the location and extent of these systems (Figure 11). It was then determined that only the two pans are impacted in any way. There are a number of factors which influence the level of impact, such as type of system, position of the system in relation to the project and position the system is located in the landscape. Factors considered for determining if a system was at risk included if a system's flow (surface or groundwater), water quality, biota or habitat would be negatively altered by the project.

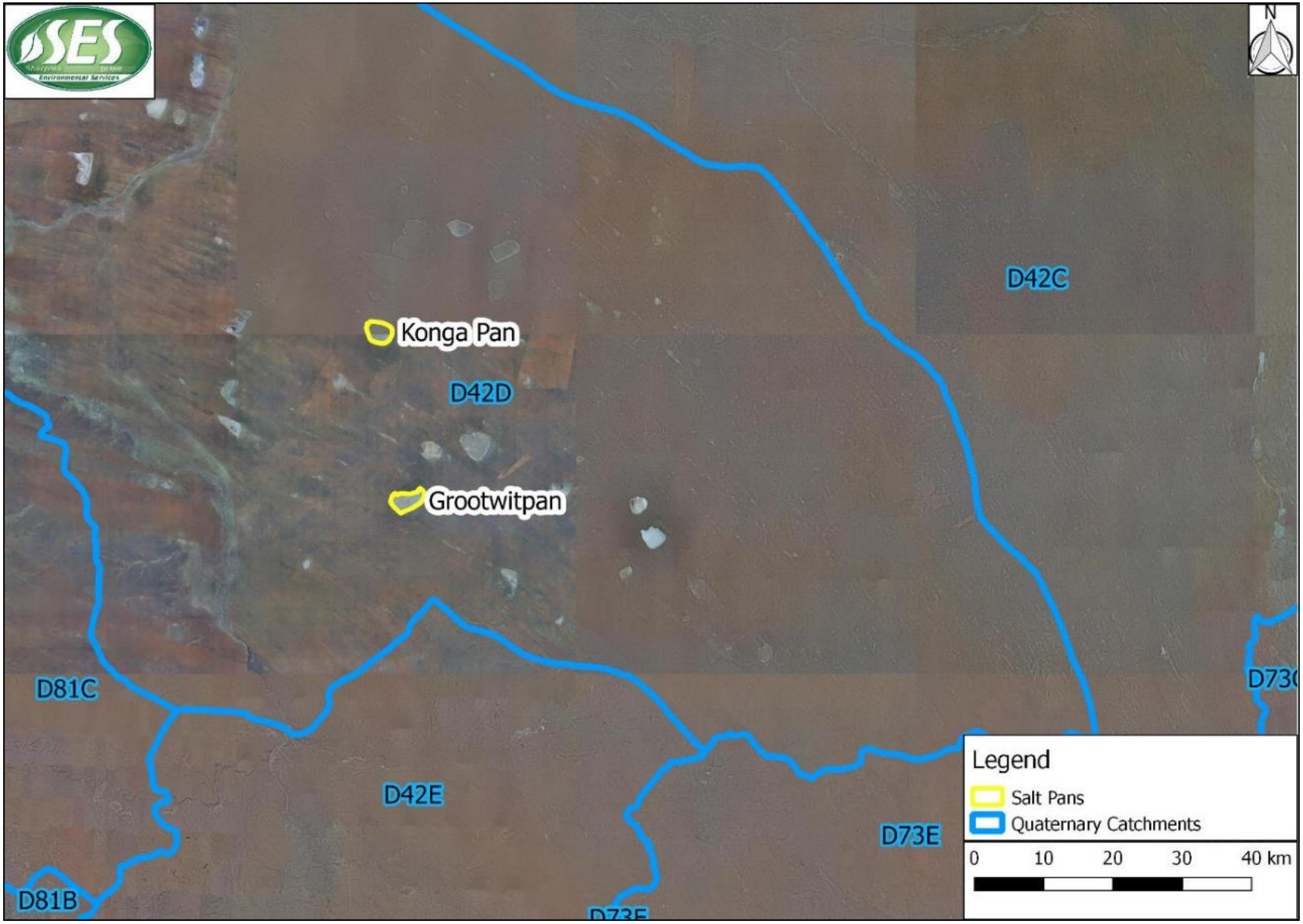

Figure 11: The mining pans in relation to the quaternary catchments

5.2 Description of the pans

Only the two pans, Konga and Grootwit Pan, are likely to be impacted upon by the project and they are exceptionally similar in nature (Figure 12). According to Dini *et al*. (1998), both are classified as endorheic wetland systems that have a flat basin floor and no outlet for water flows. However, the classification system proposed by Ollis *et al.* (2013) states that flat-bottomed depressions are often referred to as pans and subsequently grouped pans under the classification termed depressions. The definition of a depression is "a wetland or aquatic ecosystem with closed (or at least near-closed) elevation contours, which increases in depth from the perimeter to a central area of greatest depth and within which water typically accumulates". Pans exhibit considerable variability because of changes in an assortment of characteristics that include origin, underlying geology or lithology, size, morphology (shape), and frequency of surface water inundation, as well as the relative importance of surface and groundwater inputs (Shaw and Thomas, 1989).

The two identified salt pans have the typical circular shape of many salt pans. These arid drainage basins have an evaporation rate that significantly exceeds any hydrological inputs, by direct precipitation onto the pan surface and subsurface flows of water and have white salt precipitates. Due to the topographical position of the pans within the landscape it is likely that the groundwater regime dominates hydrological processes. Although the water table lies near the surface, the pans are rarely inundated with water.

Ephemeral pans are particularly vulnerable to changes in hydrology and water quality, as they are specifically adapted to brief periods of inundation and flow, and pollutants and sediments entering these watercourses are not regularly diluted or flushed out of the catchment, thus leading to a lack of resilience against pollution, erosion and sedimentation.

The fauna of these ephemeral systems is not well-known, but the pans have been found to provide aquatic habitat for species that depend on brief periods of inundation for hatching, mating, feeding and refuge. Organisms that inhabit temporary wetlands rely on the production of desiccation-resistant or dormant propagules (such as eggs, cysts, seeds, spores) to survive this kind of environment. Propagules allow for the organisms to lie in-wait during the dry period, and then come back to life when the wetland is inundated, such as Anostraca (fairy shrimp). Invertebrates were not assessed during this aquatic habitat study, but it is possible that shrimps are present in these pans as ephemeral waterbodies of southern Africa are regarded a global hotspot for large Branchiopod diversity (Meyer-Milne *et al*., 2020). The pans may host a range of branchiopod crustaceans which are specially adapted to survival in short-lived hydrological regimes. Their eggs survive extended dry periods, and they emerge and mature rapidly when stimulated by wet conditions.

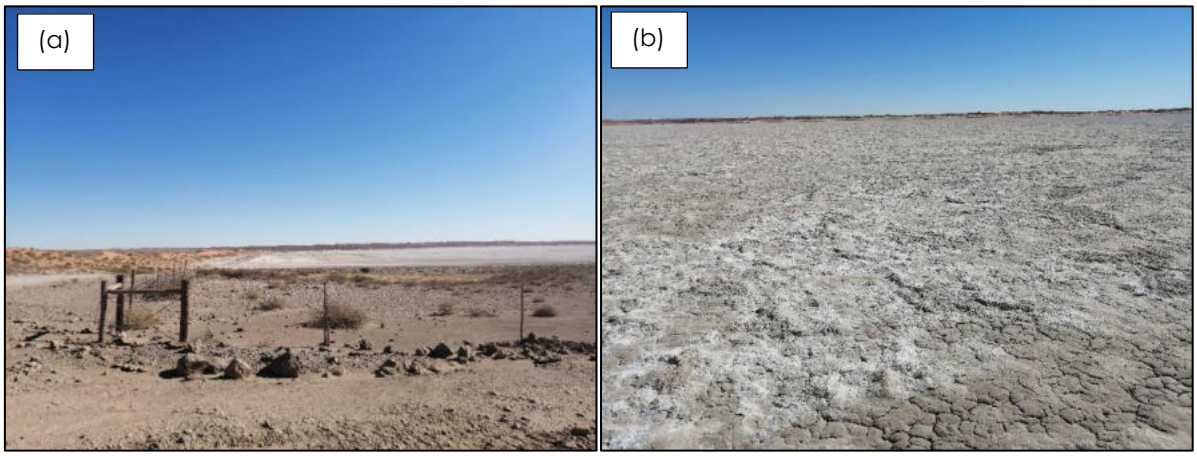

Figure 12: The round depression of Groot Witpan (a) showing the sparsely vegetated catchment and (b) the flat, dry salt pan surface of Konga Pan

5.3 PES = 'C' Moderately Modified

Hydrology and geomorphology are impacted upon by the mining, but the systems are currently stable and maintain ecological functioning. Vegetation characteristics are unchanged. There is likely to be a low level of impact upon biota as not all of the pan is mined, only a portion is disturbed. Both of the salt pans have undisturbed areas that are in a near natural condition. However, the mining activities, although not new activities, have (and continue to) cause soil and groundwater impacts upon potions of the pans. Figure 12 below shows the abstraction pumps, evaporation ponds, washing area and salt stockpile on the pan. These are localised disturbances and have not resulted in significant habitat loss.

There is no evidence that they are impacting upon the surface water processes of the pans and ecological functioning is only partially modified. Therefore, both pans obtained a PES score of 'C' which is indicative of a system that has deviated from the natural condition to a Moderate degree.

Figure 13: Top left: A pump to transport the brine from below the pan surface to ponds above.Top right: An evaporation pond on the pan. Bottom left: a salt sorting/rinsing area. Bottom right: A salt stockpile ready for loading and transport to Upington

5.4 EIS=Moderate

The mining activities have been ongoing for decades, but the pans are functioning. This indicates the resilience of such systems. The pans obtained an overall 'Moderate' EIS Score. They are not formally protected, and the vegetation is not endangered, but some elements are sensitive to changes. They contribute substantially to society through the provision of salt which increases their importance.

Pan systems typically provide limited contributions to flood attenuation, streamflow regulation, sediment trapping (due to removal by wind), and erosion control due to their isolation from the stream network. This is true for both of the identified pans, which do not contribute to carbon storage or cultivated foods due to their saline, largely unvegetated nature. The seasonality of the pan does however allow for the precipitation of minerals (including phosphate minerals) due to the concentrating effects of evaporation. Also, some of the accumulated salts and nutrients (such as organic nitrogen, and various phosphate and sulphate salts) can be transported out of the system by wind and be deposited in the surrounding area. The importance of the pan is mainly due to its potential to provide natural resources (the salt) for society. It also provides a small amount of water for livestock.

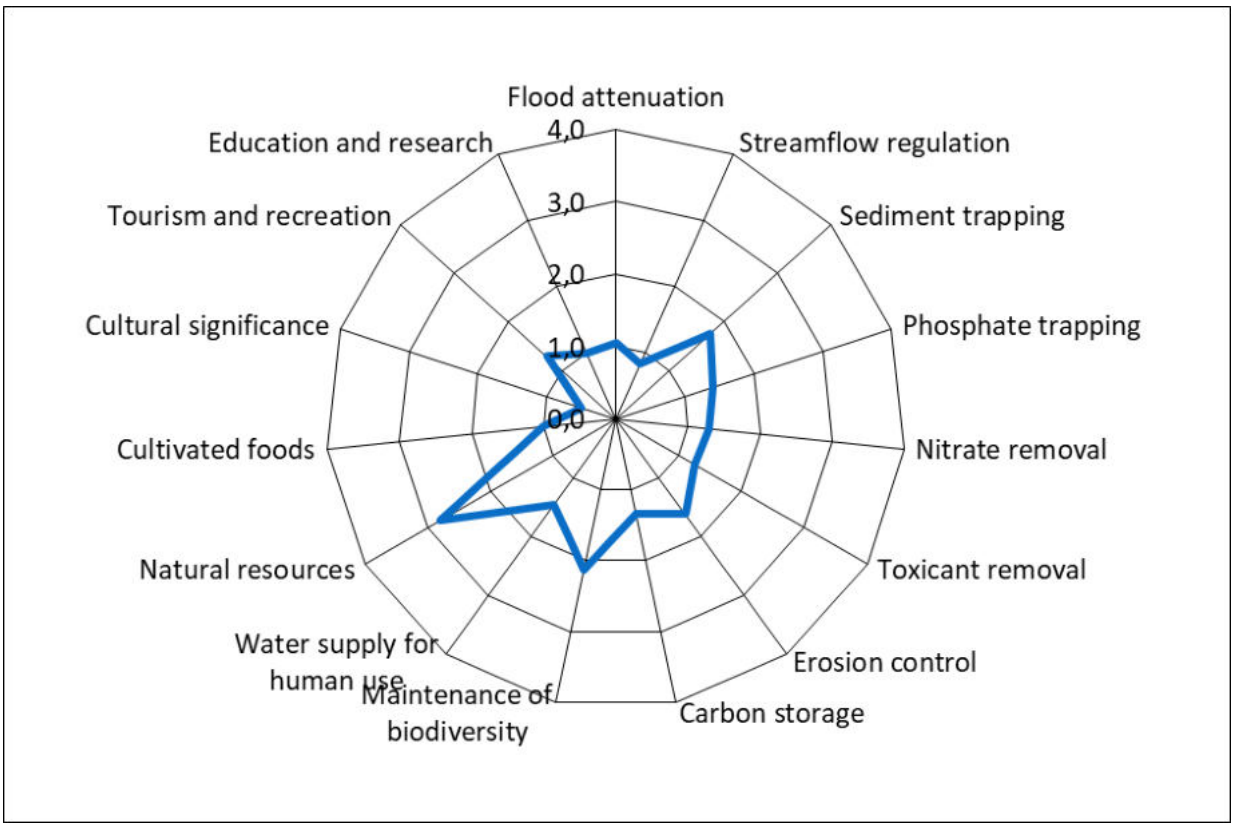

Figure 14: WET-Ecoservices Spider diagram for the pan systems

The existing mining activities within the pans are the biggest impact on the resource. However, the water use and soil disturbance have occurred for decades without noticeably changing the pan characteristics. The pans are located in agricultural area and are impacted by activities associated with livestock farming. This includes small excavations for livestock water, fences and informal road tracks. There is no evidence that these activities are significantly impacting on the functioning of the pan.

5.5 Recommended Ecological Category

The recommended ecological management category of both salt pans indicates that management should strive to maintain the systems in their present state without any further loss of integrity (Table 4).

Table 4: Management objective for the identified pans based on PES & EIS scores (DWAF 2007).

			Ecological Importance and Sensitivity (EIS)			
			Very High	High	Moderate	Low
PES	A	Pristine	Maintain	Maintain	Maintain	Maintain
	B	Natural	Improve	Improve	Maintain	Maintain
	C	Good	Improve	Improve	**Maintain**	Maintain
	D	Fair	Improve	Improve	Maintain	Maintain
	E/F	Poor	Improve	Improve	Maintain	Maintain

6 IDENTIFIED IMPACTS

The environmental impacts are associated with an existing activity. There will not be any further environmental impacts, just a continuation of the same activities that have been undertaken for decades. The soils are already disturbed in the mining area. The continued abstraction of groundwater may have Medium negative cumulative impacts in the face of climate changes and potential drop in the water table. If this is monitored, then the impacts can be reduced to Low significance. There is a risk that over abstraction of groundwater affects the water table and must be prevented. It takes very little force to crush dry branchiopod eggs and no increase in roads on the pan should occur. Intact egg banks might be protected by the surrounding soil matrix to some extent, but disturbances are expected to expose the egg bank, making the eggs more vulnerable to destruction. It is not certain what macroinvertebrates are present on these pans, but a precautionary approach must be adopted.

Following the adoption of mitigation measures from various specialists, as well as the monitoring of these measures, the project is not anticipated to have any high impacts upon the environment. The direct and indirect impacts associated with the project are grouped into three encapsulating impact categories in the table below, where associated or interlinked impacts are grouped. The impact significance is indicated in Table 6.

Table 5: Description of potential impacts without mitigation

IMPACTS (refer to Table 6 below)
OPERATIONAL PHASE IMPACTS
Disturbance of aquatic vegetation and biota The disturbance or loss of aquatic vegetation and habitat refers to the direct physical destruction or disturbance of aquatic habitat caused by vegetation clearing, soil disturbance such as excavations and backfilling, and alteration the geomorphological profile. It also refers to the indirect impact of disturbance of pan habitat due to encroachment/colonisation of habitat by invasive alien plants. In the operational phase, if the proposed mining plant facility boundary is exceeded (surrounding the pan edge) vegetation could be destroyed or disturbed due to machinery and workers on site. This is highly improbably (especially in the unvegetated context of the pan area) and likely to have negligible impact. There is potential to impact upon macroinvertebrates if there is any increased pan disturbance.
Soil disturbance The excavations and backfilling associated with the evaporation pan maintenance alter the geomorphological profile of the pan and disturb the soil profile. There areas alter the characteristics of the pan as they increase the extent of surface water. Soil disturbance refers to the alteration in the physical characteristics of the ecosystem as a result of excavation, abstraction, and backfilling mobilising sediments and disturbing the soil profile. The disturbed areas also result in a salt crust on the pan surface until dissolved again by rain and could impact any macroinvertebrates present. These impacts can indirectly result in the deterioration of aquatic ecosystem

integrity. A geohydrological study and/or hydropedological study may provide information of the impact on the soil profile if necessary.

Altered water quality and quantity

Water and/or soil disturbance causes negative changes in the physical, chemical and biological characteristics of water resources (i.e. water quality). This can indirectly result in possible deterioration in aquatic ecosystem integrity and a reduction in, or loss of species of conservation concern (i.e. rare, threatened/endangered species). Mining mobilises sediments and cause a direct impact as they alter the water quality parameters such as turbidity, salinity, nutrient levels, chemical oxygen demand and pH. These are considered to be easy to mitigate provided the volume abstracted is sustainable (which it should be considering this activity has occurred for decades). Additionally, waste and pollution are prevented as per the EMPr.

Regarding groundwater pollution, the shallow, unconfined nature of the aquifer, makes it vulnerable to pollution from surface and sub-surface sources. However, the mining area is located within a natural area with very little to no agricultural or industrial activities which would cause pollution. The potential for groundwater surface to groundwater contamination is low. The mining activities itself are not intensive, with only a few heavy vehicles and pumps on site. The brine is abstracted from groundwater as the pan is very rarely inundated. Therefore, the impact of the volume abstracted would impact groundwater characteristics (which was not assessed in this study). It is likely that the mining will slightly increase the flow of water within the pan towards the abstraction areas but will not alter the direction of water movement.

DECOMMISSIONING PHASE

Disturbance/loss of aquatic vegetation and habitat

The project will further unnatural disturbance to the pan, promoting the establishment of disturbance-tolerant species. The impact of alien invasive plant encroachment, if not addressed, will proceed beyond the decommissioning phase. Also, during decommissioning, there is the possibility that vegetation is disturbed during the removal of infrastructure.

Soil disturbance

The temporary excavations and backfilling associated with the rehabilitation of the abstraction sumps, boreholes, and holding ponds, evaporation pans will alter the geomorphological profile of the pan and disturb the soil surface. There areas alter the characteristics of the pan as they increase the extent of surface water. However, it is necessary to disturb the pan surface in order to recontour and rehabilitate the disturbed areas of the pan.

Altered water quality and quantity

During the decommissioning phase there is the potential for water pollution due to machinery spillage and soil disturbance whilst clearing infrastructure and rehabilitating the pan surface. The sediments and salts mobilised by soil movement to recontour and rehabilitate will resulting in mixing with groundwater and change characteristics temporarily. However, following rehabilitation, after some time, the water quality and quantity will improve.

The pan has already been subjected to mining within it, and apart from the mining impacts, it is also affected by the current drought conditions. There is presently very limited habitat for biota within the unvegetated area proposed for mining and the impacts will be highly localised due to the nature of the system. Therefore, although the duration of the impacts is mostly long-term the degree of magnitude, after mitigation, is low.

The impacts of the mining range from Medium significance should no mitigation measures be adopted. However, after mitigation, the impacts have a **Low significance** (Table 5) and are deemed as acceptable subject to the implementation of the mitigation measures. The potential impact upon vegetation is considered to be completely avoidable. The modifications to soils and water characteristics are not completely avoidable but can be mitigated to acceptable levels of disturbance. Therefore, the mitigation measures and monitoring plan within this report must be implemented and adhered to.

Table 6: Evaluation of potential impacts of the salt pan mining

Phase	Impact	Mitigation	Extent	Duration	Magnitude	Probability	Significance	Reversibility	Mitigation Potential	Irreplaceable Resource Loss
Operational	Loss and disturbance of aquatic vegetation & biota	Without Mitigation	Local (2)	Long-term (4)	Minor (2)	Improbable (2)	**Low (16)**	Partly	High	No
		With Mitigation	Site only (1)	Medium (3)	Small (0)	Improbable (2)	**Low (8)**	Barely	Low	No
	Soil and geomorphological modifications	Without Mitigation	Site only (1)	Permanent (5)	Low (4)	Definite (5)	**Medium (50)**	Partly	Medium	No
		With Mitigation	Site only (1)	Long-term (4)	Minor (2)	Highly Probable (4)	**Low (28)**	Barely	Low	No
	Altered water quality and quantity	Without Mitigation	Local (2)	Long-term (4)	Moderate (6)	Highly Probable (4)	**Medium (48)**	Partly	High	No
		With Mitigation	Site only (1)	Medium (3)	Minor (2)	Probable (3)	**Low (18)**	Barely	Low	No
Decommissioning	Loss and disturbance of aquatic vegetation & biota	Without Mitigation	Site only (1)	Short (2)	Minor (2)	Probable (3)	**Low (20)**	Partly	High	No
		With Mitigation	Site only (1)	Very Short (1)	Small (0)	Improbable (2)	**Low (4)**	Barely	Low	No
	Altered water quality and quantity	Without Mitigation	Local (2)	Short (2)	Low (4)	Probable (3)	**Low (24)**	Partly	High	No
		With Mitigation	Site only (1)	Very Short (1)	Minor (2)	Highly improbable (1)	**Low (4)**	Barely	Low	No
	Soil disturbance	Without Mitigation	Site only (1)	Long-term (4)	Low (4)	Definite (5)	**Medium (45)**	Partly	Medium	No
		With Mitigation	Site only (1)	Medium (3)	Minor (2)	Highly Probable (4)	**Low (24)**	Barely	Low	No

Table 7: Impact Assessment methodology

METHODS FOR IMPACT SIGNIFICANCE WEIGHTINGS

Direct, indirect and cumulative impacts should be assessed in terms of the following criteria:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high).
- The **duration**, wherein it will be indicated whether:
    - The lifetime of the impact will be of a very short duration (0-1 years) – assigned 1.
    - The lifetime of the impact will be of short duration (2-5 years) – assigned a score of 2;
    - Medium term (5-15 years) – assigned a score of 3;
    - Long-term (> 15 years) – assigned a score of 4; or
    - Permanent – assigned a score of 5.
- The **magnitude**, quantified on a scale of 0-10, where:
    - 0 is small and will have no effect on the environment,
    - 2 is minor and will not result in an impact on processes,
    - 4 is low and will cause a slight impact on processes,
    - 6 is moderate and will result in processes continuing but in a modified way,
    - 8 is high (processes are altered to the extent that they temporarily cease), and
    - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** of occurrence, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5, where:
    - 1 is very improbable (probably will not happen),
    - 2 is improbable (some possibility, but low likelihood),
    - 3 is probable (distinct possibility),
    - 4 is highly likely (most likely) and;
    - 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high;
- The degree to which the impact can be reversed.
- The significance is calculated by combining the criteria in the following formula, **S = (E+D+M) P**:
    - S = significance weighting
    - E = extent
    - D = duration
    - M = magnitude
    - P = probability
- The significance weightings for each potential impact are as follows:
    - <30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop the area),
    - 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
    - >60 points: High (i.e. where the impact must have an influence on the decision).

7 MITIGATION MEASURES

The mitigation of negative impacts on biodiversity and ecosystem goods and services is a legal requirement for authorisation purposes and must take on different forms depending on the significance of the impact and the specific area being affected. Mitigation requires the adoption of the precautionary principle and proactive planning that is enabled through a mitigation hierarchy. Its application is intended to strive to first avoid disturbance of ecosystems and loss of biodiversity, and where this cannot be avoided altogether, to minimise, rehabilitate, and then finally offset any remaining significant residual negative impacts on biodiversity (DEA 2013).

Mitigation measures related to the impacts associated with the mining activities are intended to augment standard/generic mitigation measures.

- ✓ The boundary of the mining area must be clearly demarcated and shown to staff in order to prevent any additional disturbances on the pan. Any unnecessary intrusion into these areas is prohibited. No new roads should be created.
- ✓ Machinery and vehicles within the pan must be limited to the absolute minimum and the existing access routes to the pumps and already disturbed areas must be utilised as far as possible.
- ✓ Use of the borehole water must be kept to an absolute minimum.
- ✓ The water quality should be tested yearly and assessed for any unnatural changes.
- ✓ Excavations must not exceed the minimum depth needed for effective mining of the brine.
- ✓ Regarding the protection of the groundwater, although the potential impact for the area is very low, the following measures are recommended to ensure the successful continuation of future mining and expansions:
    - All machinery must be in excellent condition and there must be NO oil/fuel leaks whatsoever from equipment. Measure must be in place to prevent this, such as drip trays underneath parked machinery/equipment.
    - If a spill does occur, it must be immediately reported to the relevant authorities and immediately remediated.
- ✓ The entire pan must be protected from direct or indirect spills of pollutants, e.g. sediment, refuse, sewage, cement, oils, fuels, chemicals, wastewater etc. Should any spills of hazardous materials occur on the site or in the storage area, the relevant clean-up specialists must be contacted immediately. In the event of a spillage that cannot be contained and which poses a serious threat to the local environment, the following Departments must be informed of the incident in accordance with Section 30 of the National Environmental Management Act, Act 107 of 1998, within forty-eight (48) hours:

- The Local Authority;
- The Department of Mineral Resources
- Department of Water and Sanitation

✓ All solid waste generated during the construction process (including packets, plastic, rubble, cut plant material, waste metals etc.) must be placed in the waste collection area and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent the skips / bins. Burying of waste, rubble on site is prohibited.

✓ Any maintenance of mining infrastructure must be undertaken as sensitively as possible to prevent adverse impacts to the environment during repairs.

✓ A monitoring programme shall be in place, not only to ensure compliance with the EMPr throughout the mining process.

7.1 Rehabilitation

The proposed project, if completed in accordance with this document and the site-specific EMPr, should not have high impacts on the aquatic habitat. There is potential for accidental disturbance therefore guidelines for rehabilitation of aquatic habitat is provided. The aim of the rehabilitation is to ensure the necessary procedures are appropriately implemented in the natural environment that may be negatively affected by the mining. The measures promote the reestablishment of the ecological functioning of any area disturbed by construction activities as far as possible. Important guidelines for rehabilitation are:

✓ Rehabilitation (such as backfilling and contouring) must occur concurrently with mining operations and properly concluded during the decommissioning phase of the mine.

✓ The landscape profile must be restored, as closely as possible, to the original land form prior to mining. For example, the pre-construction gradient of the pan must be reinstated as accurately as possible, without humping or hollowing. No imported soil material may be utilised for rehabilitation.

✓ All machinery, mining material and waste must be cleared off site in a sensitive manner (such as preventing water pollution from spillage)

✓ The establishment and infestation of alien invasive plant species must be prevented, managed and eradicated in the areas impacted upon by the project. Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. Alien/ invasive species shall not be stockpiled; they should be removed from site and dumped at an approved site.

✓ A monitoring programme shall be in place, not only to ensure compliance with the EMPr throughout the mining process, but also to monitor any post-mining environmental issues and impacts.

7.2 Monitoring

Monitoring for non-compliance must be done on a daily basis by mine management, contractor and staff. Photographic records of all incidents and non-compliances must be retained. This is to ensure that the impacts on the aquatic habitat are adequately managed and mitigated against and the successful rehabilitation of any disturbed areas within the pans occurs.

- ✓ Inspections should be undertaken of the work footprint extent, the use of existing roads, and ensure the minimum abstraction amount required is not being exceeded.
- ✓ Photographs must be taken before and after the prospecting activities from the same photo points or from a drone at a fixed location and elevation (e.g. 50 m above ground level) for monitoring. These points are required to be established before the proposed prospecting commences and show each drilling area. The timeline created between the pre- and post-rehabilitation photos will provide an invaluable visual representation of the progress that is conveyed in a straightforward manner.
- ✓ The below mentioned criteria must be adhered to, ensuring the quality of the information collected:
  - → The photographs should clearly show the entire working area of each drill site from fixed-points, at a fixed height, every time.
  - → Photo record forms must be utilised for every photo taken. The information required will be project name, location, unique identity number, directional point (e.g. North, South), date, time, photographers name and comments.

The cost of rehabilitation during decommissioning has been catered for in the Mining Right authorisation and EA/EMPr. The proposed project, if completed in accordance with this document and the site-specific EMPr, should not have high impacts on the aquatic habitat. According to the EMPr, the following will also be applied:

- The EMP contains 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.
- Monitoring will ensure all holes have been rehabilitated and that site matches the surrounding environment and pre-drilling microtopography. It will ensure that the site is free of any hydrocarbon pollution and that any structures will be removed.
- The objective is thus to return the site so that it can form part of the surrounding 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 disturbance areas / drill sites will be permitted.
- Waste volumes will be very low and is restricted.

8 CONCLUSION

Sharples Environmental Services cc (SES) has been appointed by Site Plan Consulting to conduct an aquatic assessment and Water Use Application for the brine mining abstraction and salt processing on two pans in the Northern Cape. The mining is an existing activity on both Konga and Grootwit Pan.

The impacts of the continued mining activities are of Medium significance should no mitigation measures be adopted. However, after mitigation, the impacts have a Low significance. Therefore, the project, if completed in accordance with the specialist reports and the site-specific EMPr, is deemed acceptable and should not have high impacts on the aquatic habitat or water users. Key to ensuring Low impact significance is the monitoring of the mitigation over the years

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10 ANNEXURE (METHODOLOGIES):

10.1 Wetland delineation and HGM type identification

Wetland delineation includes the confirmation of the occurrence of wetland and a determination of the outermost edge of the wetland. The outer boundary of wetlands was identified and delineated according to the Department of Water Affairs wetland delineation manual 'A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas' (DWAF, 2005a). Wetland indicators were used in the field delineation of the wetlands: position in landscape, vegetation and soil wetness (determined through soil sampling with a soil auger and the examining the degree of mottling).

Four specific wetland indicators were used in the detailed field delineation of wetlands, which include:

- The Terrain Unit Indicator helps to identify those parts of the landscape where wetlands are more likely to occur.
- The Soil Form Indicator identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation.
- The Soil Wetness Indicator identifies the morphological "signatures" developed in the soil profile as a result of prolonged and frequent saturation.
- The Vegetation Indicator identifies hydrophilic vegetation associated with frequently saturated soils.

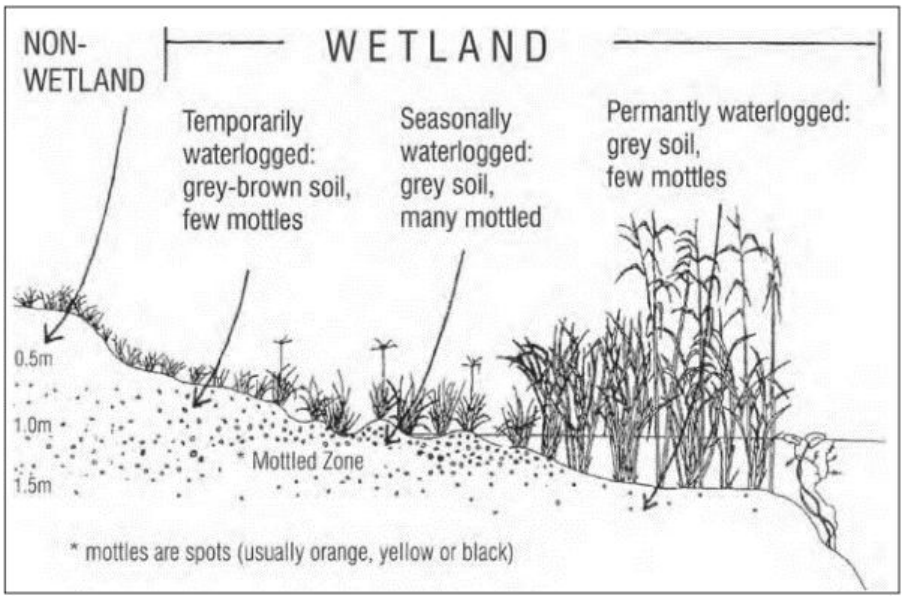


Figure A12.1a: Cross section through a wetland, indicating how the soil wetness and vegetation indicators change as one moves along a gradient of decreasing wetness, from the middle to the edge of the wetland. Source: Donovan Kotze, University of KwaZulu-Natal.

According to the wetland definition used in the National Water Act, vegetation is the primary indicator, which must be present under normal circumstances. However, in practise the soil wetness indicator tends to be the most important, and the other three indicators are used in a confirmatory

role. The reason is that vegetation responds relatively quickly to changes in soil moisture regime or management and may be transformed; whereas the morphological indicators in the soil are far more permanent and will hold the signs of frequent saturation long after a wetland has been drained (perhaps for several centuries).

The permanent, seasonal and temporary wetness zones can be characterised to some extent by the soil wetness indicators that they display (Table A12.1a)

A12.1a: Soil Wetness Indicators in the various wetland zones

TEMPORARY ZONE	SEASONAL ZONE	PERMANENT ZONE
Minimal grey matrix (<10%)	Grey matrix (<10%)	Prominent grey matrix
Few high chroma mottles	Many low chroma mottles present	Few to no high chroma mottles
Short periods of saturation (less than three months per annum)	Significant periods of wetness (at least three months per annum)	Wetness all year round (possible sulphuric odour)

Table A12.1b: Relationship between wetness zones and vegetation types and classification of plants according to occurrence in wetlands

VEGETATION	TEMPORARY WETNESS ZONE	SEASONAL WETNESS ZONE	PERMANENT WETNESS ZONE
Herbaceous	Predominantly grass species; mixture of species which occur extensively in non-wetland areas, and hydrophilic plant species which are restricted largely to wetland areas	Hydrophilic sedges and grasses restricted to wetland areas	Dominated by: (1) emergent plants, including reeds (*Phragmites australis*), a mixture of sedges and bulrushes (Typha capensis), usually >1m tall; or (2) floating or submerged aquatic plants.
Woody	Mixture of woody species which occur extensively in non-wetland areas, and hydrophilic plant species which are restricted largely to wetland areas.	Hydrophilic woody species restricted to wetland areas	Hydrophilic woody species, which are restricted to wetland areas. Morphological adaptations to prolonged wetness (e.g. prop roots).
SYMBOL	**HYDRIC STATUS**	**DESCRIPTION/OCCURRENCE**	
Ow	Obligate wetland species	Almost always grow in wetlands (>90% occurrence)	
Fw/F+	Facultative wetland species	Usually grow in wetlands (67-99% occurrence) but occasionally found in non-wetland areas	
F	Facultative species	Equally likely to grow in wetlands (34-66% occurrence) and non-wetland areas	
Fd/F-	Facultative dryland species	Usually grow in non-wetland areas but sometimes grow in wetlands (1-34% occurrence)	

D	Dryland species	Almost always grow in drylands

In order to identify the wetland types, using Kotze *et al.* (2009) and Ollie *et al*. (2013), a characterisation of hydrogeomorphic (HGM) types was conducted. These have been defined based on the geomorphic setting of the wetland in the landscape (e.g. hillslope or valley bottom, whether drainage is open or closed), water source (surface water dominated or sub-surface water dominated), how water flows through the wetland (diffusely or channelled) and how water exits the wetland (Figure A12.1b).

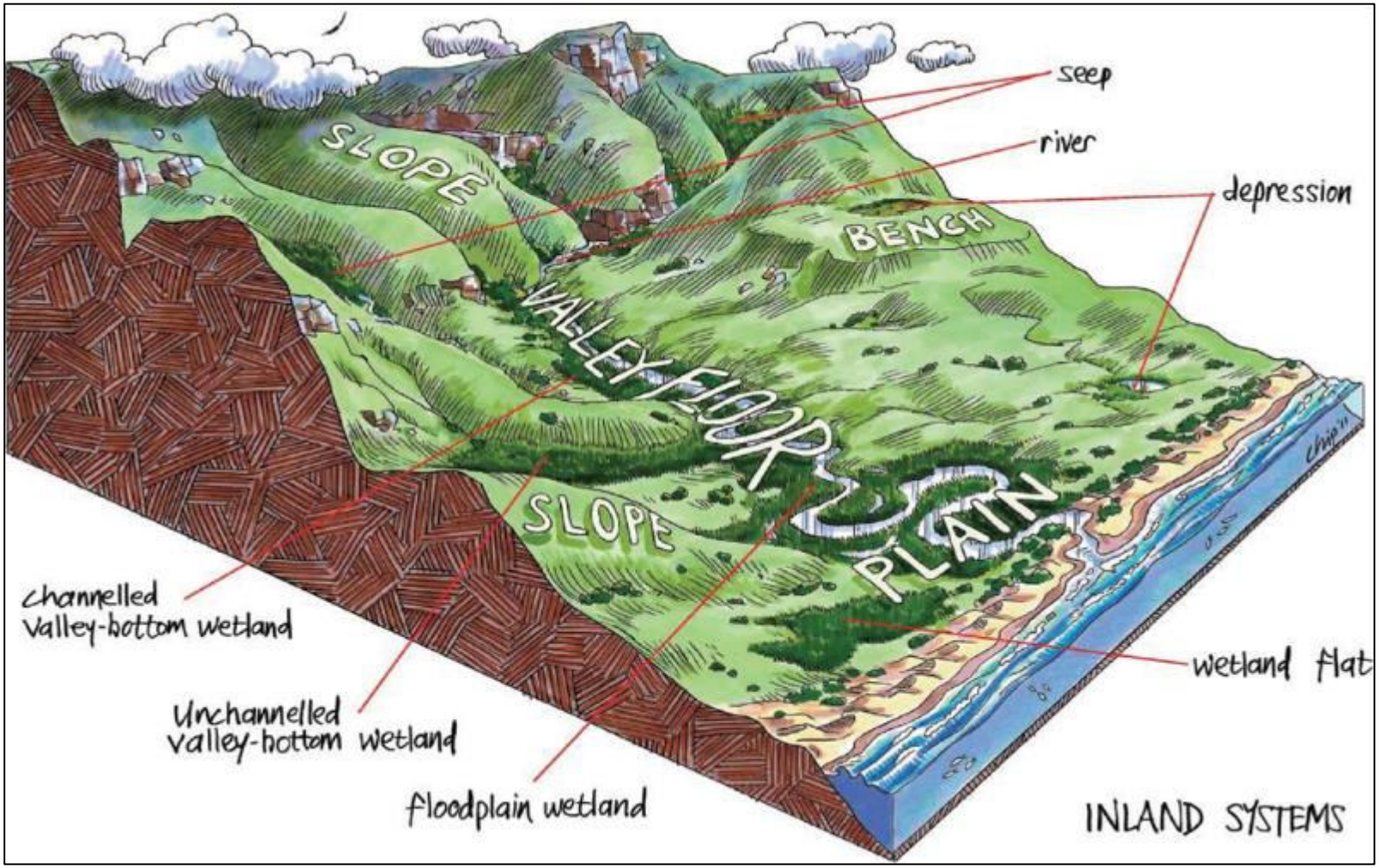


Figure A12.1b: Illustration of wetland types and their typical landscape setting (From Ollie et al. 2013)

10.2 Delineation of Riparian Areas

Riparian zones are described as "the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent areas" i , Riparian zones can be thus be distinguished from adjacent terrestrial areas through their association with the physical structure (banks) of the river or stream, as well as the distinctive structural and compositional vegetation zones between the riparian and upland terrestrial areas (Figure 12.2a). Unlike wetland areas, riparian zones are usually not saturated for a long enough duration for redoxymorphic features to develop. Riparian zones instead develop in response to (and are adapted to) the physical disturbances caused by frequent overbank flooding from the associated river or stream channel.

Like wetlands, riparian areas can be identified using a set of indicators. The indicators for riparian areas are:

- **Landscape position**; - Alluvial soils and recently deposited material;
- **Topography** associated with riparian areas; and
- **Vegetation** associated with riparian areas.

Landscape Position As discussed above, a typical landscape can be divided into 5 main units), namely the:

- Crest (hilltop);
- Scarp (cliff);
- Midslope (often a convex slope);
- Footslope (often a concave slope); and
- Valley bottom.

Amongst these landscape units, riparian areas are only likely to develop on the valley bottom landscape units (i.e. adjacent to the river or stream channels; along the banks comprised of the sediment deposited by the channel). Alluvial soils are soils derived from material deposited by flowing water, especially in the valleys of large rivers. Riparian areas often, but not always, have alluvial soils. Whilst the presence of alluvial soils cannot always be used as a primary indicator to accurately delineate riparian areas, it can be used to confirm the topographical and vegetative indicators. Quaternary alluvial soil deposits are often indicated on geological maps, and whilst the extent of these quaternary alluvial deposits usually far exceeds the extent of the contemporary riparian zone; such indicators are useful in identifying areas of the landscape where wider riparian zones may be expected to occur.

Topography and recently deposited material associated with riparian areas The National Water Act definition of riparian zones refers to the structure of the banks and likely presence of alluvium. A good indicator of the presence of riparian zones is the presence of alluvial deposited material adjacent to the active channel (such as benches and terraces), as well as the wider incised “macro-channels” which are typical of many of southern Africa’s eastern seaboard rivers. Recently deposited alluvial material outside of the main active channel banks can indicate a currently active flooding area; and thus the likely presence of wetlands. Vegetation associated with riparian areas unlike the delineation of wetland areas, where redoxymorphic features in the soil are the primary indicator, the identification of riparian areas relies heavily on vegetative indicators. Using vegetation, the outer boundary of a riparian area can be defined as the point where a distinctive change occurs: - in species composition relative to the adjacent terrestrial area; and - in the physical structure, such as vigour or robustness of growth forms of species similar to that of adjacent terrestrial areas. Growth form refers to the health, compactness, crowding, size, structure and/or numbers of individual plants.

As with the delineation approach for wetlands, the field delineation method for riparian areas focuses on two main indicators of riparian zones:

- **Vegetation Indicators**, and
- **Topography** of the banks of the river or stream.

Additional verification can be obtained by examining for any recently alluvial deposited material to indicate the extent of flooding and thus obtain at least a minimum riparian zone width. The following procedure should be used for delineation of riparian zones: A good rough indicator of the outer edge of the riparian areas is the edge of the macro channel bank. This is defined as the outer bank of a compound channel, and should not be confused with the active river or stream channel bank. The macro-channel is an incised feature, created by uplift of the subcontinent which caused many rivers to cut down to the underlying geology and creating a sort of “restrictive floodplain” within which one or more active channels flow. Floods seldom have any known influence outside of this incised feature. Within the macro-channel, flood benches may exist between the active channel and the top of the macro channel bank. These depositional features are often covered by alluvial deposits and may have riparian vegetation on them. Going (vertically) up the macro channel bank often represents a dramatic decrease in the frequency, duration and depth of flooding experienced, leading to a corresponding change in vegetation structure and composition.

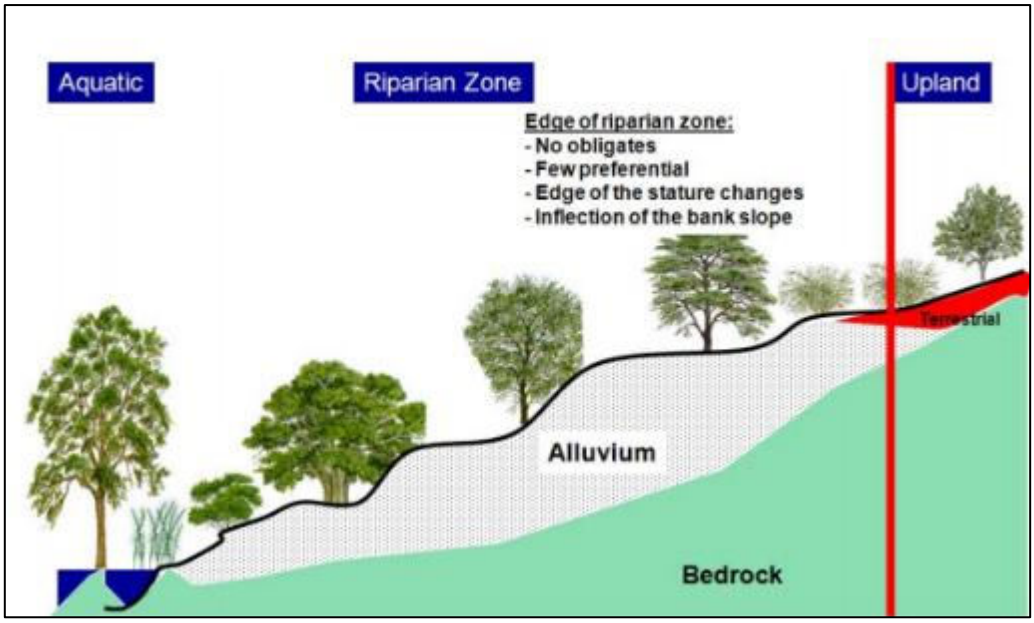


Figure A12.2a: A schematic diagram illustrating the edge of the riparian zone on one bank of a large river. Note the coincidence of the inflection (in slope) on the bank with the change in vegetation structure and composition. The edge of the riparian zone coincides with an inflection point on the bank; where there are not obligates upslope; few preferential. The boundary also coincides with the outer edge of the stature differences (DWAF 2008).

10.3 Present Ecological State (PES) – Wetlands

WET-Health assists in assessing the health of wetlands using indicators based on geomorphology, hydrology and vegetation. For the purposes of rehabilitation planning and assessment, WET-Health helps users understand the condition of the wetland in order to determine whether it is beyond repair, whether it requires rehabilitation intervention, or whether, despite damage, it is perhaps healthy enough not to require intervention. It also helps diagnose the cause of wetland degradation so that rehabilitation workers can design appropriate interventions that treat both the symptoms and causes of degradation. WET-Health is tailored specifically for South African conditions and has wide application, including assessing the Present Ecological State of a wetland. There are two levels of complexity: Level 1 is used for assessment at a broad catchment level and Level 2 provides detail and confidence for individual wetlands based on field assessment of indicators of degradation (e.g. presence of alien plants). A basic tertiary education in agriculture and/or environmental sciences is required to use it effectively. Level 1 was utilised for the assessment of the wetlands impacted upon by the Dambuza Road upgrade.

WET-Health is a tool designed to assess the health or integrity of a wetland. Wetland health is defined as a measure of the deviation of wetland structure and function from the wetland's natural reference

condition. This technique attempts to assess hydrological, geomorphological and vegetation health in three separate modules.

Hydrology is defined in this context as the distribution and movement of water through a wetland and its soils. This module focuses on changes in water inputs as a result of changes in catchment activities and characteristics that affect water supply and its timing, as well as on modifications within the wetland that alter the water distribution and retention patterns within the wetland.

Geomorphology is defined in this context as the distribution and retention patterns of sediment within the wetland. This module focuses on evaluating current geomorphic health through the presence of indicators of excessive sediment inputs and/or losses for clastic (minerogenic) and organic sediment (peat).

Vegetation is defined in this context as the vegetation structural and compositional state. This module evaluates changes in vegetation composition and structure as a consequence of current and historic onsite transformation and/or disturbance.

The overall approach is to quantify the impacts of human activity or clearly visible impacts on wetland health, and then to convert the impact scores to a Present State score. The tool attempts to standardise the way that impacts are calculated and presented across each of the modules. This takes the form of assessing the spatial extent of impact of individual activities and then separately assessing the intensity of impact of each activity in the affected area. The extent and intensity are then combined to determine an overall magnitude of impact (Table A12.2a).

Table A12.2a: Guideline for interpreting the magnitude of impacts on integrity (Macfarlane et al., 2008).

IMPACT CATEGORY	DESCRIPTION	SCORE
None	No discernible modification or the modification is such that it has no impact on this component of wetland integrity.	0 – 0.9
Small	Although identifiable, the impact of this modification on this component of wetland integrity is small.	1 – 1.9
Moderate	The impact of this modification on this component of wetland integrity is clearly identifiable, but limited.	2 – 3.9
Large	The modification has a clearly detrimental impact on this component of wetland integrity. Approximately 50% of wetland integrity has been lost.	4 – 5.9
Serious	The modification has a highly detrimental effect on this component of wetland integrity. Much of the wetland integrity has been lost but remaining integrity is still clearly identifiable.	6 – 7.9
Critical	The modification is so great that the ecosystem processes of this component of wetland integrity are almost totally destroyed, and 80% or more of the integrity has been lost.	8 – 10

Impact scores obtained for each of the modules reflect the degree of change from natural reference conditions. Resultant health scores fall into one of six health categories (A-F) on a gradient from "unmodified/natural" (Category A) to "severe/complete deviation from natural" (Category F) as depicted in Table A12.2b, below. This classification is consistent with DWAF categories used to evaluate the present ecological state of aquatic systems.

Table A12.2b. Health categories used by WET-Health for describing the integrity of wetlands (after Macfarlane et al., 2008).

IMPACT CATEGORY	DESCRIPTION	RANGE	PES CATEGORY
None	Unmodified, natural.	0 – 0.9	**A**
Small	Largely natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place.	1 – 1.9	**B**
Moderate	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact	2 – 3.9	**C**
Large	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota and has occurred.	4 – 5.9	**D**
Serious	The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still	6 – 7.9	**E**
Critical	Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8 – 10	**F**

An overall wetland health score was calculated by weighting the scores obtained for each module and combining them to give an overall combined score using the following formula:

Overall health rating = [(Hydrology*3) + (Geomorphology*2) + (Vegetation*2)] / 7

This overall score assists in providing an overall indication of wetland health/functionality which can in turn be used for recommending appropriate management measures.

10.4 Wetland Functional Importance (Goods and Services)

WET-EcoServices is used to assess the goods and services that individual wetlands provide, thereby aiding informed planning and decision making. It is designed for a class of wetlands known as palustrine wetlands (i.e. marshes, floodplains, vleis or seeps). The tool provides guidelines for scoring the importance of a wetland in delivering each of 20 different ecosystem services (including flood attenuation, sediment trapping and provision of livestock grazing). The first step is to characterise wetlands according to their hydro-geomorphic setting (e.g. floodplain). Ecosystem service delivery is

then assessed either at Level 1, based on existing knowledge or at Level 2, based on a field assessment of key descriptors (e.g. flow pattern through the wetland).

The overall goal of WET-EcoServices is to assist decision makers, government officials, planners, consultants and educators in undertaking quick assessments of wetlands, specifically in order to reveal the ecosystem services that they supply. This allows for more informed planning and decision making. WET-EcoServices includes the assessment of several ecosystem services (listed in Table A12.4a) - that is, the benefits provided to people by the ecosystem.

Ecosystem services supplied by wetlands	Indirect benefits	Regulating and supporting benefits	Flood attenuation		The spreading out and slowing down of floodwaters in the wetland, thereby reducing the severity of floods downstream
			Streamflow regulation		Sustaining streamflow during low flow periods
			Water quality enhancement benefits	Sediment trapping	The trapping and retention in the wetland of sediment carried by runoff waters
				Phosphate assimilation	Removal by the wetland of phosphates carried by runoff waters
				Nitrate assimilation	Removal by the wetland of nitrates carried by runoff waters
				Toxicant assimilation	Removal by the wetland of toxicants (e.g. metals, biocides and salts) carried by runoff waters
				Erosion control	Controlling of erosion at the wetland site, principally through the protection provided by vegetation.
			Carbon storage		The trapping of carbon by the wetland, principally as soil organic matter
	Direct benefits	**Biodiversity maintenance[2]**			Through the provision of habitat and maintenance of natural process by the wetland, a contribution is made to maintaining biodiversity
		Provisioning benefits	Provision of water for human use		The provision of water extracted directly from the wetland for domestic, agriculture or other purposes
			Provision of harvestable resources		The provision of natural resources from the wetland, including livestock grazing, craft plants, fish, etc.
			Provision of cultivated foods		The provision of areas in the wetland favourable for the cultivation of foods
		Cultural benefits	Cultural heritage		Places of special cultural significance in the wetland, e.g., for baptisms or gathering of culturally significant plants
			Tourism and recreation		Sites of value for tourism and recreation in the wetland, often associated with scenic beauty and abundant birdlife
			Education and research		Sites of value in the wetland for education or research

Table A12.4a: Ecosystem services assessed by WET-Ecoservices

10.5 Ecological Importance & Sensitivity (EIS) - Wetlands

The Ecological Importance and Sensitivity was determined by utilising a rapid scoring system. The system has been developed to provide a scoring approach for assessing the Ecological, Hydrological Functions; and Direct Human Benefits of importance and sensitivity of wetlands. These scoring assessments for these three aspects of wetland importance and sensitivity have been based on the requirements of the NWA, the original Ecological Importance and Sensitivity assessments developed for riverine assessments (DWAF, 1999), and the work conducted by Kotze et al (2008) on the assessment of wetland ecological goods and services from the WET-EcoServices tool (Rountree, 2010).

An example of the scoring sheet is attached as Table A12.5a. The scores are then placed into a category of very low, low, moderate, high and very high as shown in Table 12.5b.

Table A12.5a: Example of scoring sheet for Ecological Importance and sensitivity

ECOLOGICAL IMPORTANCE AND SENSITIVITY:			
Ecological Importance	Score (0-4)	*Confidence (1-5)*	**Motivation for site**
Biodiversity support			
Presence of Red Data species			
Populations of unique species			
Migration/breeding/feeding sites			
Landscape scale			
Protection status of the wetland			
Protection status of the vegetation type			
Regional context of the ecological integrity			
Size and rarity of the wetland type/s present			
Diversity of habitat types			
Sensitivity of the wetland			
Sensitivity to changes in floods			
Sensitivity to changes in low flows/dry season			
Sensitivity to changes in water quality			
ECOLOGICAL IMPORTANCE & SENSITIVITY			
HYDROLOGICAL/FUNCTIONAL IMPORTANCE			
IMPORTANCE OF DIRECT HUMAN BENEFITS			
OVERALL IMPORTANCE			

Table A12.5b: Category of score for the Ecological Importance and Sensitivity

RATING	EXPLANATION
None, Rating = 0	Rarely sensitive to changes in water quality/hydrological regime
Low, Rating =1	One or a few elements sensitive to changes in water quality/hydrological regime
Moderate, Rating =2	Some elements sensitive to changes in water quality/hydrological regime
High, Rating =3	Many elements sensitive to changes in water quality/ hydrological regime
Very high, Rating =4	Very many elements sensitive to changes in water quality/ hydrological regime

APPENDIX 8:

Department of Environment's Screening Tool Report

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

EIA Reference number: NCS30/5/1/2/3/2/1(219)MR

Project name: Grootwitpan Salt Mine

Project title: Amendment of Mining Right

Date screening report generated: 26/10/2022 15:39:25

Applicant: Industrial Salt (Pty) Ltd

Compiler: Craig Donald

Compiler signature:

.....

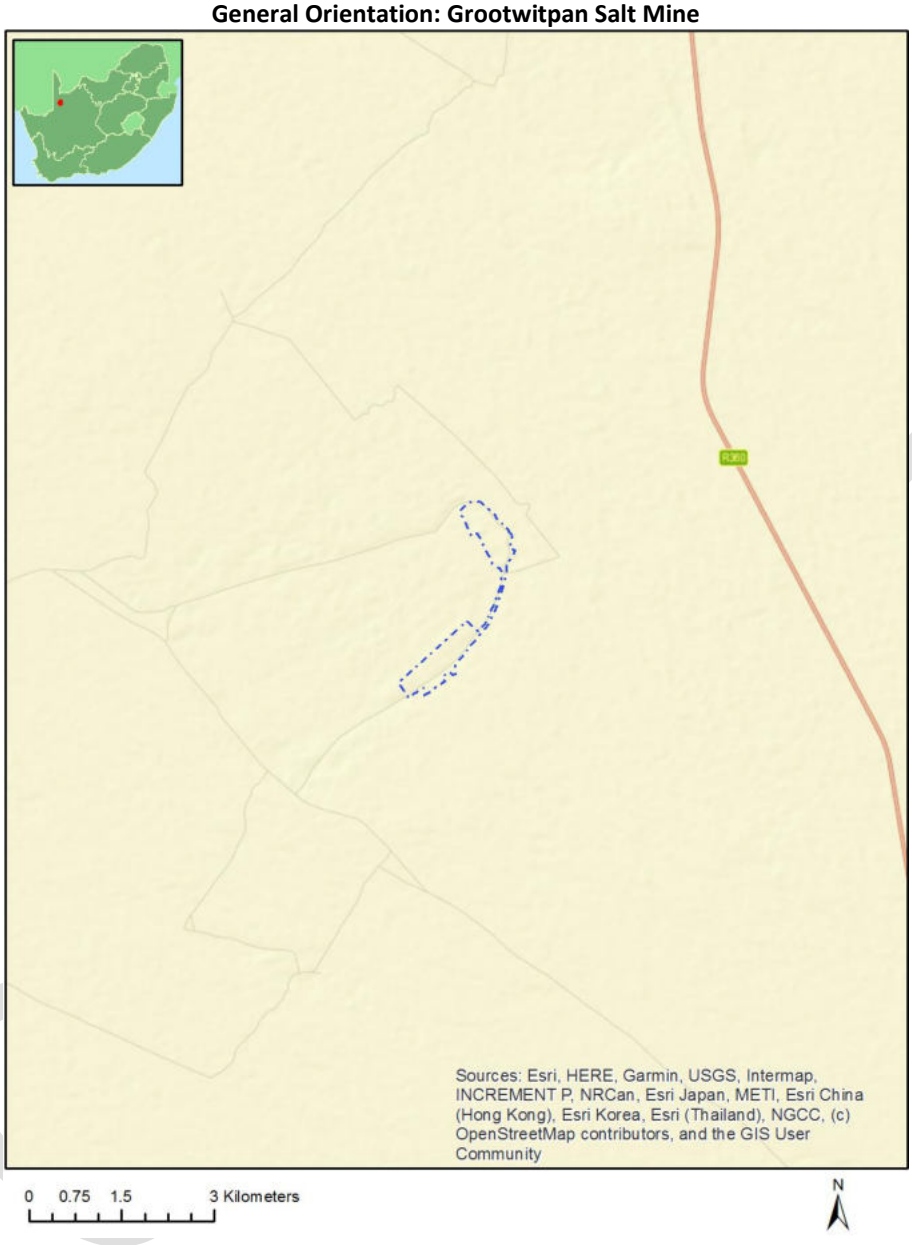
Application Category: Mining|Mining Right

Table of Contents

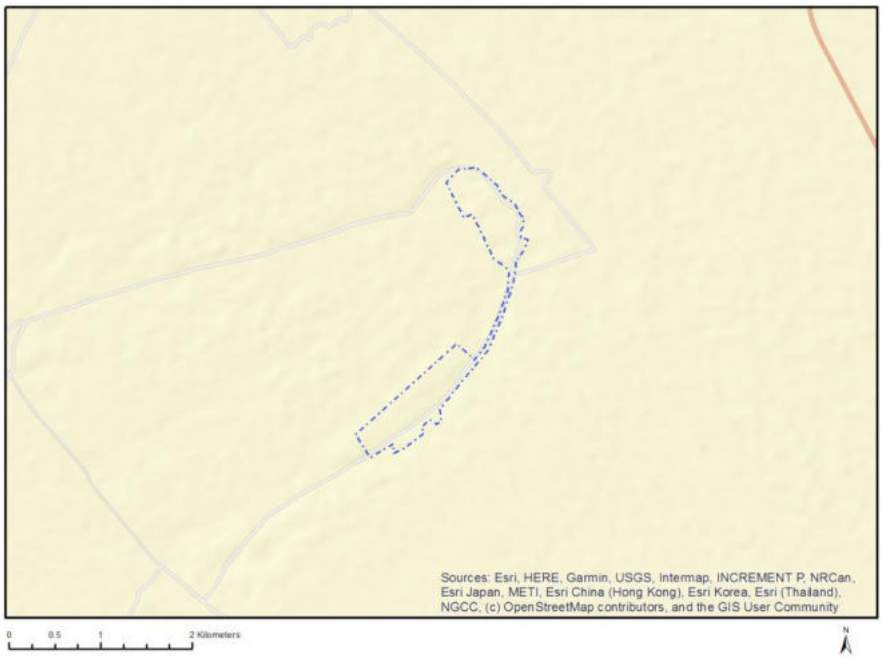
Proposed Project Location

Orientation map 1: General location

General Orientation: Grootwitpan Salt Mine



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	GROOT WITPAN	649	0	27°44'12.04S	20°47'19.64E	Farm
2	PLAAS GROOT WITPAN	327	0	27°46'30S	20°44'8.47E	Farm
3	GROOT WITPAN	649	3	27°44'29.16S	20°47'46.8E	Farm Portion
4	PLAAS GROOT WITPAN	327	1	27°44'57.55S	20°45'4.47E	Farm Portion
5	PLAAS GROOT WITPAN	327	13	27°43'53.46S	20°46'23.49E	Farm Portion
6	PLAAS GROOT WITPAN	327	10	27°44'53.32S	20°46'4.62E	Farm Portion
7	PLAAS GROOT WITPAN	327	20	27°44'9.78S	20°45'32.09E	Farm Portion
8	GROOT WITPAN	649	0	27°45'46.2S	20°46'52.42E	Farm Portion

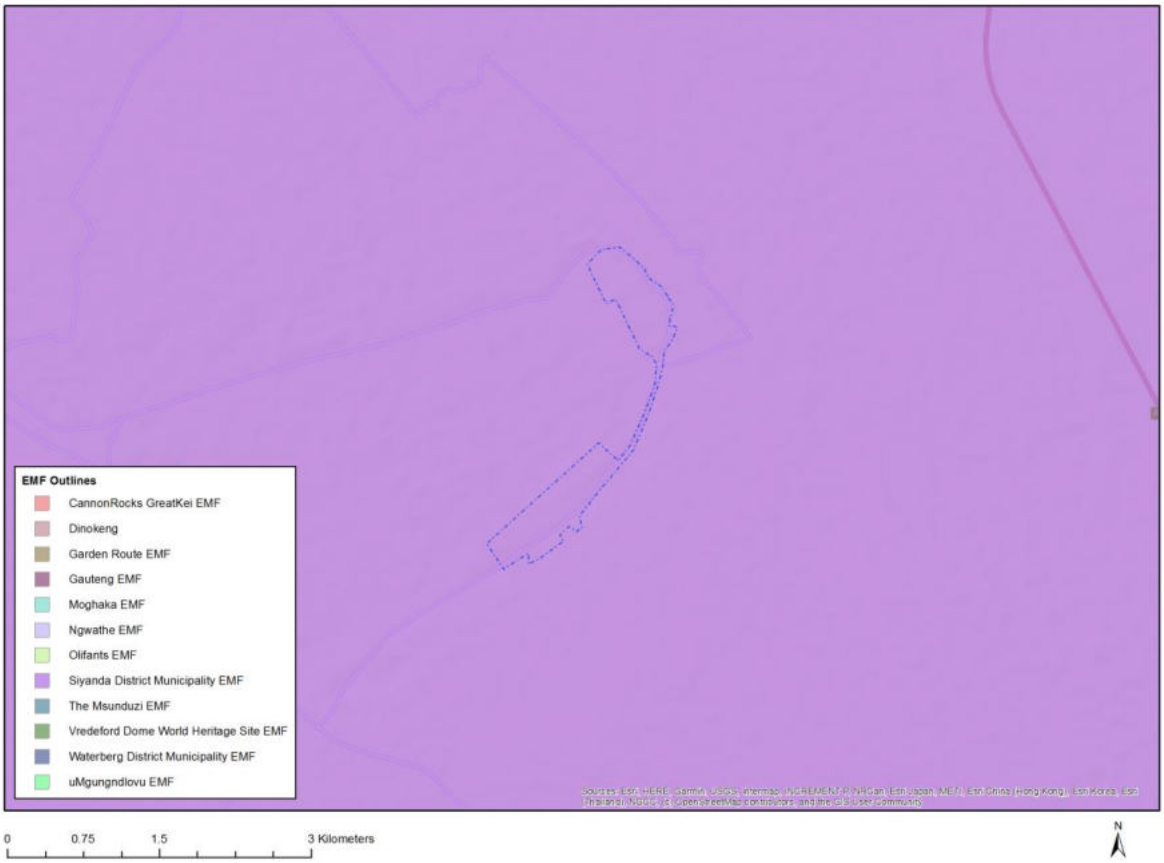
Development footprint[1] vertices:
No development footprint(s) specified.

[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.

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.

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|Mining Right**.

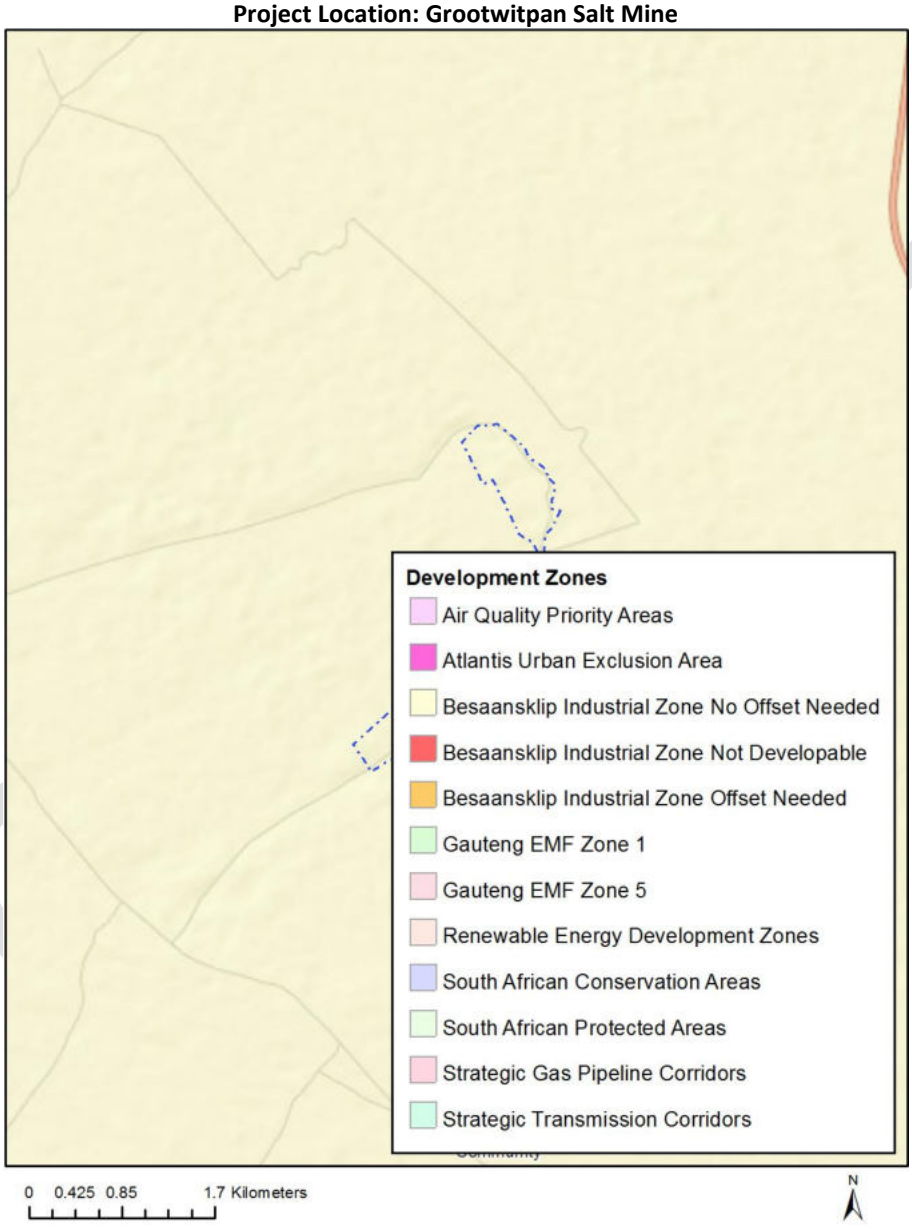
Relevant development incentives, restrictions, exclusions or prohibitions

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.

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Grootwitpan Salt Mine



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 environmental sensitivities of the proposed development footprint, 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.

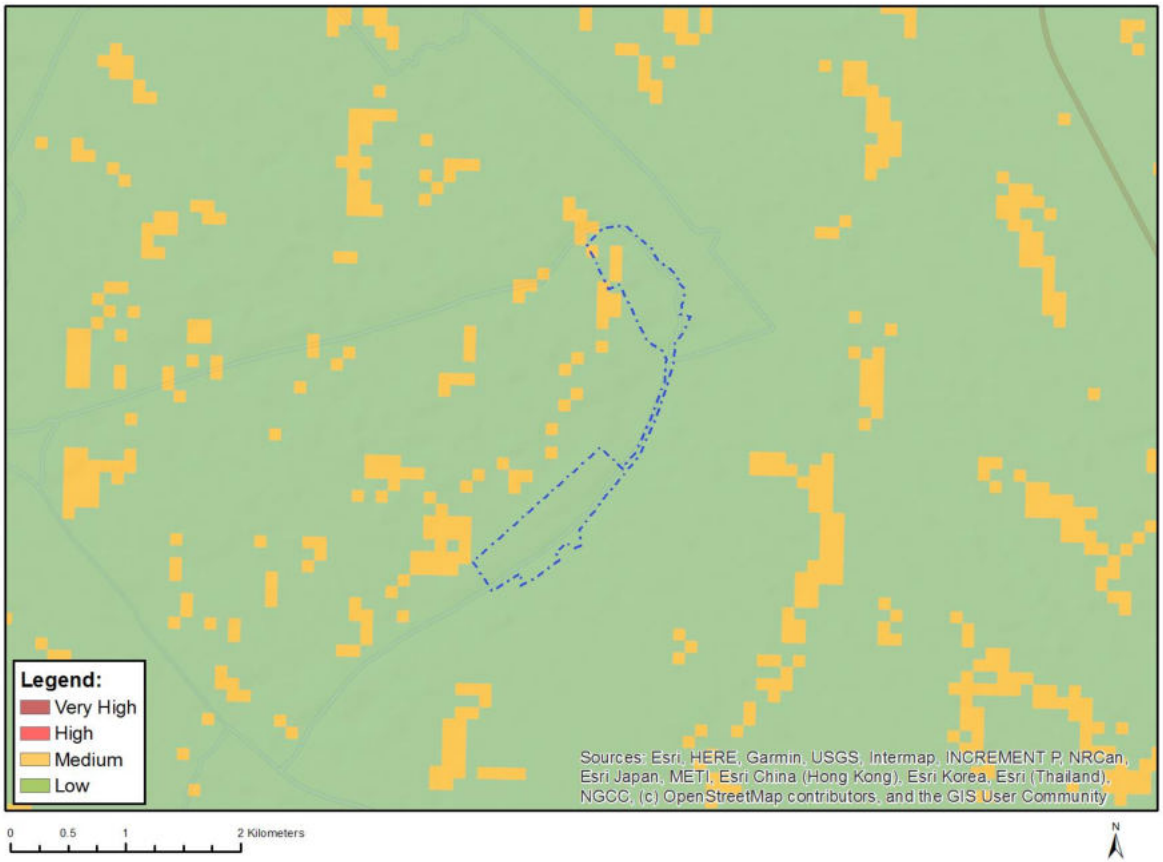
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf

	Assessment	
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
9	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Climate Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
13	Health Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
14	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
15	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
16	Seismicity Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
17	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
18	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

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

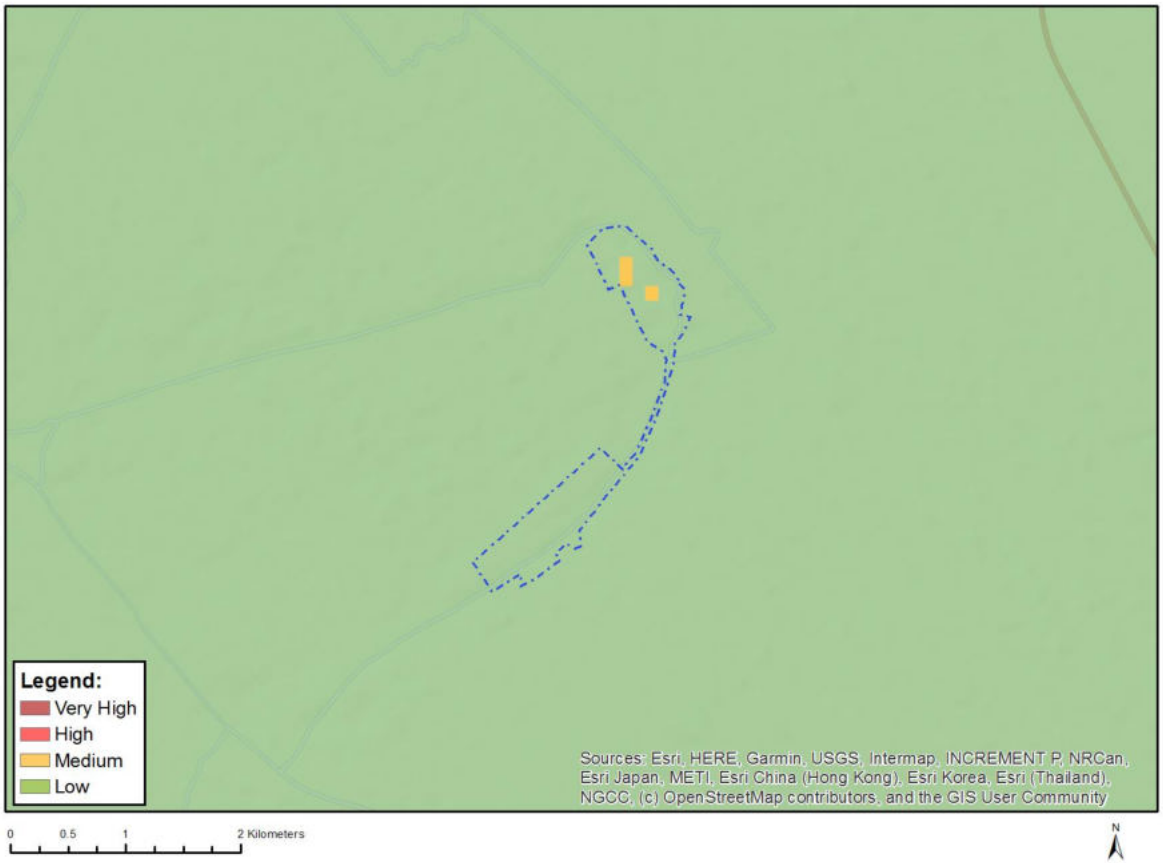


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

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



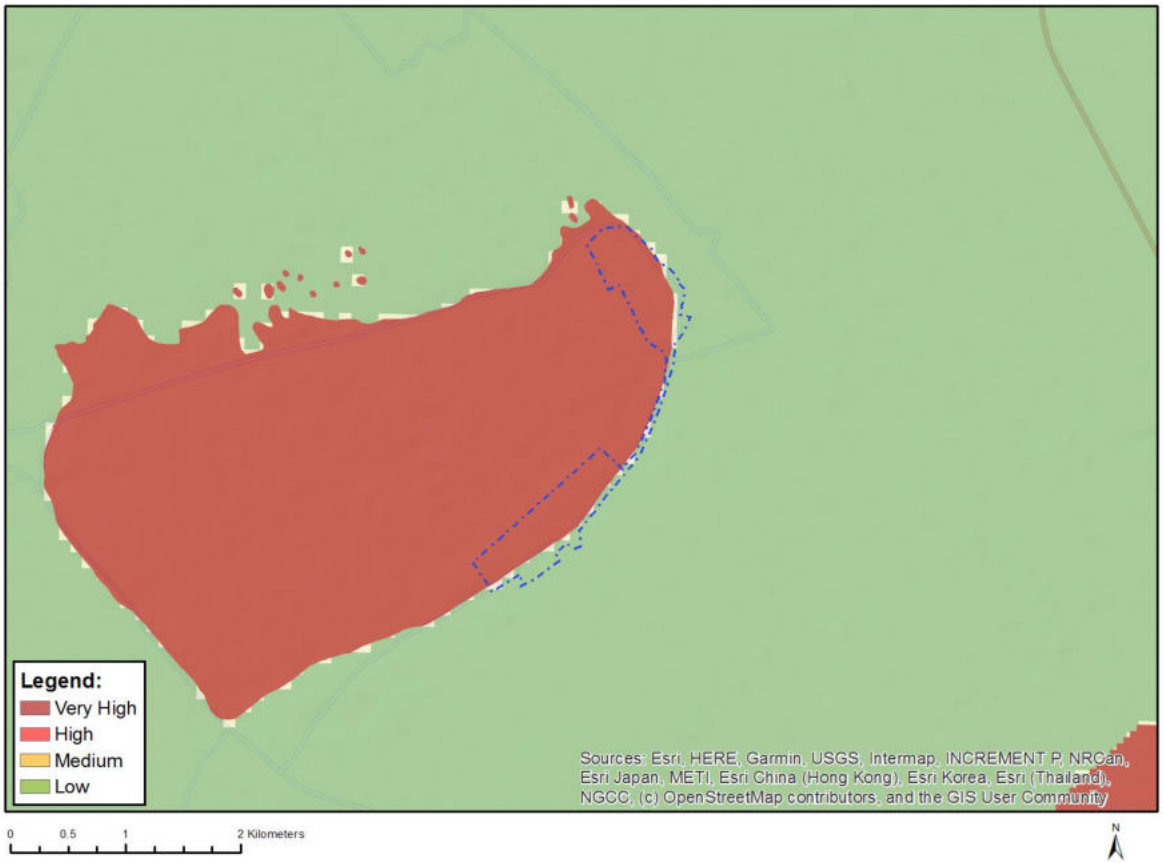
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their 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-Hydroprogne caspia

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

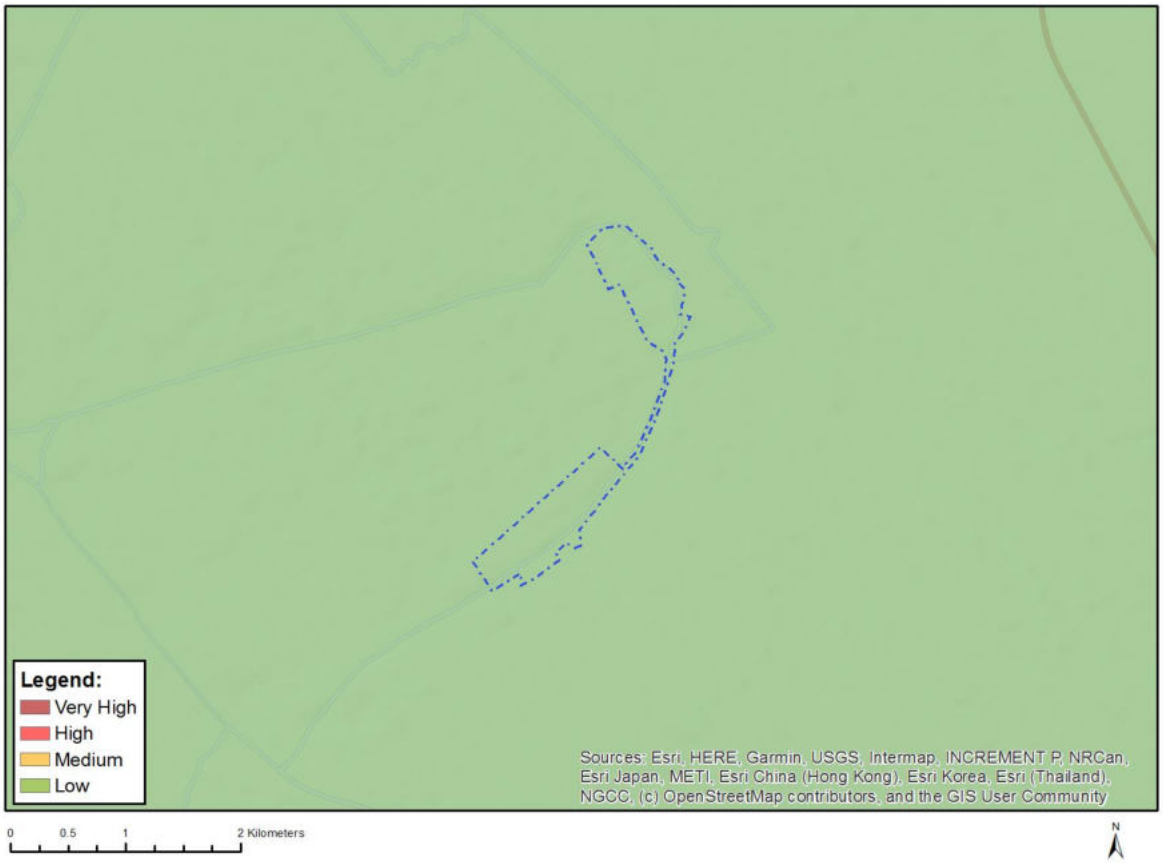


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Wetlands and Estuaries

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

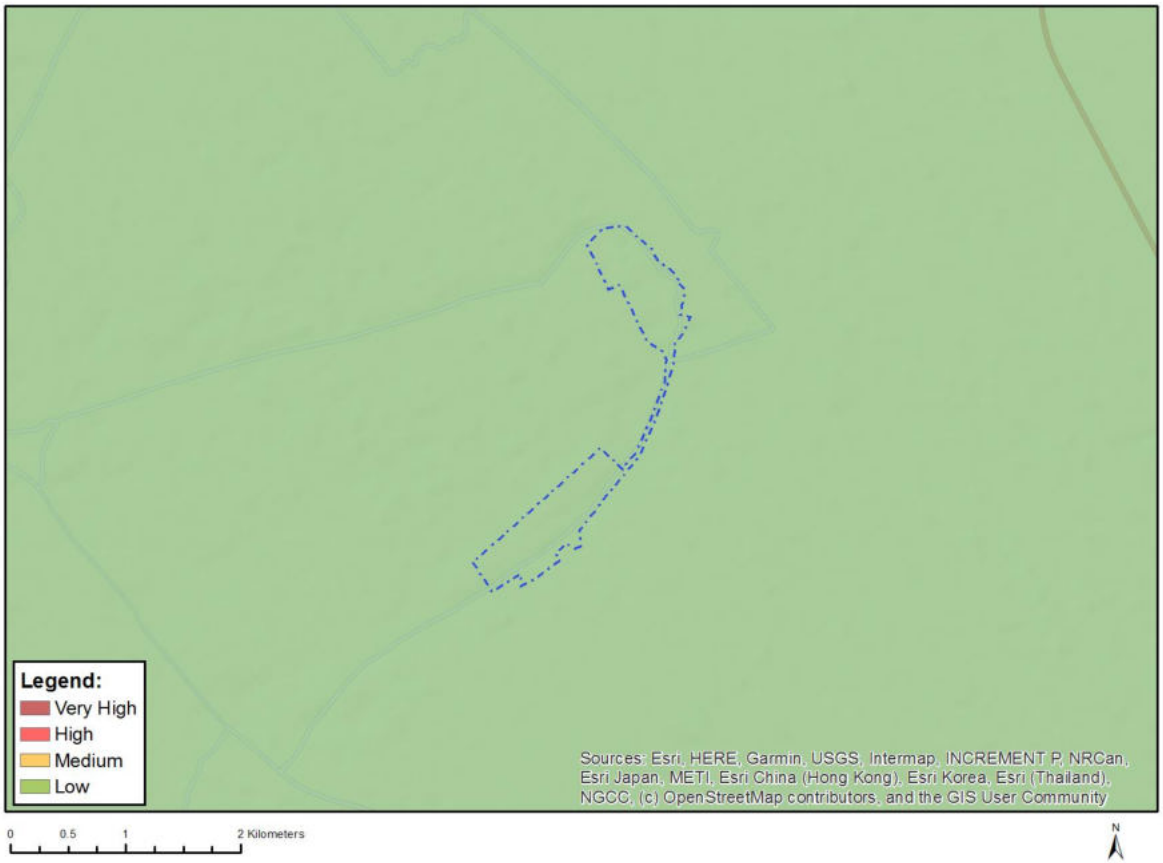


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

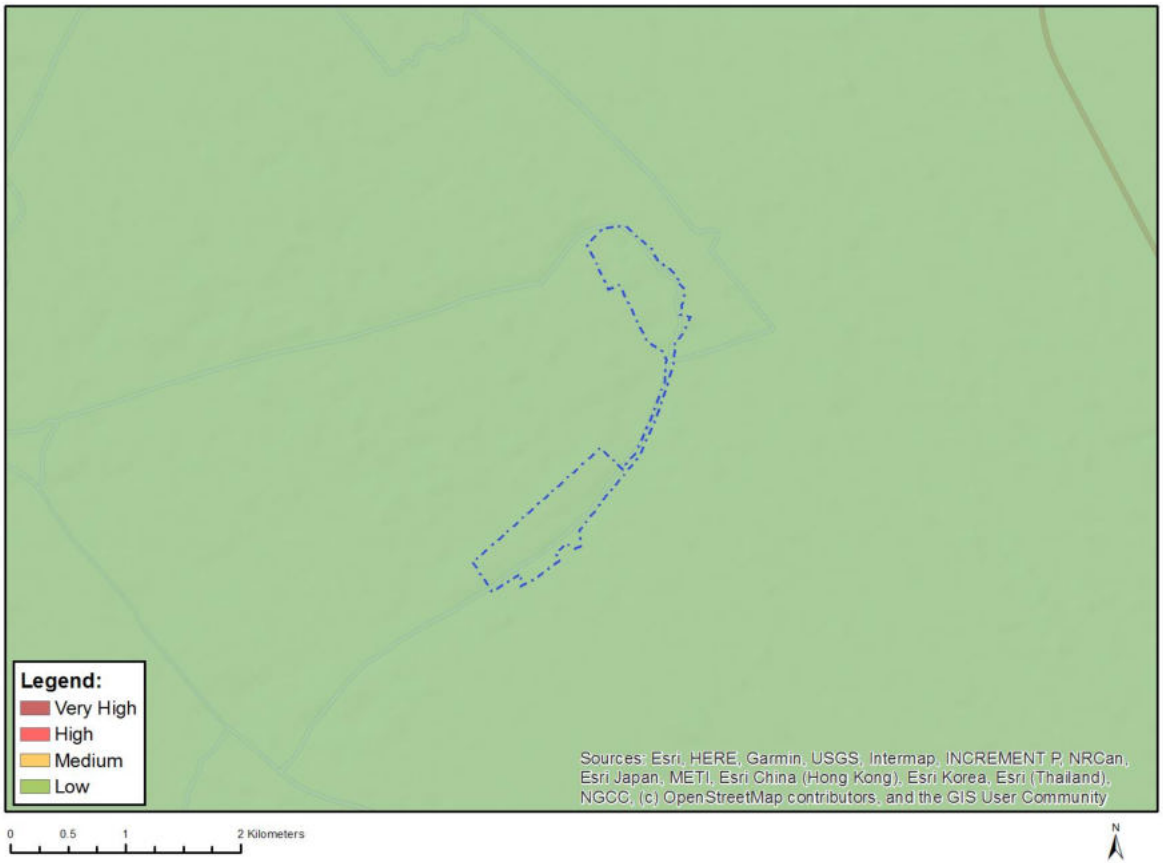


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE DEFENCE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

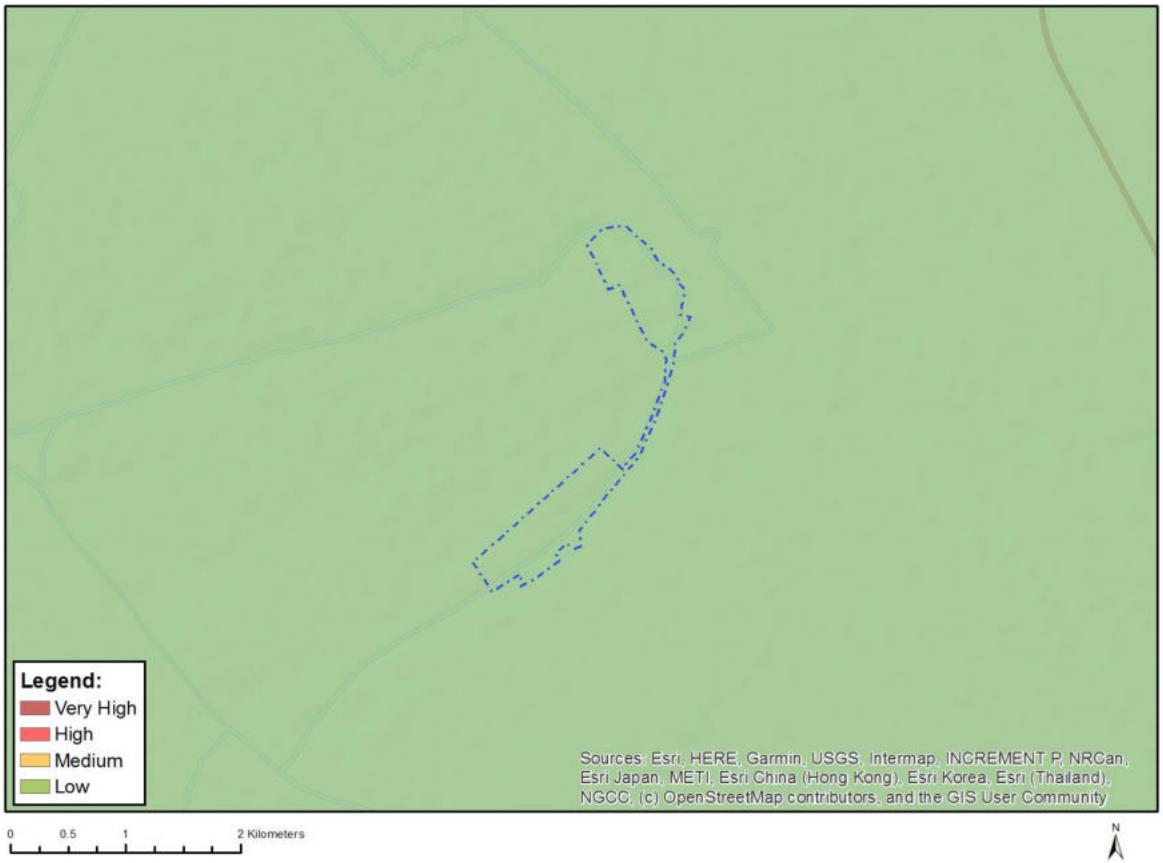
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

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

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



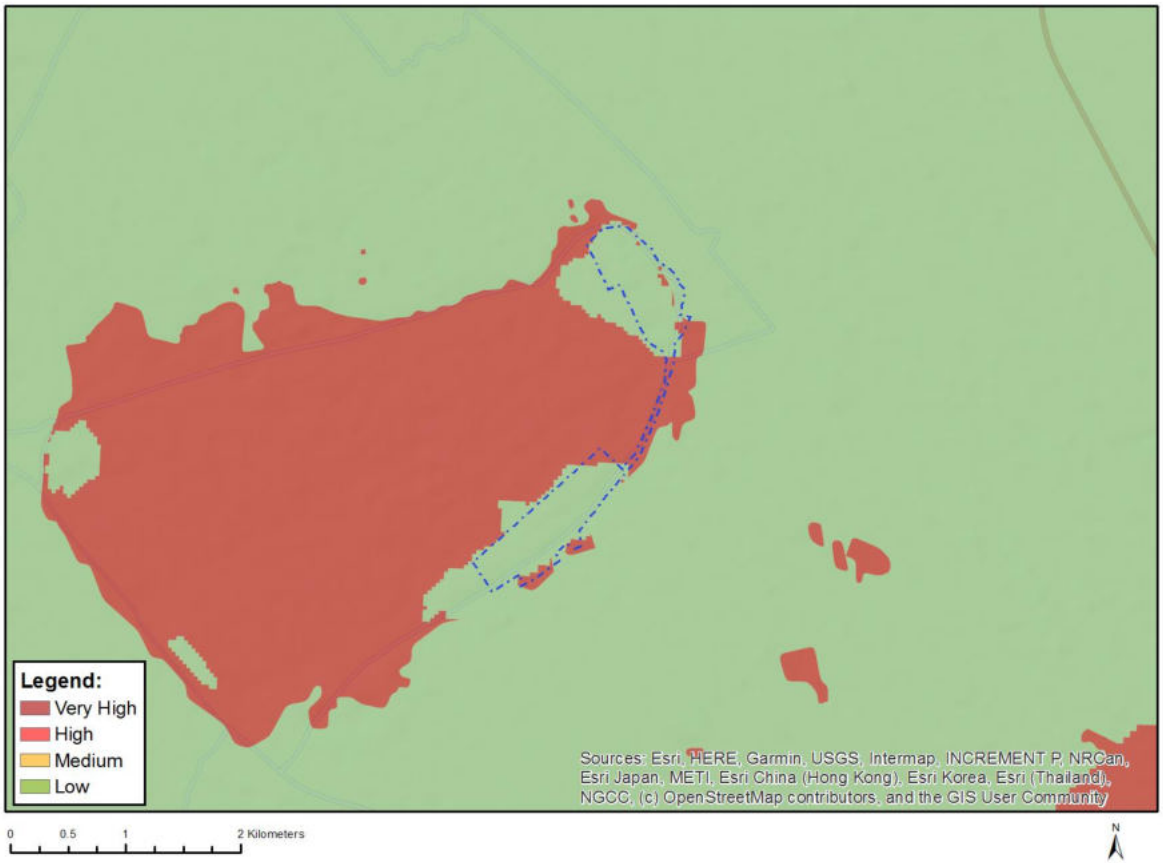
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their 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

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

APPENDIX 9:

Heritage Matters:
Letters of Exemption in respect of HIA and PIA

an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 15850

Interim Comment

In terms of Section 38(3), 38(8) of the National Heritage Resources Act (Act 25 of 1999)

Attention: Mr Wilmot Prusent
Transalt (Pty) Ltd
7 Clarke Street
South Alrode
Alberton
1451

Upgrade and consolidation of more than one existing salt mining operations under one Mining Right. Portions 10, 13, 18 and 20 of Farm Groot Witpan 327 Gordonia RD Northern Cape

Site Plan Consulting has been appointed by Industrial Salt (Pty) Ltd to conduct an Environmental Authorisation (EA) Application for the proposed Upgrade and consolidation of more than one existing salt mining operations under one Mining Right. Portions 10, 13, 18 and 20 of Farm Groot Witpan 327 Gordonia RD Northern Cape (NC 30/5/1/1/2/1/ 219MR).

A Final Scoping Report (FSR) has been submitted in terms of the National Environmental Management Act, 1998 (NEMA) and the 2017 EIA Regulations for activities that trigger the Mineral and Petroleum Resources Development Act, 2002 (MPRDA)(As amended). The proposed upgrades will include clearing of logistical area outside of pan edge, establishment of logistical facility including residences, office, generator facility, establishment of plant and stock area on pan, and development of dam walls.

Two heritage reports were submitted with the application, however it is noted that these report assessed an application to the south-east of the current application. SAHRIS Case ID 13104 refers (https://sahris.sahra.org.za/cases/gemsbok-horn-prospect).

The FSR notes that it is anticipated that a Heritage Impact Assessment will be required.

Interim Comment

The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit requests that the impact to heritage resources be conducted as part of the EIA phase of the EA application process. The pending HIA must comply with section 38(3) of the NHRA. The assessment of archaeological resources must be completed by a

an agency of the
Department of Arts and Culture

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qualified archaeologist comply with the SAHRA 2007 Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports.

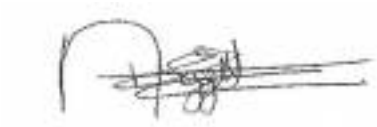
A desktop Palaeontological Impact Assessment (PIA) must be completed for the proposed development as the footprint is located within an area of moderate palaeontological sensitivity as per the SAHRIS PalaeoSensitivity map. The assessment of palaeontological resources must be completed by a qualified palaeontologist and must comply with the 2012 Minimum Standards: Palaeontological Component of Heritage Impact Assessment Reports.

Any other heritage resources as defined in section 3 of the NHRA that may be impacted, such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.

Further comments will be issued upon receipt of the above requested report and the draft EIA and appendices.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully



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Natasha Higgitt
Heritage Officer
South African Heritage Resources Agency

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Phillip Hine

an agency of the
Department of Arts and Culture

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Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 15850

Date: Tuesday December 15, 2020

Manager: Archaeology, Palaeontology and Meteorites Unit
South African Heritage Resources Agency

ADMIN:
Direct URL to case: http://www.sahra.org.za/node/546884
(DMR - NC, Ref: NC 30/5/1/1/2/1/ 219MR)

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

25 October, 2022

Att: Natasha Higgit
South African Heritage Resources Agency
PO Box 4637
Cape Town, 8001

RECOMMENDED EXEMPTION FROM 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

SAHRA Case ID: 15850

1. Introduction

The application entails the consolidation of already approved and existing Salt Mining Rights under a single Mining Permit, involving Portions 10, 13, 18 and 20 of the Farm Groot Witpan No. 327 Gordonia RD (Dawid Kruiper Local Municipality), in the Northern Cape Province.

Site Plan Consulting is the appointed, Environmental Assessment Practitioner (EAP) responsible for facilitating environmental authorisation for the project.

Groot Witpan is located about 100kms north west of Upington along the R360 road (Figure 1). Salt mining has taken place on the farm for at least the last 30 years (Site Plan Consulting 2020). Currently, salt mining takes place in terms of two adjacent Mining Rights, held by related yet different entities.

2. Description of the proposed activity

The proposed consolidation and addition of the Mining Rights on Groot Witpan No. 327 are illustrated in Figure 2.

The Mining Right on Portion 10, held by Gordonia Salts (Pty) Ltd, is to be incorporated with the northern Industrial Salt (Pty) Ltd Mining Right, for Portion 13.

The Mining Right areas are to be expanded to the north west by the incorporation of Portions 18 and 20.

At present, most activities are centred around the northern portion of the operation. Brine is collected through pumping from pumps mostly located on Portion 20, into holding/concentration ponds. The water evaporates and the salt crystals start to form on the surface. As soon as the layer of salt crystals is thick enough, the salt crystals are harvested by scraper and front-end loader.

The inclusion of Portion 18 into this application is specifically for the possible location of additional pump/s. No evaporation ponds or any other infrastructure will be developed on Portion 18. Existing roads and tracks are used, and no new roads will be constructed.

Apart from the possible location of additional new pumps on Portion 18, all existing facilities including workshops and stores, plant equipment, accommodation units for workers, managers/visitors residence, and stockpiling area, are already in place, and that `no further activities or disturbance of the site is expected' (Site Plan Consulting 2022:31).

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3. Archaeological context

The archaeological record of the vast Northern Cape region reflects the entire human history from ESA times (more than 1 million years ago), through the Middle Stone Age (about 300 000 - 40 000 years ago), to the Later Stone Age (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 very little archaeological work has been conducted in the Groot Witpan study area. However, several AIAs around salt pans have been undertaken in the Northern Cape (Figure 4).

Low density surface scatters of MSA artefacts were recorded in proposed salt prospecting areas at Bettastadt and Tsonga Pan on the Farm Gemskop Horn 242, about 70kms south east of Groot Witpan (Morris & Henderson 2019). The significance of the impact on archaeological heritage resources at these two pans, was determined to be Low.

Low densities scatters of weathered, MSA and some LSA material (chips, chunks & flakes), were recorded during a HIA for the proposed Bloupan Salt Mine on the Farm Annesley 338 about 30kms north west of Groot Witpan (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).

The Salt Pan studies surrounding Groot Witpan appear to indicate a paucity of archaeological traces in these marginal areas, where archaeological resources are more likely to appear on dune crests on the margins of pans (Masson 2006; Morris 2006, 2016; Smith 1995).

4. Conclusion

The proposed activities at Groot Witpan 327 (essentially the consolidation of already existing salt mining rights under a single Mining Permit), are not considered to pose a serious threat to local archaeological heritage because of the following considerations:

- No further disturbance or activities of the site is expected.

- All current activities take place within already disturbed and approved mining areas, for which EMPs are already in place.

- The literature study shows that salt pans surrounding Groot Witpan cannot be considered sensitive or threatened archaeological landscapes

5. Recommendations

It is recommended that exemption from further specialist archaeological studies be granted, as no Stone Age archaeological resources are likely to be impacted by the application.

6. 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.

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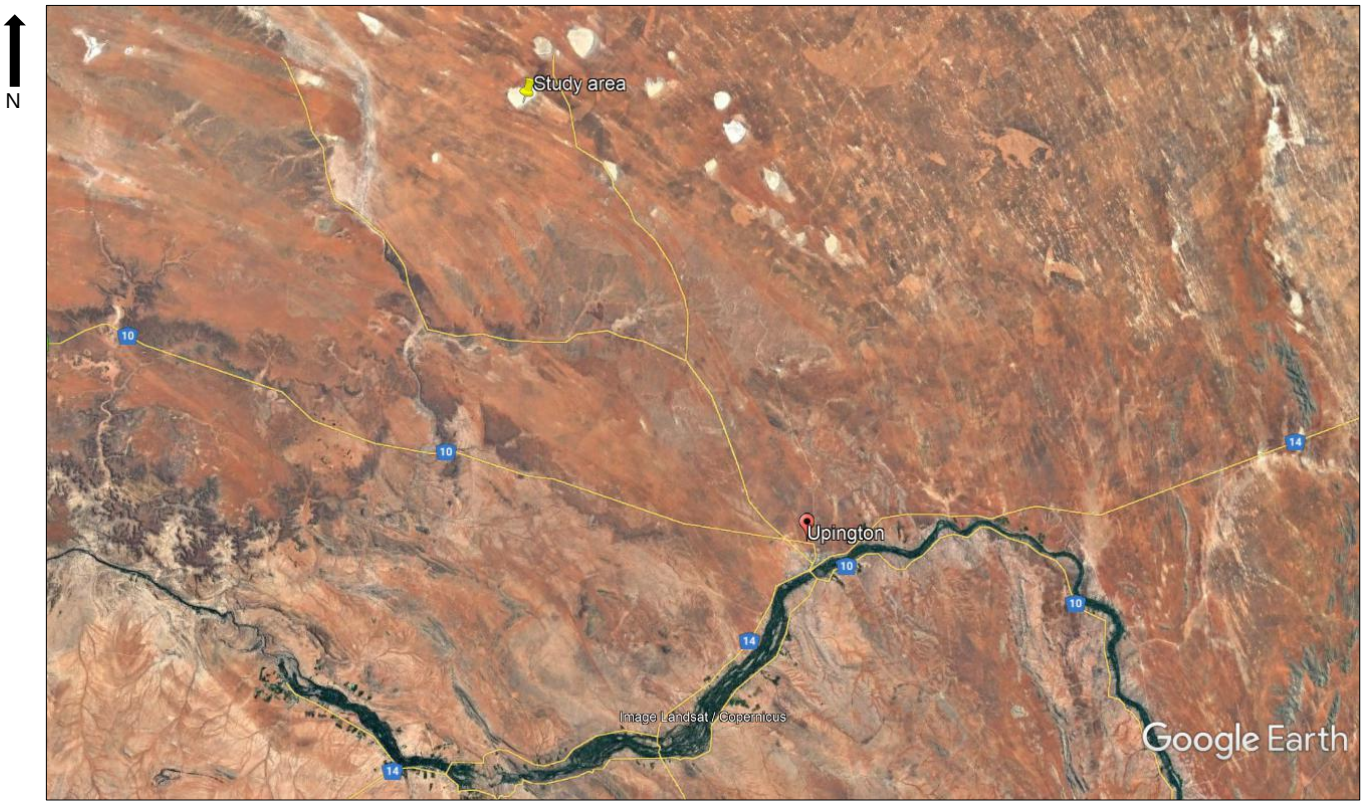

Figure 1. Google Earth satellite map indicating the location of the study area (yellow) north west of Upington. Note the concentration of saltpans in the area

Figure 2. Approved Mining Right Area (Red polygon) on the Farm Groot Witpan No. 327

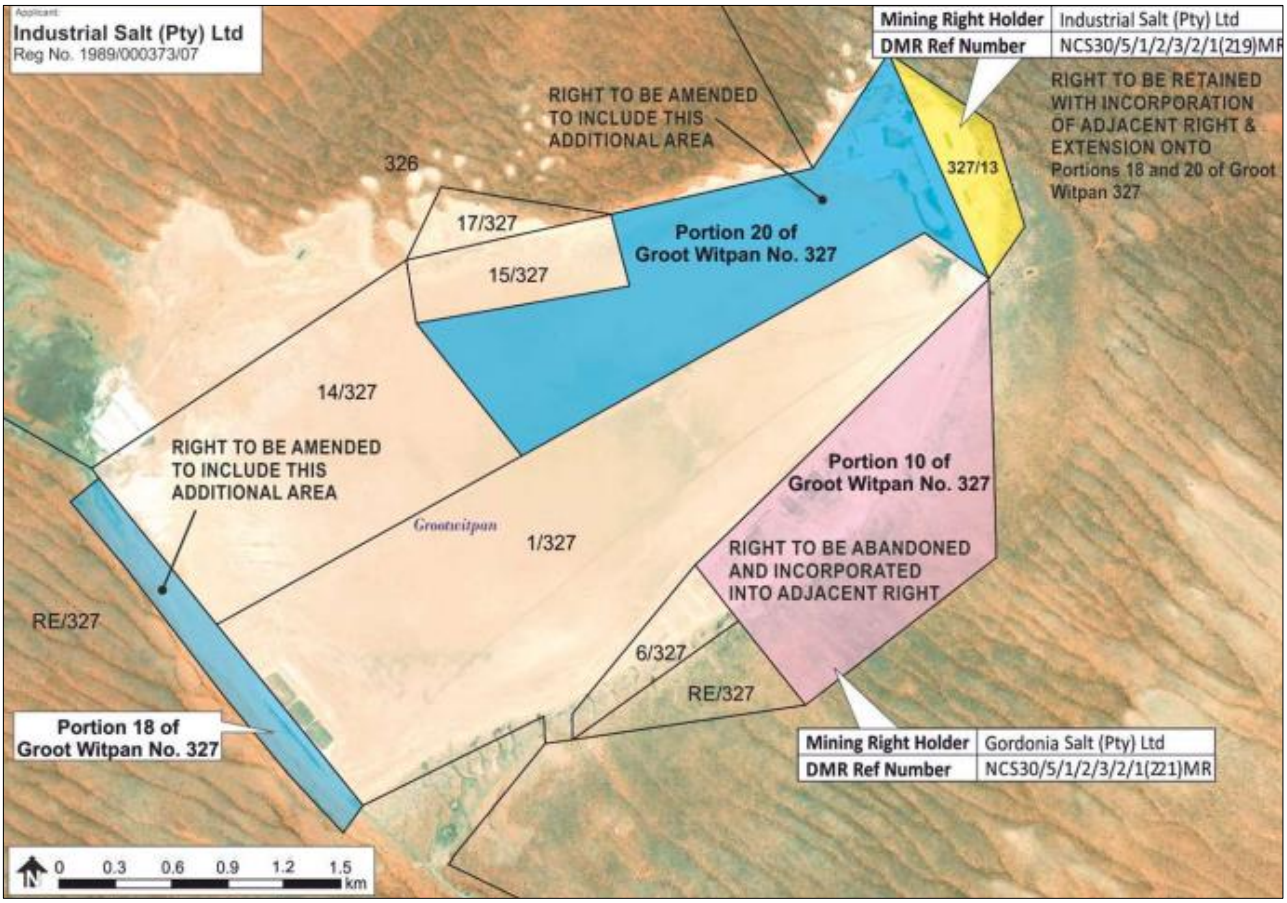

Figure 3. Consolidation of Mining Rights: Groot Witpan No. 327 (Site Plan Consulting September, 2020)

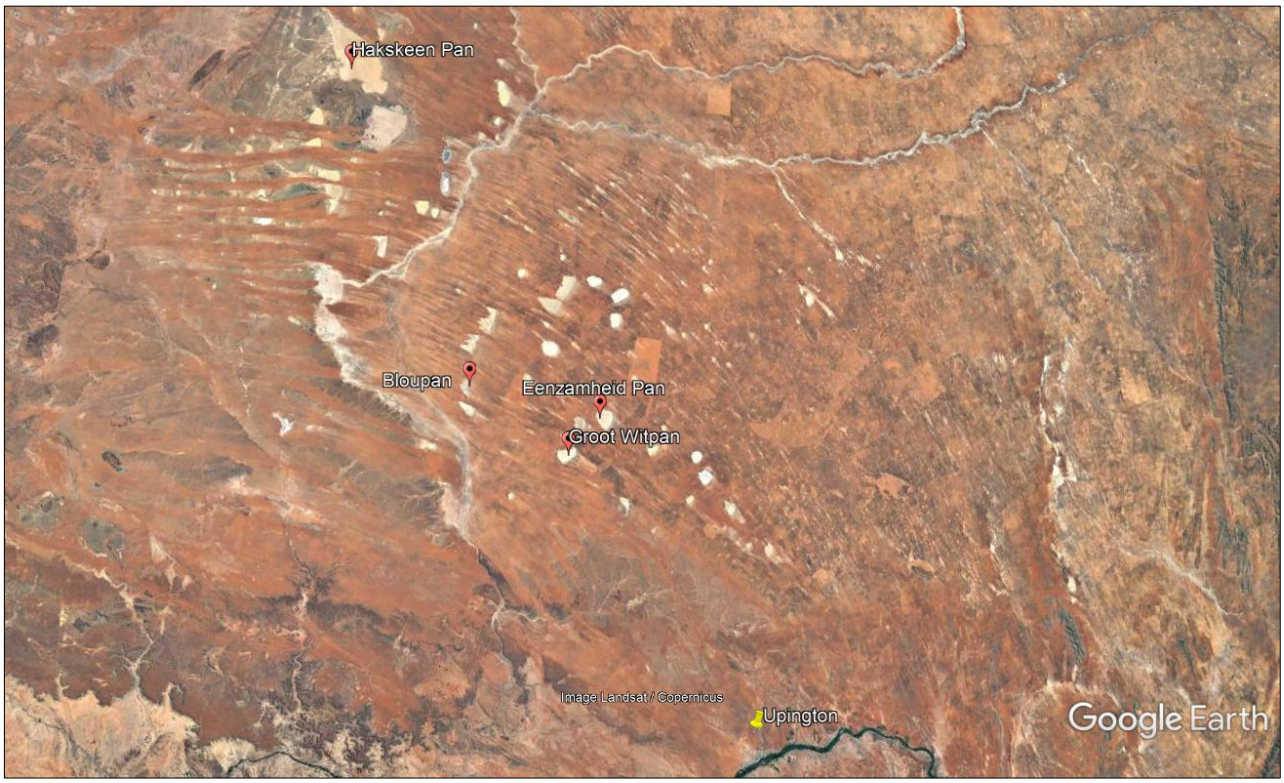

Figure 4. Google Earth satellite map indicting the location of saltpans where HIAs have been conducted

SAHRA Case ID: 15850

BASIC PALAEONTOLOGICAL ASSESSMENT

Letter of Recommendation for Exemption from further Palaeontological Studies

CONSOLIDATION OF SALT PAN MINING RIGHTS ON GROOT WITPAN 327

INDUSTRIAL SALT (PTY) LTD.

Portions 10, 13, 18 & 20 of Groot Witpan 327, Gordonia District, Northern Cape

By

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

Geological and Palaeontological Consultant

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Prepared at the Request of

Agency for Cultural Resource Management (ACRM)

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Mobile: 082 321 0172

E-mail: jonathan@acrm.co.za

For

SITE PLAN CONSULTING

CLIENT

Industrial Salt (Pty) Ltd

24 October 2022

SUMMARY

The Applicant, Industrial Salt (Pty) Ltd., proposes to consolidate existing prospecting and mining rights for established salt extraction operations from the Groot Witpan salt pan in the Northern Cape (Figure 1), involving portions 10, 13, 18 and 20 of the property Groot Witpan 327 (Figure 2). Groot Witpan 327 is located ~100 km north of Upington along the R360 road (Figure 1) and is approached via the turnoff to the village of Noenieput, in the Gordonia District.

The proposed consolidation and addition of the Mining Rights on Groot Witpan 327 are summarised in Figure 2. The Mining Right on Portion 10 held by Gordonia Salts (Pty) Ltd Is to be incorporated with the northern Industrial Salt (Pty) Ltd Mining Right for Portion 13. The Mining Right areas to be increased by the incorporation of portions 18 and 20.

The salt mining operation derives the salt from the saline water table beneath the pan. The brine is pumped from boreholes and piped to shallow evaporation ponds on the pan perimeter. The crystallized salt is scraped up and transported to the stockpile area where it is dried and then further processed by crushing, washing, spinning and final drying. The evaporation ponds and processing facilities are already established. Further activity involves the siting of more brine abstraction boreholes.

The pan is underlain by bedrock of Karoo Supergroup sedimentary rocks of the Dwyka Group (Mbizane Formation). The fossils in these Karoo formations 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 (Figure 5). 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 boreholes for brine abstraction will penetrate a small volume of pan deposits and the underlying Karoo bedrock. The “point” nature of the boreholes 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 boreholes the anticipated palaeontological impact of the brine abstraction is considered to be LOW to MARGINAL. Notwithstanding, although improbable, a chance occurrence of fossil material cannot be entirely dismissed. It is recommended that the bore 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. Fossil bones and archaeological material may also be uncovered in minor earthworks associated with pond maintenance.

It is recommended that a protocol for finds of potential archaeological and/or fossil bones, the Fossil Finds Procedure (FFP), is included in the Environmental Management Plan (EMP) for the Operations of the Industrial Salt saltworks, basically “If fossil bones are uncovered during any earthworks, stop work at that spot and report to SAHRA and/or the McGregor Museum, providing via email images of the find and its contextual information for assessment and decision on a suitable response”. Heritage Western Cape has provided a Fossil Finds Procedure and a form for the reporting of fossil finds which is available from the HWC website (link provided).

CONTENTS

1 BACKGROUND

The Applicant, Industrial Salt (Pty) Ltd., proposes to consolidate existing prospecting and mining rights for established salt extraction operations from the Groot Witpan salt pan in the Northern Cape (Figure 1), involving portions 10, 13, 18 and 20 of the property Groot Witpan 327 (Figure 2).

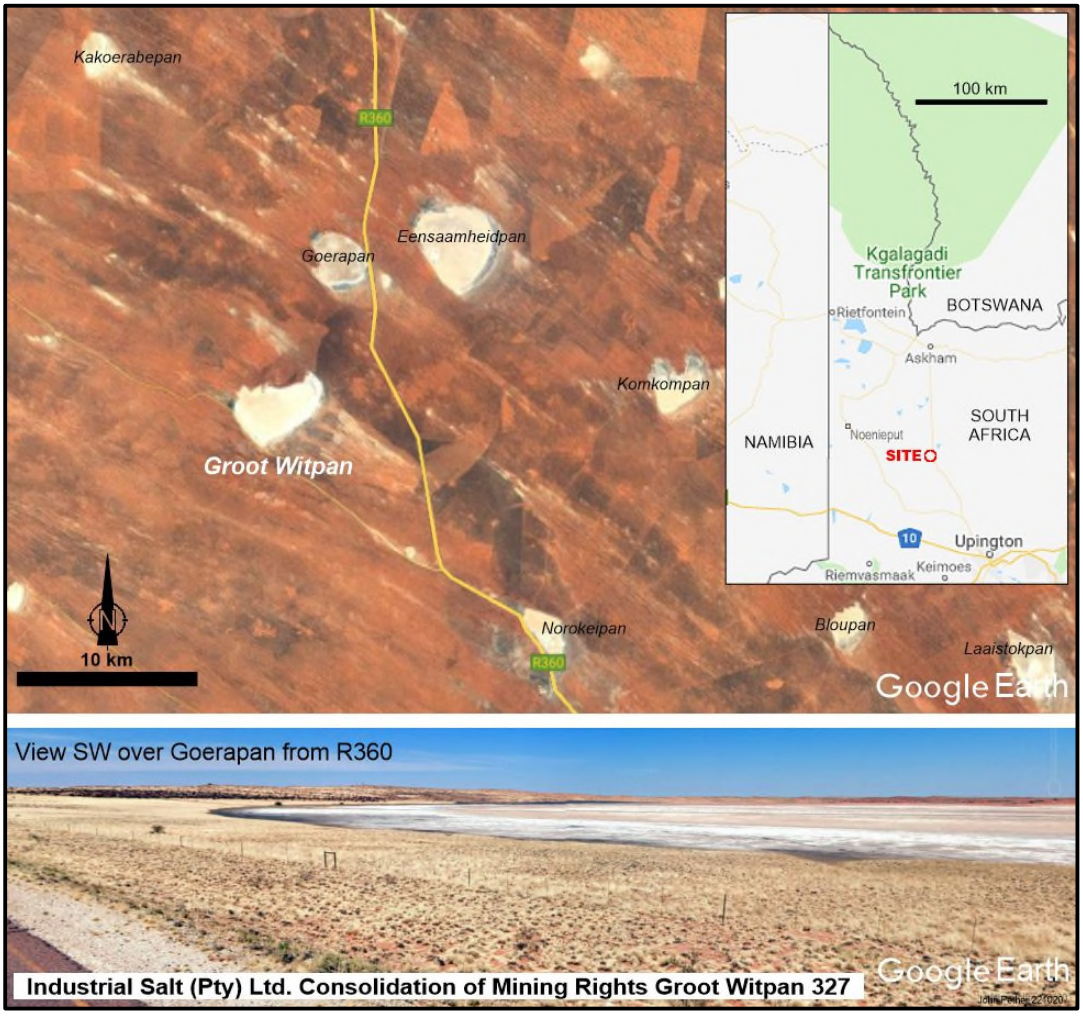

Figure 1. Location of Groot Witpan 327 and the typical landscape of salt pans and red Kalahari dune ridges.

Site Plan Consulting has been appointed to conduct the Environmental Authorization process for the application and has appointed the Agency for Cultural Resource Management (ACRM) to undertake the Heritage Impact Assessment (HIA), as required by the South African Heritage Resources Agency (SAHRA). 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 property Groot Witpan 327 is located ~100 km north of Upington along the R360 road (Figure 1) and is approached via the turnoff to the village of Noenieput, in the Gordonia District, Northern Cape. Centre co-ordinate of pan: -27.744637 °S / 20.752008 °E.

3 LOCALITY PLAN

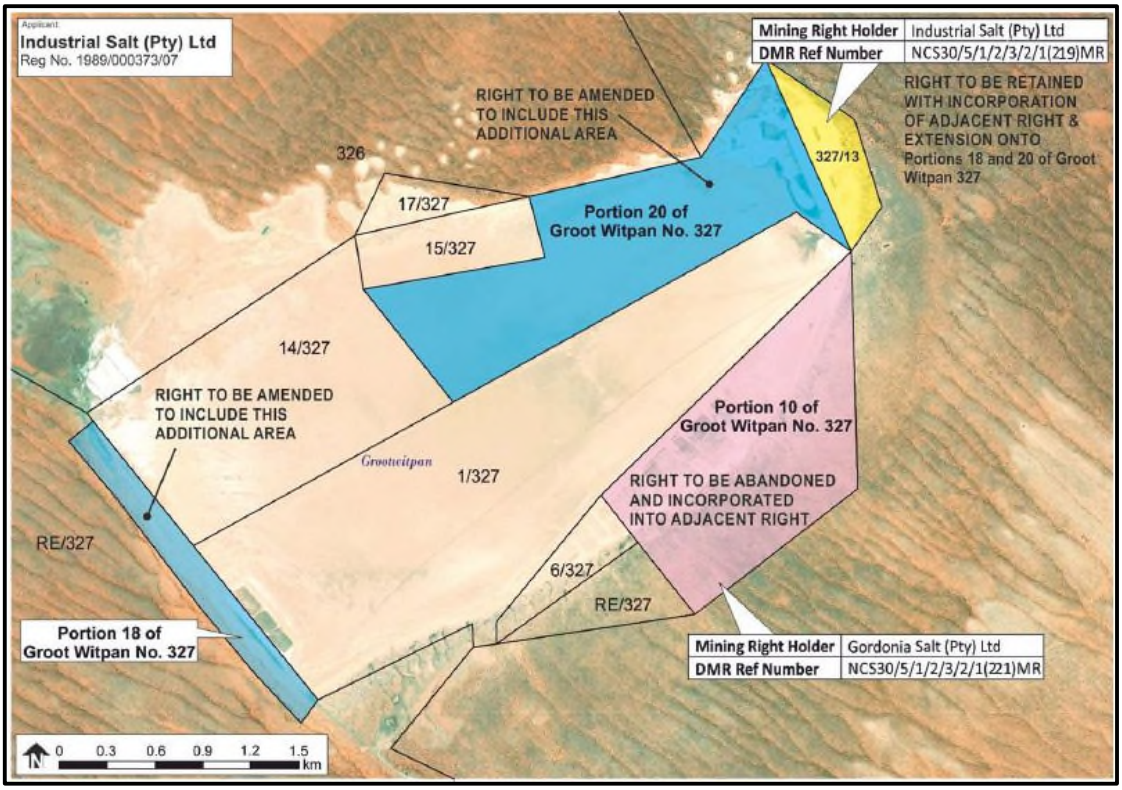

Figure 2. Industrial Salt (Pty) Ltd. - Consolidation of Mining Rights – Groot Witpan 327

4 DESCRIPTION OF THE PROPOSED ACTIVITY

The proposed consolidation and addition of the Mining Rights on Groot Witpan 327 are summarised in Figure 2. The Mining Right on Portion 10 held by Gordonia Salts (Pty) Ltd Is to be incorporated with the northern Industrial Salt (Pty) Ltd Mining Right for Portion 13. The Mining Right areas to be increased by the incorporation of portions 18 and 20.

The salt mining operation derives the salt from the saline water table beneath the pan. The brine is pumped from boreholes and piped to shallow evaporation ponds on the pan perimeter. The crystallized salt is scraped up and transported to the stockpile area where it is dried and then further processed by crushing, washing, spinning and final drying. The evaporation ponds and processing facilities are already established. Further activity involves the siting of more brine abstraction boreholes.

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 (Figures 3 & 4, C-Pd). 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.

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).

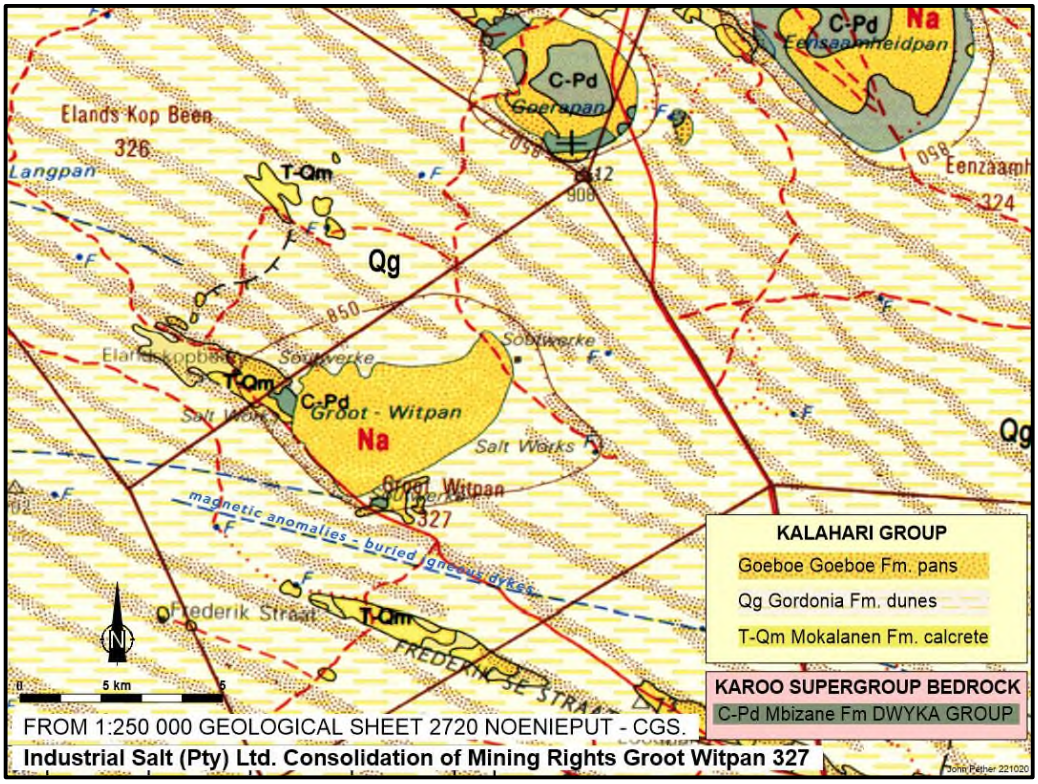

Figure 3. Surface geology of the Groot Witpan 327 area.

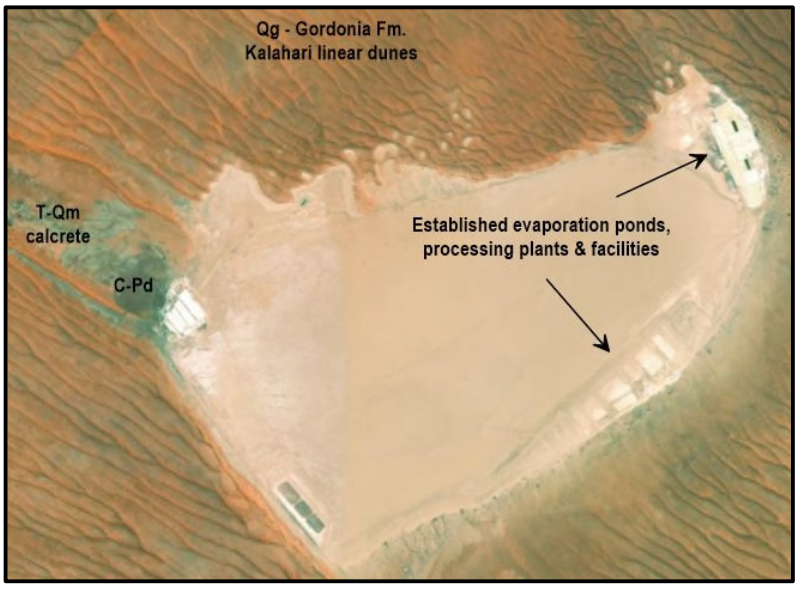

Figure 4. Locations of the existing Industrial Salt salt harvesting plants.

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. 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

Groot Witpan is underlain by the bedrock of the Mbizane Formation (Figures 3, 4). The overall palaeontological sensitivity of this Dwyka Group formation is rated “Moderate” (Figure 5). The fossils in these rocks include trace fossils, plant material (typically the *Glossopteris* Flora), a low diversity of invertebrates (molluscs, brachiopods) and fish remains (Almond & Pether, 2009).

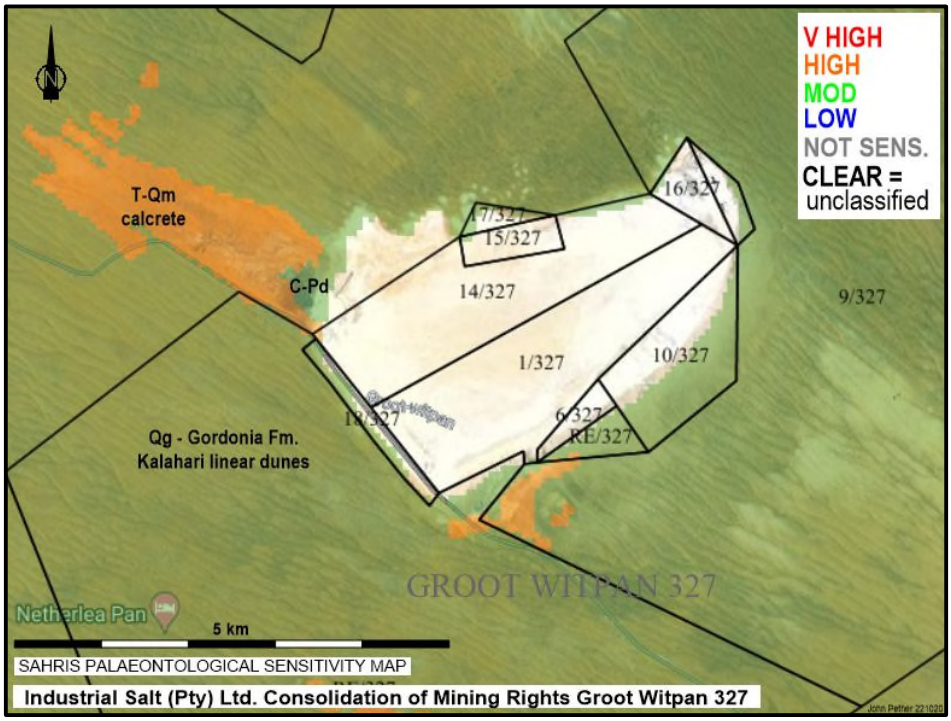

Figure 5. General palaeontological sensitivities of the local formations.

Outcrop and shallowly sand-covered calcrete pedocrete of the Mokalanen Fm. is mapped to the west of the pan (Figures 3-5, T-Qm) and it is probable that under the surrounding aeolian sands the pan is rimmed by the calcrete, as is typical of the landscape. The overall palaeontological sensitivity of the Mokalanen Fm. is indicated as “HIGH” (Figure 5). The calcrete is likely to have been superimposed on the surficial regolith and also involves the Dwyka bedrock. The calcrete generally includes fossil roots and trace fossils such as termitaria and thick calcretes conceal amalgamated palaeosurfaces on which fossil bones

and land snails occur. However, calcrete outcrop is not mapped in the eastern part of the pan and the salt harvesting operation does not affect the calcrete.

The Gordonia Fm. Kalahari dunes are rated as “Moderate” overall palaeontological sensitivity (Figure 5), but fossil bones are very sparse in the dunes which were active in phases during the late Quaternary. Trace fossils such as termite burrows and termitaria, the burrows of other insects, spiders and scorpions, mole tunnels and plant root casts are the most common fossils, while land snails, rodents, mole and tortoise remains and ostrich eggs and bones are expected to occur. Associated fossil bones and archaeological material occurs on the peripheries of pans.

The current pan deposits (Goeboe Goeboe Fm.) are mapped as of uncertain palaeontological sensitivity (Figure 5, 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 boreholes for brine abstraction will penetrate a small volume of the pan deposits and partly the underlying Dwyka bedrock. The “point” nature of the drill holes renders the likelihood of intersecting fossil bones in the pan deposits improbable. The Dwyka 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 boreholes the anticipated palaeontological impact of the brine abstraction 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 bore 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. Fossil bones and archaeological material may also be uncovered in minor earthworks associated with pond maintenance.

It is recommended that a protocol for finds of potential archaeological and/or fossil bones, the Fossil Finds Procedure (FFP), is included in the Environmental Management Plan (EMP) for the Operations of the Industrial Salt saltworks, basically “If fossil bones are uncovered during any earthworks, stop work at that spot and report to SAHRA and/or the McGregor Museum, providing via email images of the find and its contextual information for assessment and decision on a suitable response”.

Heritage Western Cape has provided a Fossil Finds Procedure and a form for the reporting of fossil finds:

https://www.hwc.org.za/sites/default/files/3_11%20Protocol%20Fossil%20Finds%20Final%20June%202016.pdf

SAHRA: 021 462 4502.

McGregor Museum, Kimberley: 053 839 2700.

8 REFERENCES

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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.

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

Recommendation for Exemption from further Palaeontological Studies

CONSOLIDATION OF SALT PAN MINING RIGHTS ON GROOT WITPAN 327

INDUSTRIAL SALT (PTY) LTD.

Portions 10, 13, 18 & 20 of Groot Witpan 327, Gordonia District, Northern Cape.

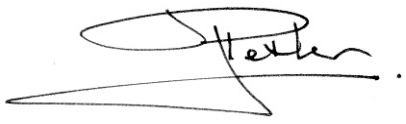
Terms of Reference

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: 24 October 2022

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