

**BASIC ASSESSMENT REPORT FOR THE PROPOSED PROSPECTING
ACTIVITIES ON VARIOUS FARMS IN THE DISTRICT OF MANKWE,
GROOT MARICO AND ZEERUST, NORTH WEST PROVINCE**

For

Salene Manganese (Pty) Ltd

For the following Minerals:

**Nickel ore, Silver ore, Copper ore, Gold, Cobalt, Platinum Group Metals
(PGM), Chrome, Titanium, Barium, Magnesite and Rare Earth Elements
(REE)**

Located on:

**Roodekopjesfontein 15-JP, Zelikatskop 16-JP, Knapdaar 26-JP, Farm 10
902-JP, Schoonlaagte 935-KP, Nooitgedacht 938-KP, Farm 6 939-KP,
Leeuwkopje 952-KP, Driekop 14-JP, Magdalenas Kuil 37-JP, Kuilenburg
39-JP, Giglio 42-JP, Doornlaagte 51-JP, Medfordt Park 52-JP,
Vriendschap 53-JP, Koedoespoort 64-JP and Koedoespoort 68-JP within
the administrative district of Mankwe, Groot Marico and Zeerust, North
West Province**

DMRE Reference Number: NW30/5/1/1/2/13162 PR

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BASIC ASSESSMENT REPORT FOR THE PROPOSED PROSPECTING ACTIVITIES ON VARIOUS FARMS IN THE DISTRICT OF MANKWE, GROOT MARICO AND ZEERUST, NORTH WEST PROVINCE FOR SALENE MANGANESE (PTY) LTD

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

Basic Assessment Report for the proposed prospecting activities for Salene Manganese (Pty) Ltd for the following Minerals: Nickel ore, Silver ore, Copper ore, Gold, Cobalt, Platinum Group Metals (PGM), Chrome, Titanium, Barium, Magnesite and Rare Earth Elements (REE). The proposed activities will be located on farms Roodekopjesfontein 15-JP, Zelikatskop 16-JP, Knapdaar 26-JP, Farm 10 902-JP, Schoonlaagte 935-KP, Nooitgedacht 938-KP, Farm 6 939-KP, Leeuwkopje 952-KP, Driekop 14-JP, Magdalenas Kuil 37-JP, Kuilenburg 39-JP, Giglio 42-JP, Doornlaagte 51-JP, Medfordt Park 52-JP, Vriendschap 53-JP, Koedoespoort 64-JP and Koedoespoort 68-JP within the administrative district of Mankwe, Groot Marico and Zeerust, North West Province

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

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IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.



EXECUTIVE SUMMARY

Salene Manganese (Pty) Ltd is proposing to conduct prospecting activities for Nickel ore, Silver ore, Copper ore, Gold, Cobalt, Platinum Group Metals (PGM), Chrome, Titanium, Barium, Magnesite and Rare Earth Elements (REE). The proposed activities will be located on the farms Roodekopjesfontein 15-JP, Zelikatskop 16-JP, Knapdaar 26-JP, Farm 10 902-JP, Schoonlaagte 935-KP, Nooitgedacht 938-KP, Farm 6 939-KP, Leeuwkopje 952-KP, Driekop 14-JP, Magdalenas Kuil 37-JP, Kuilenburg 39-JP, Giglio 42-JP, Doornlaagte 51-JP, Medfordt Park 52-JP, Vriendschap 53-JP, Koedoespoort 64-JP and Koedoespoort 68-JP within the administrative district of Mankwe, Groot Marico and Zeerust, North West Province. The prospecting area is located in the Ramotshere Moiloa Local Municipality. The proposed prospecting activities will include the following activities as described below.

Non-Invasive Activities:

Desktop Studies: Some areas within or in close to the proposed prospecting area where previously drilled by Rio Tinto and other exploration companies. Available historic prospecting data will be captured and evaluated, and a working plan of the area on a suitable scale (1:10 000 or 1:20 000) will be compiled. The desk top study will provide guidance with respect of areas to target for soil sampling, and drilling.

Mapping: Geological mapping involves plotting the location and attitude of the various rock units, structures, economic mineral/metal occurrences, etc. as observed in the field on a base map. Geological mapping will be on a scale suitable for the local geological variability. Mapping will be done along lines spaced at regular intervals and oriented perpendicular to the expected north-south striking lithologies in the area. The mapping will primarily focus on the delineation of the KFM Formation to establish the occurrence of minerals that form part of this application.

Compilation of Data, Interpretation and Reporting: This will follow after completion of the non-invasive phase, and before the planning of the first drilling phase, and will be updated after completion of successive drilling programs.

Resource estimation: The borehole logs and analytical data/results are captured into an electronic database and validated. A geological model is then developed that forms the basis for the resource estimate. The purpose of the resource estimate is to obtain an indication of the tonnage and grade of the potential precious and base metal deposit.

Invasive Activities:

Drilling:

Drilling will only be considered after completion of all the sourced historic exploration results. An estimated 10 holes will be drilled in this phase. After assessing results of these holes, more drilling will be planned if required. Co-ordinates of holes will be finalized at that stage.

Rehabilitation of the drill sites will be monitored to ensure compliance with the environmental management programme. Normal industry practice in terms of assaying, mineralogical testing and metallurgical testing will be followed. In all instances drilling would be:

- Under close supervision of an experienced geologist;
- Conducted along best practice guidelines; and
- Minimize environmental disturbance.

An independent and experienced drilling contractor will be used to complete the drilling in compliance with the Mine Health and Safety Act, 1996 (Act No. 29 of 1996). Plastic lining will be employed to prevent oil spillage under the drill rigs and hydrocarbon containers. Borehole sites are GPS located and pegged with PVC flags attached to the stakes. The site is inspected and photographed prior to any disturbance. Minimal clearing of drill pads will be done, keeping disturbance to the native vegetation to an absolute minimum. No topsoil will be removed. After completion of a borehole, the collar position will be marked with a numbered concrete block, of approximately 0.5 x 0.5 x 0.5 meters, fitted with a steel rod of approximately 1m high (or similar). After each drill hole is complete, logged and sampled the collar will be surveyed by an independent surveyor using a high-



accuracy differential GPS. Thereafter the drill area will be rehabilitated according to the procedures as stipulated in the Environmental Management Plan and photographed. The rehabilitation process will be closely monitored to ensure that standards are not compromised. The drill sites are only considered rehabilitated when the project geologist has signed a standard drill pad rehabilitation checklist. The boreholes will be logged and mineralized horizons sampled by qualified geologists. Proposed co-ordinates for 10 holes are as follows:

Label	Latitude WGS84	Longitude WGS84
4	S25° 07' 54.47"	E26° 20' 12.84"
5	S25° 06' 45.21"	E26° 20' 38.09"
6	S25° 06' 13.54"	E26° 20' 39.63"
7	S25° 05' 19.00"	E26° 21' 14.00"
8	S25° 04' 24.00"	E26° 21' 07.00"
9	S25° 03' 45.16"	E26° 20' 40.64"
10	S25° 02' 57.67"	E26° 20' 21.37"
11	S25° 12' 20.68"	E26° 10' 44.43"
12	S25° 09' 59.00"	E26° 16' 39.00"
13	S25° 01' 04.00"	E26° 19' 50.00"

Sampling Program: Samples will be submitted for analyses to determine the mineral content. Each sample will be logged and split and quartered where assaying is warranted. One quarter will be dispatched to the assay lab, one quarter kept for a permanent record, and the halves utilized for petrological studies or stored for future reference or metallurgical test work. Samples for analysis will be bagged and numbered on site by the geologist and field assistant, and dispatched to the contracted laboratory. Analyses to determine the mineral content and composition is conducted off site at an accredited laboratory.

Metallurgical Sampling: The mineralized portions of boreholes, as indicated by assay results, would provide sufficient material for metallurgical test work purposes.

Bulk sampling and testing to be carried out: Bulk sampling will only be considered if a viable target is identified, as part of a feasibility study into the establishment of a mine, in which case an amendment to the Environmental Authorization will be considered. At this stage no bulk sampling is envisaged.

Other prospecting methods to be applied: Normal industry practice in terms of assaying, mineralogical testing and metallurgical testing will be followed. If prospecting results indicate the need for any other method of prospecting, then it will be planned and reported to the Department of Minerals and Energy via the relevant reporting structure.

Description of Pre-feasibility studies

Any program such as this culminates with an overall completion study and in this case the objective would be to provide a pre-feasibility study at a suitably detailed level for planning to enable the submittal of Mining Right, NEMA and IWUL applications should the mineral resource be suitable for exploitation. During the final year all data needs to be compiled, interpreted, summarized and evaluated in a final report. Several additional studies will need to be completed in order for an informed decision to be made on whether or not to proceed with development. Aside from all the information already discussed, expert input is frequently required in geohydrology, processing and plant design, engineering and infrastructure, mining and other specialized fields. In addition, extra specialized studies have been allowed for to cover provision of services (power, water, labour), logistics, consumables, and all other items necessary in a pre- feasibility study. Consequently, while others costs decline in the final year, the cost of consultants is increased as much of the work is traditionally outsourced – both as an independent verification, and because few companies can keep so many specialist talents on their books.



Listed Activities:

The proposed activities will trigger the following NEMA Listed Activities:

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY (Ha or m ²)	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
Drill site	10m x 10m Drill Sites 1 Drill site= 100 m ² Total Drill Site Area= 1,000 m ²	X	GNR 983 (as amended 07 April 2017) Listed Activity 20
Rehabilitation and Closure	1,000 m ²	X	GNR 983 (as amended 07 April 2017) Listed Activity 22

The positive impact of the proposed activity is the discovery of economically viable mineral resources within Ngaka Modiri Molema District Municipality, that could lead to employment opportunities in the area if the minerals prospected for are present in an economically viable quantity.

The access roads may over time and continuous use deteriorate and become damaged. Based on the recommended access roads to the borehole locations, no watercourses will be affected by the access roads needed provided that the existing roads as indicated by the Surveyor General is correct. Should the required access roads be constructed using foreign materials this could affect nearby.

The removal of natural vegetation to accommodate the sampling and drilling site and their associated access roads may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area, at least temporarily. Vegetation clearance could result in silt entering watercourses if the topsoil stockpiles are not managed correctly or as a result of erosion on the cleared area. Access to the application area for the topographical and geophysical survey, prospecting sampling will be required which may interrupt the existing land uses, such as grazing and existing mines. Provisions have been made for the rehabilitation of all areas disturbed during prospecting, including access tracks.

Drilling will only be considered after completion of all the sourced historic exploration results and 10 boreholes will be drilled in this phase. It is more cost effective and will have less of an impact than bulk sampling activities will have. Trenching (mini-bulk sampling) will need for a bigger area of vegetation to be removed and will result in the establishment of topsoil, and other mine residue deposits and stockpiles such as overburden. This could be done in future in selected areas based on the outcome of the drilling programme and is thus not applicable at the moment.

The prospecting activities will generate general waste during the operational phase. This generated waste must be collected during all phases of the prospecting activities and be disposed of at appropriate landfill sites. It is understood that the Zeerust landfill site is not licenced and the appointed contractor must thus ensure that any general waste generated will be disposed off in terms of the NEMWA requirements.

A summary of the positive and negative impacts of the proposed activity are provided in below.

Table A: Positive and Negative impacts and the phases (C= Construction/Site Establishment; O= Operational; CL= Closure; D=Decommissioning)

ASPECT	IMPACT	PHASE	POSITIVE/NEGATIVE
Soil	Pollution of soil	O	Negative
	Erosion due to improper rehabilitation	D	Negative
	Loss of topsoil during stripping, handling and placement on rehabilitated areas	C, D	Negative



ASPECT	IMPACT	PHASE	POSITIVE/NEGATIVE
	Disturbances/losses of soil due to erosion as well as contamination of soils	C, O, D	Negative
Flora	Invasive prospecting and associated activities will lead to destruction and damage of habitat and overall loss of floral and faunal species within the clearance and operational area. As a result of the activities degradation or compression may occur if heavy construction vehicles are not kept to the demarcated roads	O	Negative
	Vegetation clearance will likely destroy habitats and lead to possible invasive and/or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. Bare areas may become vulnerable to Alien and Invasive Plant species and these may compete with indigenous species, likely leading to the migration of sensitive species from the site to a more favourable habitat.	O	Negative
	Invasive prospecting and associated activities may impact on areas designated as high sensitivity, including critical biodiversity areas, ecological support areas, koppies, ridges and watercourses situated in and around the Prospecting Right area. The activity may lead to the loss of floral species of conservation concern. However, based on the desktop study findings, no flora SCC are considered to be likely to occur on the project area.	O	Negative
	Rehabilitation could be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance. Without the necessary mitigation measures, rehabilitation will be less successful and the ecology of the impacted areas may not recover to a pre-prospecting state. Without mitigation the alien invasive species may increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and agriculture.	CI	Negative
Fauna	The onset of activities might result in impacts to the natural environment and fauna due to increased movement, traffic and large machinery to the area.	O	Negative
	River and streams occurring on the Prospecting Right area may be impacted due to the invasive prospecting and related activities and may result in the destruction of riparian habitat for sensitive species. Impacts within these areas could lead to destruction and degradation of habitats and food associated with these drainage / riverine areas.	O	Negative
	The operational activities might result in impacts to the natural environment and faunal species due to prolonged activity and movement to and from the area.	O	Negative
	Increased activity and traffic within a shorter timeframe (closure phase) may degrade the area. The possibility exists for rehabilitation to be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance.	CI	Negative
Surface Water	Vegetation clearance could result in silt entering watercourses if the topsoil stockpiles are not managed correctly or as a result of erosion on the cleared area.	C	Negative
	The construction and operation of a sump at the drill pad to capture slurry generated by the drilling activity will impact on the water quantity (run-off) from the area reaching the nearby watercourse.	C, O	Negative



ASPECT	IMPACT	PHASE	POSITIVE/NEGATIVE
	Should foreign material be brought in to construct required access roads these could result in siltation of nearby watercourses if the material is not adequately compacted. No additional impact foreseen as the proposed access roads needed does not cross a watercourse.	C	Negative
	Dust generated could settle on nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse.	C, O, CI	Negative
	Slurry generated if not captured could flow to nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse	O	Negative
	Hydrocarbon spills from vehicles and other equipment if not managed could impact on the water quality of nearby watercourses	O, CI	Negative
	Chemical toilets will be used and needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the toilets.	O, CI	Negative
	Hazardous waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the waste.	O, CI	Negative
	General waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of windblown waste from storage areas e.g., plastics.	O, CI	Negative
	Biodegradable waste needs to be managed in such a manner that it does not impact on nearby watercourses quality.	O, CI	Negative
	Spills from dangerous good containers could impact on the health and water quality of nearby water resources	O, CI	Negative
Groundwater	Loose soil could be easily moved to nearby resources resulting in siltation that could impact on the health of the system.	O	Negative
	Degradation of aquifers	O	Negative
	Impacts of existing groundwater users	O	Negative
Air	Lowering of groundwater levels	C	Negative
	Impact on air quality as a result of operation dust and gaseous emissions	O	Negative
	Deterioration and damage to existing access roads and tracks	C, O, D	Negative
Noise	Material handling operations will impact on Dust fallout (nuisance dust)	O	Negative
	Noise nuisance	C, O	Negative
	Impacts on potential burial grounds and graves	C, O	Negative
Heritage Resources	Impacts on archaeological resources	C, O	Negative
	Generation and disposal of waste	C	Negative
Socio-economic	Potential job creation	C, O, D	Positive
	Safety and security to existing landowners and lawful occupier	C, O, D	Negative
	Interference with existing land uses	C, O, D	Negative
	Possible loss of life and Covid-19 pandemic spread and new cases	C, O, D	Negative



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PART A
SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1 CONTACT PERSON AND CORRESPONDENCE ADDRESS

1.1 DETAILS OF:

1.1.1 *The EAP who prepared the report*

Name of the Practitioner: Prescali Environmental Consultants (Pty) Ltd.

The report was compiled by Ms Obakeng Mokgatle and Ms Simrin Reddy.

Tel No.: 012 543 3808

Fax No. :086 621 0294

e-mail address: info@prescali.co.za

1.2 EXPERTISE OF THE EAP

1.2.1 *The qualifications of the EAP*

(With evidence attached as Appendix 1)

Ms Obakeng Mokgatle has a National Diploma: Environmental Sciences and a Bachelor of Technology (Btech): Environmental Sciences. Ms Simrin Reddy has qualifications in Environmental Sciences. Their qualifications are provided in Appendix 1.

Reviewers:

- Ms. E. van der Linde has qualifications in Geology, Engineering Geology and Environmental Management and experience in Water and Environmental Management. She is registered as a Pri Sci Nat. (SACNASP), Natural Professional Scientist. Her qualifications are provided in Appendix 1.
- Dr. P. Erasmus has qualifications in Zoology and Biochemistry and further studied in Zoology and Marine pollution. She is registered as a Pri Sci Nat. (SACNASP), Natural Professional Scientist, for Ecological and Environmental Sciences. She is also a registered Environmental Assessment Practitioner with EAPASA. Her qualifications are provided in Appendix 1.

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

(Attach the EAP's curriculum vitae as Appendix 2)

- Miss O. Mokgatle has 5 years applicable experience in the environmental industry (a short resume with a list of projects is attached in Appendix 2) and has been employed by:
 - Exigo Sustainability; and
 - Prescali Environmental Consultants (Pty) Ltd.
- Miss S. Reddy has 6 months applicable experience (a short resume with a list of projects is attached in Appendix 2 and has been employed by:
 - Prescali Environmental Consultants (Pty) Ltd.

Reviewers:

- Ms. E. van der Linde has 20 years of applicable experience (a short resume with a list of projects is attached in Appendix 2 and has been employed by:
 - Department: Water Affairs and Forestry (DWAF);
 - Groundwater Consulting Services cc;
 - M2 Environmental Connections cc; and
 - Prescali Environmental Consultants (Pty) Ltd.
- Dr. P. Erasmus has 15 years of applicable experience (a short resume with a list of projects is attached in Appendix 2 and has been employed by:
 - Department: Water Affairs and Forestry (DWAF);
 - M2 Environmental Connections (Pty) Ltd; and
 - Prescali Environmental Consultants (Pty) Ltd.



2 LOCATION OF THE OVERALL ACTIVITY

The proposed prospecting activities will take place on the following farms and portions as outlined below. Please refer to Figure 3-1.

1.	Farm Name:	Driekop	
	Farm Number:	14	
	Registration Division:	JP	
	Portions:	RE	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000001400000

2	Farm Name:	Roodekopjesfontein	
	Farm Number:	15	
	Registration Division:	JP	
	Portions:	RE,1, 2,3, 6, 7	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000001500000
		1	T0JP00000000001500001
		2	T0JP00000000001500002
		3	T0JP00000000001500003
		6	T0JP00000000001500006
		7	T0JP00000000001500007

3	Farm Name:	Zelikatskop	
	Farm Number:	16	
	Registration Division:	JP	
	Portions:	RE,1	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000001600000
		1	T0JP00000000001600001

4	Farm Name:	Knapdaar	
	Farm Number:	26	
	Registration Division:	JP	
	Portions:	RE	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000002600000

5	Farm Name:	Magdalenas Kuil	
	Farm Number:	37	
	Registration Division:	JP	
	Portions:	RE,1	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code



		RE	T0JP00000000003700000
		1	T0JP00000000003700001

6	Farm Name:	Kuilenburg	
	Farm Number:	39	
	Registration Division:	JP	
	Portions:	RE,1,2,3,4	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000003900000
		1	T0JP00000000003900001
		2	T0JP00000000003900002
		3	T0JP00000000003900003
		4	T0JP00000000003900004

7	Farm Name:	Giglio	
	Farm Number:	42	
	Registration Division:	JP	
	Portions:	RE	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000004200000

8	Farm Name:	Doornlaagte	
	Farm Number:	51	
	Registration Division:	JP	
	Portions:	RE,1,2,4,6, 13	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000005100000
		1	T0JP00000000005100001
		2	T0JP00000000005100002
		4	T0JP00000000005100004
		6	T0JP00000000005100006
		13	T0JP00000000005100013

9	Farm Name:	Medfordt Park	
	Farm Number:	52	
	Registration Division:	JP	
	Portions:	RE,1,2,3,4,5,6,7,8	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000005200000
		1	T0JP00000000005200001
		2	T0JP00000000005200002
		3	T0JP00000000005200003
		4	T0JP00000000005200004
		5	T0JP00000000005200005
		6	T0JP00000000005200006
		7	T0JP00000000005200007



		8	T0JP00000000005200008
10	Farm Name:	Vriendschap	
	Farm Number:	53	
	Registration Division:	JP	
	Portions:	RE	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000005300000
11	Farm Name:	Koedoespoort	
	Farm Number:	64	
	Registration Division:	JP	
	Portions:	RE,2,5,8	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000006400000
		2	T0JP00000000006400002
		5	T0JP00000000006400005
		8	T0JP00000000006400008
12	Farm Name:	Koedoespoort	
	Farm Number:	68	
	Registration Division:	JP	
	Portions:	RE,1,2	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP00000000006800000
		1	T0JP00000000006800001
		2	T0JP00000000006800002
13	Farm Name:	Farm 10	
	Farm Number:	902	
	Registration Division:	JP	
	Portions:	RE, 1,2	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0JP000000000090200000
		1	T0JP000000000090200001
		2	T0JP000000000090200002
14	Farm Name:	Schoonlaagte	
	Farm Number:	935	
	Registration Division:	KP	
	Portions:	RE,2,3,4,5	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0KP000000000093500000
		2	T0KP000000000093500002



		3	T0KP00000000093500003
		4	T0KP00000000093500004
		5	T0KP00000000093500005

15	Farm Name:	Nooitgedacht	
	Farm Number:	938	
	Registration Division:	KP	
	Portions:	RE,2	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0KP00000000093800000
		2	T0KP00000000093800002

16	Farm Name:	Farm 6	
	Farm Number:	939	
	Registration Division:	KP	
	Portions:	RE,4	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0KP00000000093900000
		4	T0KP00000000093900004

17	Farm Name:	Leeuwkopje	
	Farm Number:	952	
	Registration Division:	KP	
	Portions:	RE,2	
	Administrative District:	Ramotshere Moiloa Local Municipality	
	SG Codes	Farm Portion	SG Code
		RE	T0KP00000000095200000
		2	T0KP00000000095200002

Application Area (Ha):	64 519.9097 Ha
Distance and Direction from Nearest Town:	24 km North East of Zeerust and 35 km South East of Kopfontein Border Post (South Africa/Botswana border)
Magisterial District:	Ngaka Modiri Molema District Municipality

3 LOCALITY MAP

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

The locality map is provided in Appendix 3 and in Figure 3-1 and Figure 3-2.

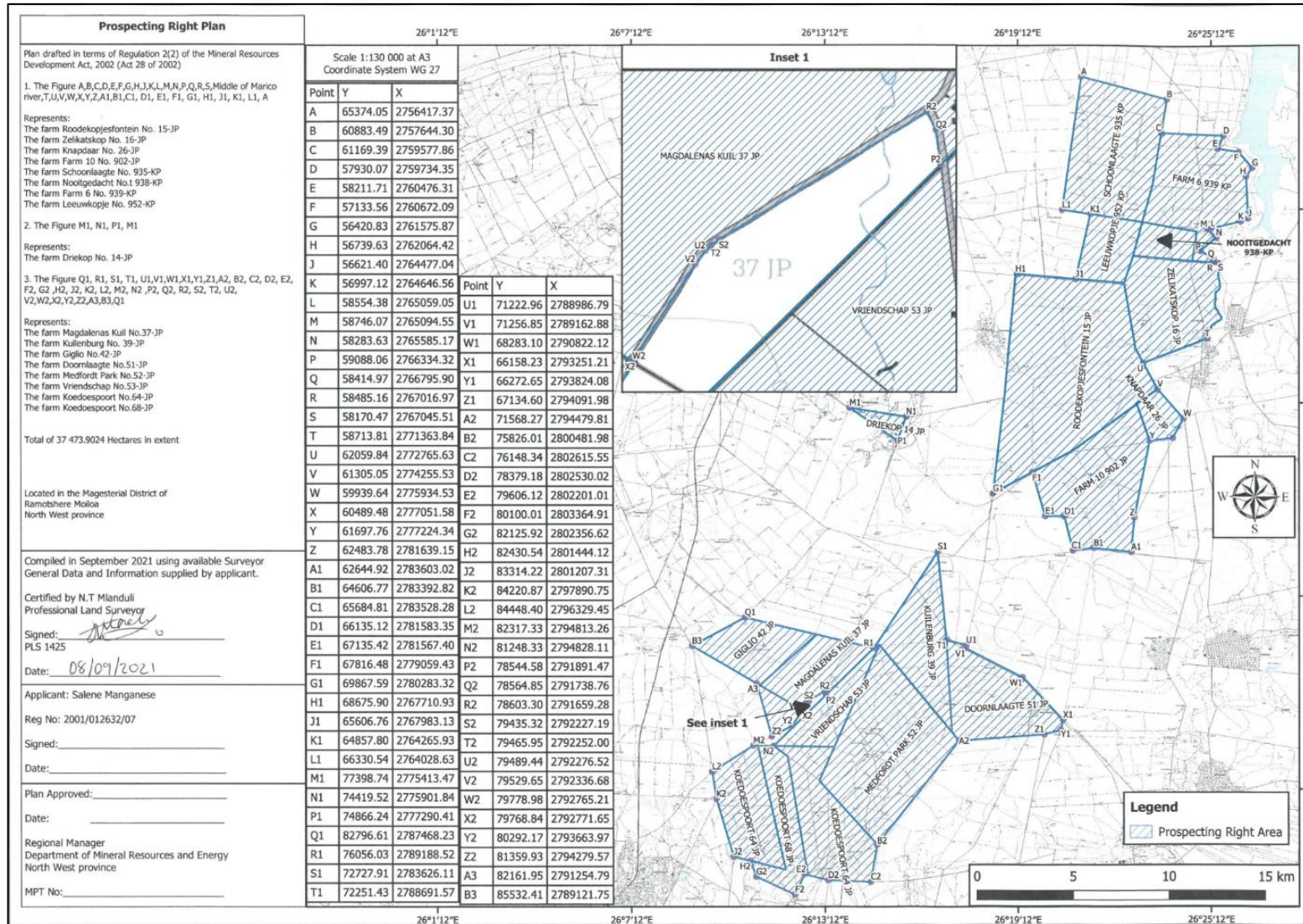


Figure 3-1: Location of the Prospecting Right Area (<250 000)

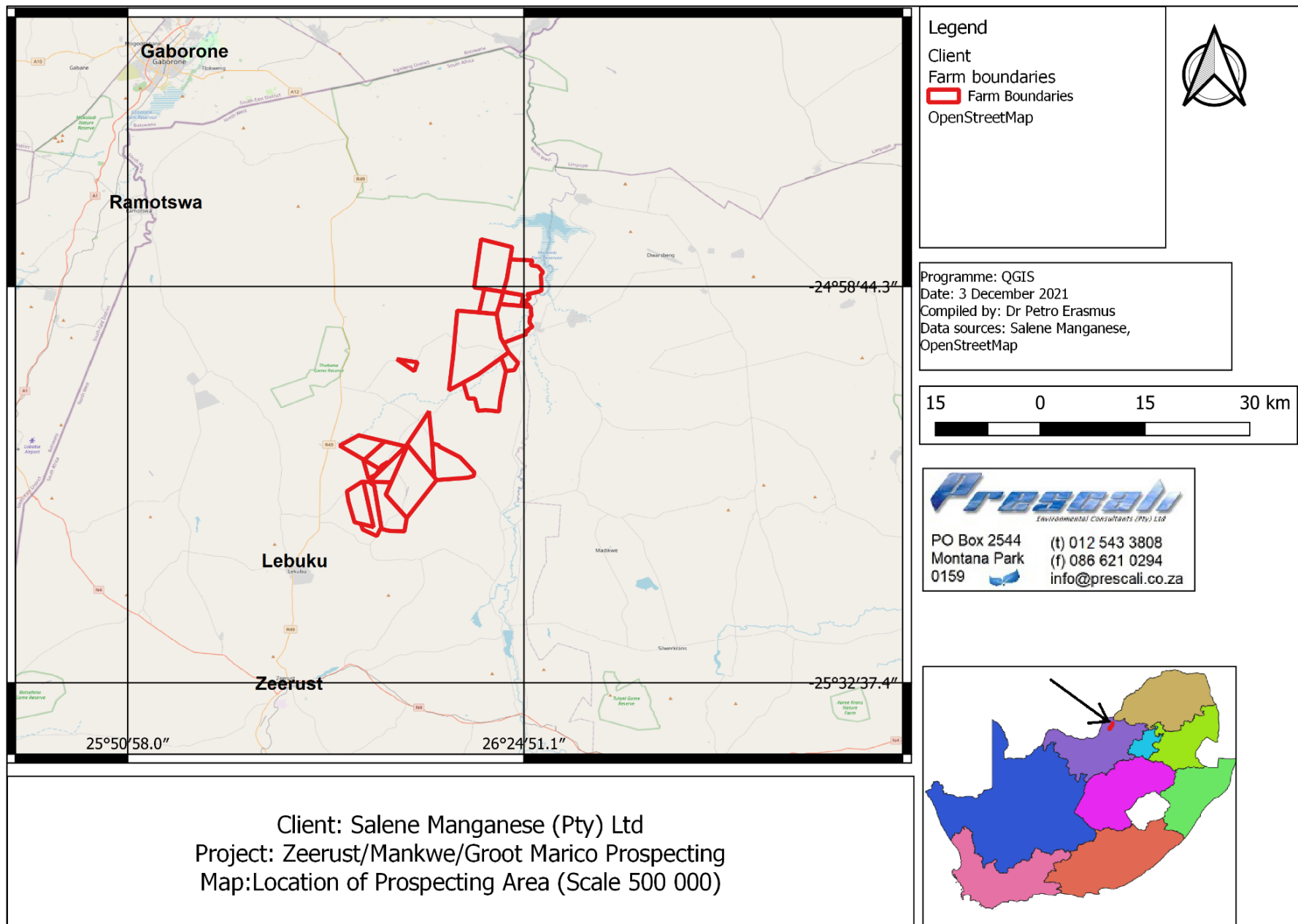


Figure 3-2: Location of the Prospecting Right Area (500 000)

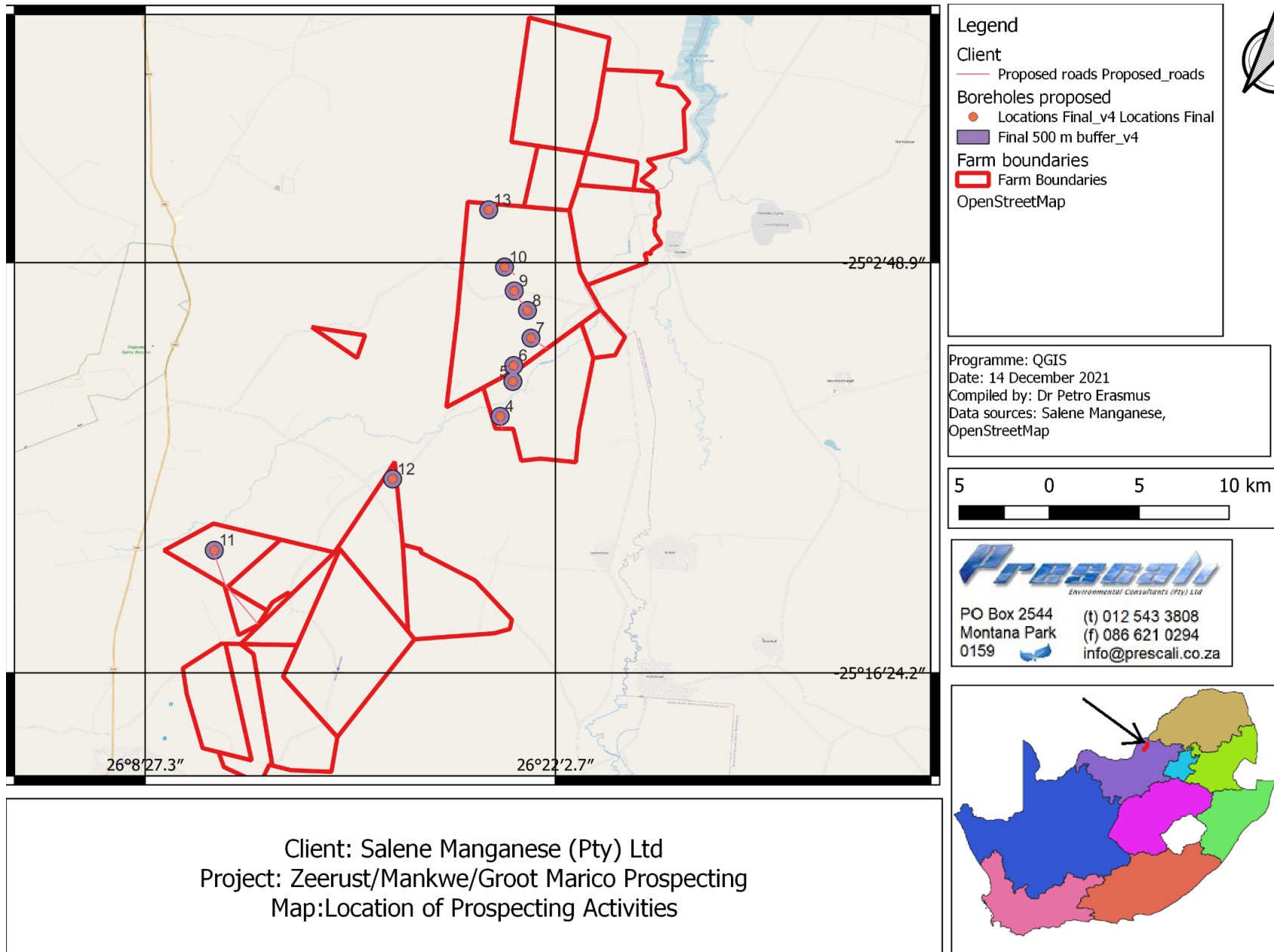


Figure 3-3: Location and area extend of main and listed activities



4 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.

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

The plan, showing the location of the proposed prospecting activities with a 500 m radius around each point in which prospecting activities will take place, is provided in Figure 3-3.

4.1 NON-INVASIVE ACTIVITIES

Desktop Studies: Some areas within or in close to the proposed prospecting area where previously drilled by Rio Tinto and other exploration companies. Available historic prospecting data will be captured and evaluated, and a working plan of the area on a suitable scale (1:10 000 or 1:20 000) compiled. The desk top study will provide guidance with respect of areas to target for soil sampling, and drilling.

Mapping: Geological mapping involves plotting the location and attitude of the various rock units, structures, economic mineral/metal occurrences, etc. as observed in the field on a base map. Geological mapping will be on a scale suitable for the local geological variability. Mapping will be done along lines spaced at regular intervals and oriented perpendicular to the expected north-south striking lithologies in the area. The mapping will primarily focus on the delineation of the KFM Formation to establish the occurrence of minerals that form part of this application.

Compilation of Data, Interpretation and Reporting: This will follow after completion of the non-invasive phase, and before the planning of the first drilling phase, and will be updated after completion of successive drilling programs.

Resource estimation: The borehole logs and analytical data/results are captured into an electronic database and validated. A geological model is then developed that forms the basis for the resource estimate. The purpose of the resource estimate is to obtain an indication of the tonnage and grade of the potential precious and base metal deposit.

4.2 INVASIVE ACTIVITIES

Sampling Program:

Samples will be submitted for analyses to determine the mineral content. Each sample will be logged and split and quartered where assaying is warranted. One quarter will be dispatched to the assay lab, one quarter kept for a permanent record, and the halves utilized for petrological studies or stored for future reference or metallurgical test work. Samples for analysis will be bagged and numbered on site by the geologist and field assistant, and dispatched to the contracted laboratory. Analyses to determine the mineral content and composition is conducted off site at an accredited laboratory.

Metallurgical Sampling:

The mineralized portions of boreholes, as indicated by assay results, would provide sufficient material for metallurgical test work purposes.

Drilling:

Drilling will only be considered after completion of all the sourced historic exploration results. An estimated 10 holes will be drilled in this phase. After assessing results of these holes, more drilling will be planned if required. Co-ordinates of holes will be finalized at that stage.

Rehabilitation of the drill sites will be monitored to ensure compliance with the environmental management programme. Normal industry practice in terms of assaying, mineralogical testing and metallurgical testing will be followed. In all instances drilling would be:

- Under close supervision of an experienced geologist;
- Conducted along best practice guidelines; and
- Minimize environmental disturbance.



An independent and experienced drilling contractor will be used to complete the drilling in compliance with the Mine Health and Safety Act. Plastic lining will be employed to prevent oil spillage under the drill rigs and hydrocarbon containers. Borehole sites are GPS located and pegged with PVC flags attached to the stakes.

The site is inspected and photographed prior to any disturbance. Minimal clearing of drill pads will be done, keeping disturbance to the native vegetation to an absolute minimum. No topsoil will be removed. After completion of a borehole, the collar position will be marked with a numbered concrete block, of approximately 0.5 x 0.5 x 0.5 meters, fitted with a steel rod of approximately 1m high (or similar). After each drill hole is complete, logged and sampled the collar will be surveyed by an independent surveyor using a high-accuracy differential GPS. Thereafter the drill area will be rehabilitated according to the procedures as stipulated in the Environmental Management Plan and photographed. The rehabilitation process will be closely monitored to ensure that standards are not compromised. The drill sites are only considered rehabilitated when the project geologist has signed a standard drill pad rehabilitation checklist. The boreholes will be logged and mineralized horizons sampled by qualified geologists. Proposed co-ordinates for 10 holes are as follows:

Label	Latitude WGS84	Longitude WGS84
4	S25° 07' 54.47"	E26° 20' 12.84"
5	S25° 06' 45.21"	E26° 20' 38.09"
6	S25° 06' 13.54"	E26° 20' 39.63"
7	S25° 05' 19.00"	E26° 21' 14.00"
8	S25° 04' 24.00"	E26° 21' 07.00"
9	S25° 03' 45.16"	E26° 20' 40.64"
10	S25° 02' 57.67"	E26° 20' 21.37"
11	S25° 12' 20.68"	E26° 10' 44.43"
12	S25° 09' 59.00"	E26° 16' 39.00"
13	S25° 01' 04.00"	E26° 19' 50.00"

Bulk sampling and testing to be carried out:

Bulk sampling will only be considered if a viable target is identified, as part of a feasibility study into the establishment of a mine, in which case an amendment to the Environmental Authorization will be considered. At this stage no bulk sampling is envisaged.

Other prospecting methods to be applied:

Normal industry practice in terms of assaying, mineralogical testing and metallurgical testing will be followed. If prospecting results indicate the need for any other method of prospecting, then it will be planned and reported to the Department of Minerals and Energy via the relevant reporting structure.

4.3 DESCRIPTION OF PRE-/FEASIBILITY STUDIES

Any program such as this culminates with an overall completion study and in this case the objective would be to provide a pre-feasibility study at a suitably detailed level for planning to enable the submittal of Mining Right, NEMA and IWUL applications should the mineral resource be suitable for exploitation.

During the final year all data needs to be compiled, interpreted, summarized and evaluated in a final report. Several additional studies will need to be completed in order for an informed decision to be made on whether or not to proceed with development. Aside from all the information already discussed, expert input is frequently required in geohydrology, processing and plant design, engineering and infrastructure, mining and other specialized fields. In addition, extra specialized studies have been allowed for to cover provision of services (power, water, labour), logistics, consumables, and all other items necessary in a pre- feasibility study.



Consequently, while others costs decline in the final year, the cost of consultants is increased as much of the work is traditionally outsourced – both as an independent verification, and because few companies can keep so many specialist talents on their books.

As part of this application the following desktop studies were commissioned:

1. Surface water impact assessment;
2. Ecological impact assessment;
3. Archaeological impact assessment.

5 LISTED AND SPECIFIED ACTIVITIES

No Environmental Impacts are foreseen on the following farms as NO invasive activities will take place on them only non-invasive assessments: Zelikatskop 16-JP, Knapdaar 26-JP, , Schoonlaagte 935-KP, Nooitgedacht 938-KP, Farm 6 939-KP, Leeuwkopje 952-KP, Driekop 14-JP, Magdalenas Kuil 37-JP, , Doornlaagte 51-JP, Medfordt Park 52-JP, Vriendschap 53-JP, Koedoespoort 64-JP and Koedoespoort 68-JP.

Invasive prospecting (Drilling) will take place on the following farms Roodekopjesfontein 15-JP Roodekopjes, Farm 10 902-JP, Kuilenburg 39-JP, Giglio 42-JP the following areas are applicable to each property:

Farm	Borehole number	Road length (m)	Road Width (m)	Borehole area (m ²)
39 JP	12	111,88	4	100
42 JP	11	5570,5	4	100
902 JP	4	754,5	4	100
	5	110,14	4	100
15 JP	6	288,7	4	100
	7	1080,7	4	100
	8	1274,1	4	100
	9	147,5	4	100
	10	704,16	4	100
	13	510,7	4	100
Total		10552,88	N/A	1000

Table 5-1: Listed Activities

NAME OF ACTIVITY (E.g., For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route)	AERIAL EXTENT OF THE ACTIVITY Ha or m ²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORIZATION (Indicate whether an authorization is required in terms of the Waste Management Act). (Mark with an X)
Drill site	10m x 10m Drill Sites 1 Drill site= 100 m ² Total Drill Site Area= 1 000 m ²	X	GNR 983 (as amended 07 April 2017) Listed Activity 20	X
Rehabilitation and Closure	1 000 m ²	X	GNR 983 (as amended 07 April 2017) Listed Activity 22	X
Road development	Total Length: 10 552.9 m Width 4 m	N/A	GNR 983 (as amended 07 April 2017) Listed Activity 24	N/A
Vegetation clearance	Drill site: 1000 m ² Roads (linear activity) 4.2 ha	N/A	GNR 983 (as amended 07 April 2017)	N/A



NAME OF ACTIVITY (E.g., For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route)	AERIAL EXTENT OF THE ACTIVITY Ha or m²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORIZATION (Indicate whether an authorization is required in terms of the Waste Management Act). (Mark with an X)
			Listed Activity 27	
Non-invasive activities	64 519.9097 Ha	N/A	N/A	N/A
Environmental Screening	64 519.9097 Ha	N/A	N/A	N/A
Ablutions - Chemical Toilets	5 m ²	N/A	N/A	N/A
Temporary Waste storage	1 m ²	N/A	N/A	N/A

6 POLICY AND LEGISLATIVE CONTEXT

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
(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);		(E.g., In terms of the National Water Act a Water Use License has/ has not been applied for)
<p>The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)</p> <p>Section 2 of the Constitution states that: “This Constitution is the supreme law of the Republic; law or conduct inconsistent with it is invalid, and the obligations imposed by it must be fulfilled.” Section 24 of the CA, states that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:</p> <ul style="list-style-type: none"> • prevent pollution and ecological degradation; • promote conservation; and • secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. <p>Section 24 guarantees the protection of the environment through reasonable legislative (and other measures) and such legislation is continuously in the process of being promulgated. Section 33(1) concerns administrative justice which includes the constitutional right to administrative action that is lawful, reasonable and procedurally fair.</p>	<p>The BAR and EMPr was accordingly prepared and considered within the constitutional framework set by Section 24 and 33 of the Constitution.</p>	<p>The prospecting application has been submitted in terms of the NEMA</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context																																	
<p>The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the Environmental Assessment Regulations, 2014 (as amended)</p> <p>The overarching principle of the NEMA is sustainable development. It defines sustainability as meaning the integration of social, economic and environmental factors into planning, implementation and decision making so as to ensure the development serves present and future generations.</p> <p>Section 2 of NEMA provides for National Environmental Management Principles. These principles include:</p> <ul style="list-style-type: none">• Environmental management must place people and their needs at the forefront of its concern.• Development must be socially, environmentally and economically sustainable.• Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated.• Environmental justice must be pursued.• Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued.• Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.• The participation of all Interested and Affected Parties (I&APs) in environmental governance must be promoted.	<p>The BAR and EMPr will be distributed for public review for periods stipulated in NEMA as part of the environmental impact assessment process. The document was also compiled to ensure compliance with the requirements as per the EIA regulations.</p> <p>Refer to No Environmental Impacts are foreseen on the following farms as NO invasive activities will take place on them only non-invasive assessments: Zelikatskop 16-JP, Knapdaar 26-JP, , Schoonlaagte 935-KP, Nooitgedacht 938-KP, Farm 6 939-KP, Leeuwkopje 952-KP, Driekop 14-JP, Magdalenas Kuil 37-JP, , Doornlaagte 51-JP, Medfordt Park 52-JP, Vriendschap 53-JP, Koedoespoort 64-JP and Koedoespoort 68-JP.</p> <p>Invasive prospecting (Drilling) will take place on the following farms Roodekopjesfontein 15-JP Roodekopjes, Farm 10 902-JP, Kuilenburg 39-JP, Giglio 42-JP the following areas are applicable to each property:</p> <table><tr><th>Farm</th><th>Borehole number</th><th>Road length (m)</th><th>Road Width (m)</th><th>Borehole area (m2)</th></tr><tr><td>39 JP</td><td>12</td><td>111,88</td><td>4</td><td>100</td></tr><tr><td>42 JP</td><td>11</td><td>5570,5</td><td>4</td><td>100</td></tr><tr><td rowspan="2">902 JP</td><td>4</td><td>754,5</td><td>4</td><td>100</td></tr><tr><td>5</td><td>110,14</td><td>4</td><td>100</td></tr><tr><td rowspan="2">15 JP</td><td>6</td><td>288,7</td><td>4</td><td>100</td></tr><tr><td>7</td><td>1080,7</td><td>4</td><td>100</td></tr></table>	Farm	Borehole number	Road length (m)	Road Width (m)	Borehole area (m2)	39 JP	12	111,88	4	100	42 JP	11	5570,5	4	100	902 JP	4	754,5	4	100	5	110,14	4	100	15 JP	6	288,7	4	100	7	1080,7	4	100	<p>According to the EIA Regulations (GNR 982, 2014 as amended) the following will be submitted in support of the application for Environmental Authorisation: BAR / EMP (this document) together with the results of consultation with Interested and Affected Parties (IAPs) and State Departments, which must be submitted to the DMRE</p>
Farm	Borehole number	Road length (m)	Road Width (m)	Borehole area (m2)																															
39 JP	12	111,88	4	100																															
42 JP	11	5570,5	4	100																															
902 JP	4	754,5	4	100																															
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	7	1080,7	4	100																															



Applicable legislation and guidelines used to compile the report	Reference where applied					How does this development comply with and respond to the legislation and policy context
<ul style="list-style-type: none">Decisions must take into account the interests, needs and values of all I&APs. The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment. <p>The EIA process to be undertaken in respect of the authorization process of the proposed mining operations is in compliance with the MPRDA, as well as the NEMA read with the Environmental Impact Assessment Regulations of 2014 (as amended). The proposed development involves 'listed activities', as identified in terms of the NEMA and in terms of section 24(1), the potential consequences for or impacts on the environment of listed activities must be considered, investigated, assessed and reported on to the Minister of Mineral Resources or to the relevant office of the Department responsible for mineral resources, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of the NEMA.</p>		8	1274,1	4	100	within 90 days of the acceptance of the NEMA application.
		9	147,5	4	100	
		10	704,16	4	100	
		13	510,7	4	100	
		Total	10552,88	N/A	1000	
Table 5-1 of the BAR for the listed activities applicable to the proposed project.						



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>GNR 1147 (20 November 2015) of the NEMA - Financial Provisioning Regulations</p> <p>In accordance with the above legislation, the holder of a mining right must make the prescribed financial provision for the costs associated with the undertaking of the management, rehabilitation and remediation of the negative environmental impacts due to prospecting, exploration and mining activities and the latent or residual environmental impacts that may become known in future.</p>	<p>The Final Rehabilitation, Decommissioning and Mine Closure plan will be compiled in accordance with GNR 1147.</p>	<p>Section 9 of this report (Part A) details the calculated financial liability the Salene Manganese (Pty) Ltd must provide for the rehabilitation of the area that is going to be disturbed.</p>
<p>Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)</p> <p>Previously South African mineral rights were owned either by the State or the private sector. This dual ownership system represented an entry barrier to potential new investors. The current Government's objective is for all mineral rights to be vested in the State, with due regard to constitutional ownership rights and security of tenure. The MPRDA was passed in order to make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources, and to provide for matters connected therewith. The Preamble to the MPRDA inter alia affirms the State's obligation to:</p>	<p>An integrated application in terms of the MPRDA and NEMA is being undertaken. The NEMA process for the proposed project is described below.</p>	<p>An application for a Prospecting Right was submitted to the DMRE for which an acceptance letter was issued on 21 October 2021.</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<ul style="list-style-type: none">• protect the environment for the benefit of present and future generations;• ensure ecologically sustainable development of mineral and petroleum resources; and• promote economic and social development. <p>The aforesaid preamble affirms the general right to an environment provided for in section 24 of the Constitution (as set out hereinabove).</p> <p>The objects of the MPRDA, as set out in section 2 thereof serve as a guide to the interpretation of the Act.</p> <p>The objects of the MPRDA are as follows:</p> <ul style="list-style-type: none">• recognise the internationally accepted right of the State to exercise sovereignty over all the mineral and petroleum resources within the Republic;• give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources;• promote equitable access to the nation's mineral and petroleum resources to all the people of South Africa;• substantially and meaningfully expand opportunities for historically disadvantaged persons, including women, to enter the mineral and petroleum industries and to benefit from the exploitation of the nation's mineral and petroleum resources;• promote economic growth and mineral and petroleum resources development in the Republic;		



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<ul style="list-style-type: none">• promote employment and advance the social and economic welfare of all South Africans;• provide for security of tenure in respect of prospecting, exploration, mining and production operations;• give effect to section 24 of the Constitution by ensuring that the nation's mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development; and• ensure that holders of mining and production rights contribute towards the socio-economic development of the areas in which they are operating. <p>The national environmental management principles provided for in section 2 of the NEMA apply to all prospecting and mining operations and any matter relating to such operation. These principles apply throughout the Republic to the actions of all organs of state including inter alia the Department of Mineral Resources that may significantly affect the environment.</p> <p>Any prospecting or mining operation must be conducted in accordance with generally accepted principles of sustainable development by integrating social, economic and environmental factors into the planning and implementation of prospecting and mining projects in order to ensure that exploitation of mineral resources serves present and future generations.</p> <p>Section 38 of the MPRDA states that the holder of inter alia, a prospecting right, mining right or mining permit:</p>		



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<ul style="list-style-type: none">• Must at all times give effect to the general objectives of integrated environmental management laid down in Chapter 5 of NEMA;• Must consider, investigate, assess and communicate the impact of his or her prospecting or mining on the environment as contemplated in section 24(7) of NEMA;• Must manage all environmental impacts –<ul style="list-style-type: none">○ In accordance with an environmental management plan or approved environmental management programme, where appropriate, and○ As an integral part of the prospecting or mining operations, unless the Minister directs otherwise.• Must as far as reasonably practicable, rehabilitate the environment affected by the prospecting or mining operations to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and• Is responsible for any environmental damage, pollution or ecological degradation as a result of prospecting or mining operations and which may occur inside and outside the boundaries of the area to which such right, permit or permission relates.		
National Water Act, 1998 (Act No. 36 of 1998 (NWA)) In terms of the NWA, the National Government, acting through the Minister of Water Affairs, is the public trustee of South Africa's water resources, and must ensure that water is protected, used, development, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons (section 3(1)).	Refer to Section 10.6 where the baseline water resource of the project area is characterised.	10 boreholes will be drilled. The areas of direct influence is located more than 100 m from a



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>In terms of the NWA a person may only use water without a license under certain circumstances. All other use, provided that such use qualifies as a use listed in section 21 of the Act, require a water use license. A person may only use water without a license if such water use is permissible under Schedule 1 (generally domestic type use) if that water use constitutes a continuation of an existing lawful water use (water uses being undertaken prior to the commencement of the NWA, generally in terms of the Water Act of 1956), or if that water use is permissible in terms of a general authorisation issued under section 39 (general authorisations allow for the use of certain section 21 uses provided that the criteria and thresholds described in the general authorisation is met). Permissible water use furthermore includes water use authorised by a license issued in terms of the NWA.</p> <p>Section 21 of the NWA indicates that “water use” includes:</p> <ul style="list-style-type: none">• taking water from a water resource (section 21(a));• storing water (section 21(b));• impeding or diverting the flow of water in a water course (section 21(c));• engaging in a stream flow reduction activity contemplated in section 36 (section 21(d));• engaging in a controlled activity which has either been declared as such or is identified in section 37(1) (section 21(e));• discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit (section 21(f));• disposing of waste in a manner which may detrimentally impact on a water resource (section 21(g));		<p>watercourse and more than 500 m from a delineated wetland, thus no listed activities in terms of the NWA are triggered by the proposed project. The appointed contractor will be responsible for providing any water requirements they may need.</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<ul style="list-style-type: none">• disposing in any manner of water which contains waste from, or which has heated in, any industrial or power generation process (section 21 (h));• altering the bed, banks, course or characteristics of a water course (section 21(i));• removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people (section 21(j)); and• using water for recreational purposes (section 21(k)). <p>In addition to the above and in terms of section 26 of the NWA, Regulations on the Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources were published in GN R. 704 of 4 June 1999 (GN R. 704). The aforesaid GN R. 704 provides for inter alia the capacity requirements of clean and dirty water systems (Regulation 6), the protection of water resources by a person in control of a mine (Regulation 7), security and addition measures (Regulation 8) and temporary or permanent cessation of a mine or activity (Regulation 9).</p> <p>According to GN R. 704 “no person in charge of a mine may carry on any underground or opencast mining, prospecting or any other operation or activity under or within the 1:50 year flood-line or within a horizontal distance of 100 metres from any watercourse or estuary, whichever is the greatest”. Insofar as the undertaking of section 21 water uses is concerned, it is anticipated that application for registration and water use licensing will be undertaken.</p>		
National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)	Refer to Section 10.9.	Sites, features or material of



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>The NHRA established the South African Heritage Resources Agency (SAHRA) as well as Provincial Heritage Resources Agencies. In terms of the NHRA, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.</p> <p>No person may damage, disfigure, alter, subdivide or in any other way develop any part of a protected area unless, at least 60 days prior to the initiation of such changes, he/she/it has consulted with the relevant heritage resources authority. Section 34 of the NHRA provides for the protection of immovable property by providing for a prohibition on altering or demolishing any structure or part of any structure, which is older than 60 years, without a permit issued by the relevant provincial heritage resources authority. Accordingly, should the proposed activities, prospecting or mining activities or the closure and rehabilitation of mined land involve the altering or demolishing of any structure or part of any structure, which is older than 60 years, a permit issued by the relevant provincial heritage resources authority is required.</p> <p>No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite; destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite; trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or bring onto or use at an archaeological or palaeontological site any excavation</p>		<p>archaeological and/or historical origin or significance would be located in the study & Prospecting Rights Application areas. This could include open-air surface scatter of Stone Age tools as well as Late Iron Age stone-walled settlement sites and recent historical sites, structures and features related to farming in the area. Both</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.</p> <p>No person may, without a permit issued by SAHRA or a provincial heritage resources authority destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves; destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or bring onto or use at the burial ground or grave referred to above any excavation equipment or any equipment which assists in the detection or recovery of metals.</p> <p>Section 38 of the NHRA states that any person who intends to undertake developments categorised in Section 38 of the NHRA must at the very earliest stages of initiating such development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. By way of example, the developments referred to in Section 38 of the NHRA include:</p> <ul style="list-style-type: none">• the Site Establishment of a road, wall, power-line, pipeline, canal or other similar form of linear development or barrier exceeding 300 metres in length;• the Site Establishment of a bridge or similar structure exceeding 50 metres in length;• any development or other activity which will change the character of a site as specified in the regulations;		<p>formal and informal cemeteries, individual graves and previously unknown & unmarked graves could also be present</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<ul style="list-style-type: none"> any other category of development provided for in regulations by SAHRA or the provincial heritage resources authority. <p>However, the abovementioned provisions are subject to the exclusion that section 38 does not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act No. 73 of 1989 (EIA) (now presumably the NEMA in view of the repeal of the listed activities under the ECA: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.</p>		
<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA)</p> <p>The NEMBA aims to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.</p> <p>The NEMBA provides for the publishing of various lists of species and ecosystems by the Minister of Environmental Affairs and Tourism (now the Minister of Water and Environmental Affairs) as well as by a Member of the Executive Council responsible for the conservation of biodiversity of a province</p>	<p>The legislation was considered throughout the EIA process and in particular the Ecological Impact Assessment which will comply with the NEMBA.</p>	<p>National Species of Conservation Concern (SCC) include mammalian and avifaunal species which are known to occur in the regional area where the project is proposed.</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>in relation to which certain activities may not be undertaken without a permit. In terms of Section 57 of the NEMBA, no person may carry out any restricted activity involving any species which has been identified by the Minister as “critically endangered species”, “endangered species”, “vulnerable species” or “protected species” without a permit. The NEMBA defines “restricted activity” in relation to such identified species so as to include, but not limited to, “hunting, catching, capturing, killing, gathering, collecting, plucking, picking parts of, cutting, chopping off, uprooting, damaging, destroying, having in possession, exercising physical control over, moving or translocating”.</p> <p>The Minister has made regulations in terms of section 97 of the NEMBA with regards to Threatened and Protected Species which came into effect on 1 June 2007. Furthermore, the Minister published lists of critically endangered, endangered, vulnerable and protected species in terms of section 56(1) of the NEMBA.</p>		<p>Provincially protected species could also be expected to occur in the region.</p> <p>The project area is located on three vegetation types and is listed as Least Concern by the 2018 National Biodiversity Assessment.</p>
<p>National Forestry Act, 1998 (Act No. 84 of 1998)</p> <p>The purpose of this Act is to promote the sustainable management of forests. Everyone has the constitutional right to have the environment protected for the benefit of present and future generations; * natural forests and woodlands form an important part of that environment and need to be conserved and developed according to the principles of sustainable management; * plantation forests play an important role in the economy; * plantation forests have an impact on the environment and need to be managed appropriately; * the State's role in forestry needs to change; and * the economic, social and environmental benefits of forests have been distributed unfairly in the past.</p>	<p>The legislation was considered throughout the EIA process.</p>	<p>No forests will be impacted by the proposed prospecting activities.</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEMAQA)</p> <p>The NEMAQA came into power on the 24th of February 2005. Additionally, the amendment to the Minimum Emission Standards (GN R 893) also came into effect on the 12 June 2015. This Notice provides a list of activities that may cause atmospheric emissions which have or may have a significant detrimental effect on the environment as well as the minimum emission standards ("MES") for these activities as contemplated in section 21 of NEMAQA.</p> <p>The effect of the commencement of the NEMAQA and the listed activities, listed in GN 964 is that an atmospheric emission licence (AEL) is now required for conducting these listed activities.</p>	<p>There are no listed activities that require registration/permitting according to NEMAQA for the proposed prospecting activities.</p>	<p>No listed activities in terms of the NEMAQA are triggered by the proposed project. Therefore, no AEL is required.</p> <p>Activities associated with the proposed project are unlikely to result in exceedances of the air quality standards</p>
<p>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA)</p> <p>The NEMWA commenced on 1 July 2009 and as a result of its commencement the relevant provisions in the Environment Conservation Act No. 73 of 1989 (ECA) in respect of waste management, were repealed. The NEMWA sets out</p>	<p>There are no listed activities that require registration/permitting according to NEMWA for the proposed prospecting activities</p>	<p>No Listed activities in terms of NEMWA are triggered by</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>to reform the law regulating waste management and deals with waste management and control more comprehensively than was dealt with in the ECA. It also introduces new and distinct concepts never before canvassed within the realm of waste management in South Africa, such as the concept of contaminated land and extended producer responsibility. It also provides for more elaborate definitions to assist in the interpretation of the Act.</p> <p>Section 19 of the NEMWA provides for listed waste management activities and states in terms of section 19(1), the Minister may publish a list of waste management activities that have, or are likely to have a detrimental effect on the environment. Such a list was published in GNR 921 of 29 November 2013.</p> <p>In accordance with section 19(3), the Schedule to GNR 921 provides that a waste management licence is required for those activities listed therein prior to the commencement, undertaking or conducting of same. In addition, GNR 921 differentiates between Category A, B, and Category C waste management activities. Category A waste management activities are those which require the conducting of a basic assessment process as stipulated in the EIA Regulations, 2014 promulgated in terms of the NEMA as part of the waste management licence application and Category B waste management activities are those that require the conducting of a scoping and environmental impact assessment process stipulated in the EIA Regulations, 2014 as part of the waste management licence application. Category C waste management activities do not require a waste management licence, however a person who wished to commence, undertake or conduct a waste management activity listed under this category, must comply with the relevant requirements and standards,</p>		<p>the proposed project. Therefore, no Waste Management Licence (WML) is required.</p> <p>Activities associated with the proposed project are unlikely to result in exceedances in the thresholds for waste storage.</p> <p>It is however noted that any minimal waste produced on site should be transferred to</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>Section 20 of the NEMWA pertains to the consequences of listing waste management activities and states that no person may commence, undertake or conduct a waste management activity, except in accordance with the requirements or standards for that activity as determined by the Minister or in accordance with a waste management licence issued in respect of that activity, if a licence is required.</p> <p>In terms of the current statutory framework with regards to waste management, a waste management licence is required for those waste management activities identified in the Schedule to GNR 921. Certain of the waste management activities listed in the Schedule are governed by specific thresholds. Where any process or activity falls below or outside the thresholds stipulated, a waste management licence is not required.</p>		<p>the nearest licensed waste disposal facility.</p> <p>The applicant should take note of the requirements as published in terms of the Norms and Standards.</p>
Provincial and Local Plans		
<p>The North-West Biodiversity Management Act, 2016 (Act No. 4 of 2016) (NWBMA)</p> <p>The North West Biodiversity Management Act was published on 03 January 2017 but has not come into force to date (Centre for Environmental Rights, 2017). The purpose of the NWBMA is to provide for:</p> <ul style="list-style-type: none"> • The management and conservation of the North West Province's biophysical environment and protected areas within the framework of the NEMA; • The protection species and ecological systems that warrant provincial protection; and • The sustainable use of indigenous biological resources. 	<p>Section 0 and 10.5 refer to the relevant requirements in relation to the NWBMA.</p>	<p>All three vegetation types occurring on the project area are not listed in the "National List of Ecosystems that are Threatened and need of</p>



Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
<p>The following sections are of importance:</p> <ul style="list-style-type: none">• Schedule 2: Specially Protected Species;• Schedule 3: List of ordinary species;• Schedule 4: List of ordinary species to be hunted with landowner's written consent. <p>This Act must be interpreted and applied in accordance with the national environmental management principles set out in Section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).</p>		protection", and as Least Concern by the 2018 National Biodiversity Assessment.
<p>North West Biodiversity Sector Plan (NWBSP)</p> <p>The purpose of a Biodiversity Sector Plan is to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.</p> <p>The NWBSP comprises two spatial components: maps of critical biodiversity areas (CBAs); and a set of land-use guidelines that are important for maintaining and supporting the inherent biodiversity values of these critical biodiversity areas.</p>	Section 0 refer to the relevant requirements in relation to the Sector Plan.	The study area contains the following classes from the NWBSP: CBA2, ESA1, and ESA2.



7 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).

As an industrial age society, we make use of various metals or materials constructed from metals. The prospecting programme is needed to determine if the minerals below is available for exploitation as new resources are needed to replace areas where mining may have been finalised or to meet an increasing demand. Potential uses of the minerals included in the prospecting application is outlined below.

Table 7-1: Uses of the minerals applied for

Metal	Potential uses
Nickel (Ni)	Nickel has the capacity to resist erosion and thus is used in the production of coins (money), wires, gas turbines, rocket engines, and alloys used for armour plating, nails and pipes. In combination with copper (Monel alloys) it is resistant to sweater corrosion and thus is used in propeller shafts of boats and desalination plants. ¹
Silver (Ag)	A very good conductor of electricity and heat it is used in the manufacturing of solar panels, photography and electronic devices, thermal or infrared coatings and air conditioners. It is also used as currency in some countries and for jewellery and silverware. Other applications are uses as antibiotic coatings on medical devices and in purifier in water filers ² .
Copper (Cu)	Used in the creation of various alloys such as bronze. Other uses are: agricultural poison, algicide in water purification and in a number of goods such as coins, cans, cooking foil, saucepans, electricity cables, planes, and space vehicles ³ .
Gold (Au)	A well-known precious metal not only is it used in jewellery but also in glass to reflect heat / sun rays, thin threads for embroidery, electronic items and its radioactive isotope Au-198 is used in the treatment of tumours ⁴ .
Cobalt (Co)	Cobalt is a component of various alloys that are used in the manufacture of aircraft engines, gas turbines, high speed steels. It is also used in magnets and magnetic recording devices, a catalyst in the petroleum and chemical industries and as a drying agent in paints and ink. The radioactive isotope Co-60 is used in medical treatment and to irradiate food for preservation and consumer protection ⁵ .
Platinum Group Metals (PGM)	PGM's includes the metals platinum, palladium, rhodium, iridium, osmium, and ruthenium ⁶ . Known for their purity, high melting points, catalytic / oxidation and reduction properties and corrosion resistance, PGMs are utilized in various industrial processes, technologies and commercial applications. Consumer and industrial products include flat panel monitors, glass fibre, medical tools, computer hard drives, nylon and razors. Platinum, palladium and rhodium are also used as autocatalysis and pollution control in the automotive sector.
Chrome (Cr)	Chromium is used in electroplating (e.g., shiny caps on motor vehicles), alloys (e.g., stainless steel and some aluminium alloys) and in paints and dyes ⁷ .
Rare Earth Elements (REE)	The REE group consists of yttrium and the 15 lanthanide elements (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium) ⁸ . They are used as components in high technology devices such as smart phones, digital cameras, computer hard disks, fluorescent and light-emitting-diode (LED) lights, flat screen televisions, computer monitors, and electronic displays. Some REE's are also used in clean energy

¹ <https://byjus.com/chemistry/nickel/> 4 November 2021

² <https://byjus.com/chemistry/silver/> 4 November 2021

³ <https://byjus.com/chemistry/copper/> 4 November 2021

⁴ <https://byjus.com/chemistry/gold/> 4 November 2021

⁵ <https://byjus.com/chemistry/cobalt/> 4 November 2021

⁶ <https://www.platinumgroupmetals.net/pgm-markets/default.aspx> 4 November 2021

⁷ <https://byjus.com/chemistry/chromium/> 4 November 2021

⁸ <https://geology.com/articles/rare-earth-elements/> 4 November 2021



Metal	Potential uses
	and defence technologies. Depending on the element it is also used in lights, screens, and glass, as catalysts, in magnets, batteries and steel alloys. ⁹
Titanium (Ti)	Resistant to corrosion, titanium is used in desalination plants, titanium oxide is used in paints and as it is strong while being lightweight it is used in aircrafts ¹⁰ .
Barium (Ba)	Used for the manufacture of spark plug electrodes, vacuum tubes, florescent lamps and in the oil and gas industries to make drilling mud that lubricates the drill. In addition, it is also used to make paint, bricks, tiles glass, rubber and in fireworks ¹¹ .
Magnesite (Mg)	Medicinal uses of Magnesium include treatment of skin related problems, Attention Deficit - Hyperactivity disorder (ADHD), anxiety, mania, and recovery after surgery. It is also used in flashbulbs ¹² . Magnesite is used as a refractory metal, catalyst and a filter in the production of synthetic rubber as well as in the preparation of fertilisers ¹³ .

8 FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE.

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

The identification of alternatives is a key aspect of the success of the evaluation process. All reasonable and feasible alternatives was identified and screened to determine the most suitable alternative to consider and assess. There are however some significant constraints that have to be taken into account when identifying alternatives for a project of this scope. Such constraints include financial, environmental and social issues, which will be discussed in the evaluation of the alternatives.

Alternatives can typically be identified according to:

- Location alternatives;
- Process alternatives;
- Technological alternatives; and
- Activity alternatives (including the No-go option).

For any alternative to be considered feasible such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts.

Alternatives can also be distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and or basic assessment phases of the EIA process. Incremental alternatives typically arise during the EIA process and are usually suggested as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation measures and are not specifically identified as distinct alternatives. This section provides information on the development footprint alternatives, the properties considered, as well as the type of activity, activity layout, technological and operational aspects of the activity.

8.1 DETAILS OF THE ALTERNATIVES CONSIDERED

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

⁹ <https://www.americangeosciences.org/critical-issues/faq/how-do-we-use-rare-earth-elements> 4 November 2021

¹⁰ <https://byjus.com/chemistry/titanium/> 4 November 2021

¹¹ <https://byjus.com/chemistry/barium/> 4 November 2021

¹² <https://byjus.com/chemistry/magnesium/> 4 November 2021

¹³ <https://www.britannica.com/science/magnesite> 4 November 2021



8.1.1 Farms on which or location where it is proposed to undertake the activity.

The farms on which the proposed prospecting activities will be located are within various farms in the District of Zeerust, Groot Marico and Mankwe in the North West Province, see Section 2 and Figure 3-1 as outlined above.

The type of minerals to be prospected for: Nickel (Ni), Silver (Ag), Copper (Cu), Gold (Au), Cobalt (Co), Platinum Group Metals (PGM), Chrome (Cr), Rare Earth Elements (REE), Titanium (Ti), Barium (Ba), Magnesite (Mg).

8.1.2 Type of activity to be undertaken

Refer to Section 4 for a full description of proposed activities. Prospecting activities will follow a non-invasive as well as invasive methods. Drilling was decided on as it is more cost effective and will have less of an impact than bulk sampling activities will have. Trenching (mini-bulk sampling) will need for a bigger area of vegetation to be removed and will result in the establishment of topsoil, and other mine residue deposits and stockpiles such as overburden. This could be done in future in selected areas based on the outcome of the drilling programme and is thus not applicable at the moment.

8.1.3 Design or layout of the activity

10 boreholes were identified based on the original footprint area identified, after approval from the DMRE three of these fell outside the approved prospecting application area and three alternative locations (11, 12 and 13) were identified. Based on the information sourced during the surface water assessment some boreholes were found to be located within 100 m from a watercourse and 500 m from a wetland area, these were relocated to outside the regulated buffer areas: 4, 5, 6, 9, 10 and 11. During the public consultation process, the applicant became aware of a proposed solar project and borehole 11 was moved so as not to impact on this project. Please refer to Figure 3-3 for final proposed borehole locations.

8.1.4 Technology to be used in the activity

In all instances drilling would be:

- An independent and experienced drilling contractor will be used to complete the drilling in compliance with the Mine Health and Safety Act, 1996 (Act No. 29 of 1996).
- Under close supervision of an experienced geologist;
- Conducted along best practice guidelines; and minimize environmental disturbance

Samples will be submitted for analyses to an accredited off-site laboratory to determine the mineral content. Each sample will be logged and split and quartered where assaying is warranted:

- One quarter will be dispatched to the assay laboratory,
- One quarter kept for a permanent record, and
- The halves utilized for petrological studies or stored for future reference or metallurgical test work.

Samples for analysis will be bagged and numbered on site by the geologist and field assistant, and dispatched to the contracted laboratory.

8.1.5 Operational aspects of the activity.

A detailed activity plan was made available in the Prospecting Works Programme provided to Prescali and is summarised below:

Table 8-1: Prospecting Works Programme

Phase	Activity	Timeframe	Outcome
	<i>(what are the activities that are planned to achieve optimal prospecting)</i>	<i>(in months) for the activity)</i>	<i>(What is the expected deliverable, e.g. Geological report, analytical results, feasibility</i>
Phase 1	NON – INVASIVE + INVASIVE (3 year)		
	Desk-top study	6 months	Initial report - Summary of all past information & results
	Geological mapping	6 months	Geological map of area
	Progress Reports	2 months	Internal and regulatory progress reports, recommendations



Phase	Activity	Timeframe	Outcome
	Scout reconnaissance sample planning and contracting	1 year	Exact locations and orientations, sample tender evaluation and contracting
	Scout reconnaissance sampling	6 months	Logging, collar survey, sampling, data capture
	Sample preparation and analysis	6 months	Sample preparation (splitting) and analysis
	Sample interpretation and Reporting	2 months	Plans and sections, internal and regulatory progress reports, recommendations
Phase 2	INVASIVE PROSPECTING (1 year)		
	Resource drill planning and contracting	1 month	Exact locations and orientations, drill tender evaluation and contracting
	Resource drilling (new targets)	6 months	Drilling, logging, collar survey, sampling, data capture
	Drill sample preparation and analysis	3 months	Sample preparation (splitting) and analysis
	Drill interpretation and Reporting	1 month	Plans and sections, internal and regulatory progress reports, recommendations
Phase 3	NON-INVASIVE (1 year)		
	Data validation, geological modelling and resource estimate	3 months	Geological model and SAMREC compliant resource estimate
	Specialised studies	6 months	Mine plan, CHPP design, tailings disposal, infrastructure study, etc
	Valuation	1 month	Financial analysis, funding options
	Pre-feasibility Study Completion Report	1 month	Pre-feasibility report and resource statement

8.1.6 Option of not implementing the activity.

From the impact assessment it can be seen that the proposed activities and infrastructures will have a low to medium impact before mitigation and a low impact following mitigation. As very little activities have impacted on the area the cumulative impact would be similar to the exploration activities – no additional cumulative impact is expected.

Should the prospecting application not be successful the potential extend of a viable resource will not be established and this could impact on future employment opportunities in the area.

9 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

This section of the report provides an overview of the tasks undertaken for the Public Participation Process (PPP) to date. The PPP was conducted in terms of Chapter 6 of the NEMA and included the following:

- Identification of key Interested and Affected Parties (affected and adjacent landowners) and other stakeholders (organs of state and other parties);
- Placement of site notices on farms, and other accessible public areas;
- Formal notification of the application to key Interested and Affected Parties and other stakeholders;
- Consultation and correspondence with I&APs and Stakeholders and the addressing of their comments. This appendix will be included in the Final Basic Assessment; and
- Newspaper adverts.

The objectives of PPP include:

- Provides Interested and Affected parties (I&APs) with an opportunity to voice their support, concerns and raise questions regarding the project, application or decision;



- Provides an opportunity for I&APs, Environmental Assessment Practitioners (EAPs) and the Competent Authority (CA) to obtain clear, accurate and understandable information about the environmental, social and economic impacts of the proposed activity or implications of a decision;
- Provides I&APs with the opportunity of suggesting ways of reducing or mitigating negative impacts of an activity and for enhancing positive impacts; and
- Enables the applicant to incorporate the needs, preferences and values of affected parties into the application.

The PPP must comply with the several important sets of legislation that require public participation as part of an application for authorisation or approval; namely:

- The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002 - MPRDA); and
- The National Environmental Management Act, 1998 (Act No. 107 of 1998 - NEMA).

Adherence to the requirements of the above-mentioned Acts will allow for an Integrated PPP to be conducted, and in so doing, satisfy the requirement for public participation referenced in the Acts.

During the process, the following methods are used to develop a stakeholder database which will be utilised to ensure a proper representation of stakeholders interested in or affected by the proposed Project.

This included the following:

- Search works and desktop searches are conducted in and around the project area to verify land ownership and obtain contact details;
- Responses received from newspaper advertisements, public notices and site notices;
- Responses received from distribution of the Background Information Document (BID);
- Identification and consultation with stakeholders including commenting authorities (local and district municipalities);
- Organs of state, other than the competent authority, such as the Department of Agriculture, Forestry and Fisheries (DAFF) having jurisdiction in respect of any aspect of the proposed project and affected authorities; and
- Consultations with affected landowners.

The PPP commenced on 5 November 2021 with the placement of advertisements within the local newspapers and the registration period commenced on 5 November 2021 and will continue until 10 December 2021. The notifications includes:

- Newspaper advertisement: published in Noordwester and the Mahikeng Mail for the week of 5 November 2021;
- Site Notices were placed on 12, 15 and 16 November 2021 in and around the fences of the various farms; and
- Background information document: distributed to identified stakeholders, landowners and residence (where possible) on 12, 15 and 16 November 2021 and throughout the registration period.

Salene Manganese also initiated correspondence with the existing mineral right holders on the applicable properties as instructed by the DMRE. This process consisted of emails, faxes and posted notifications between 3 and 25 November 2021 to allow for sufficient time to receive comments for the submission to the DMRE on 3 December 2021 as instructed.

Consultation meetings will be held with registered I&APs. These meetings will follow the format of an open day or will be online to ensure that COVID-19 restrictions are adhered to.

All pre-identified and registered I&APs will be notified of the availability of the Basic Assessment Report for public view for a period of 30 days (20 January 2022 to 21 February 2022) within which the report can be reviewed and comments forwarded to the environmental consultant. Consultation sheets and a comments and issue register will be included in the final BAR as submitted to the DMRE.

Refer to Appendix 6 for details and photographic evidence pertaining to the public participation process to date.

9.1 MEETINGS

The following meetings has been held to date:

- Property owner Mr Andreini; 13 December 2021, please refer to Appendix 5.
- Public Meeting: 25 February 2022 at Tapologo Lodge, Zeerust.

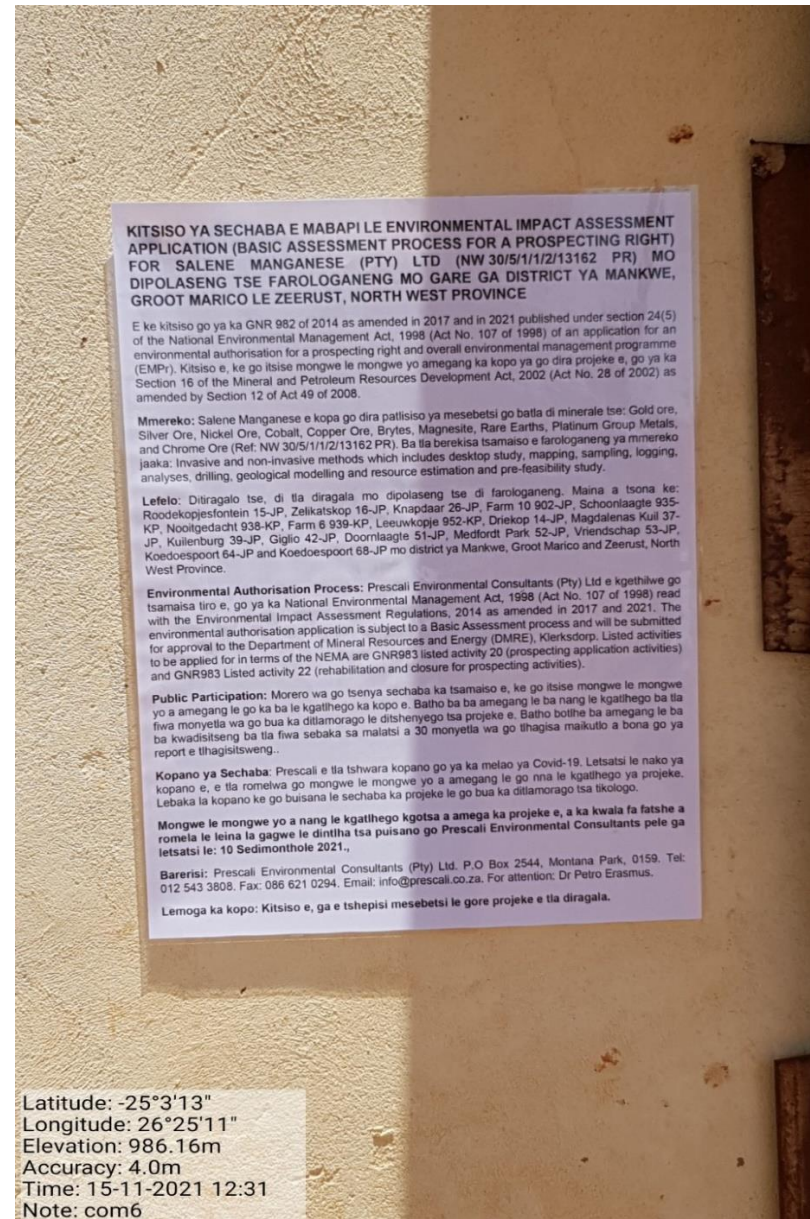
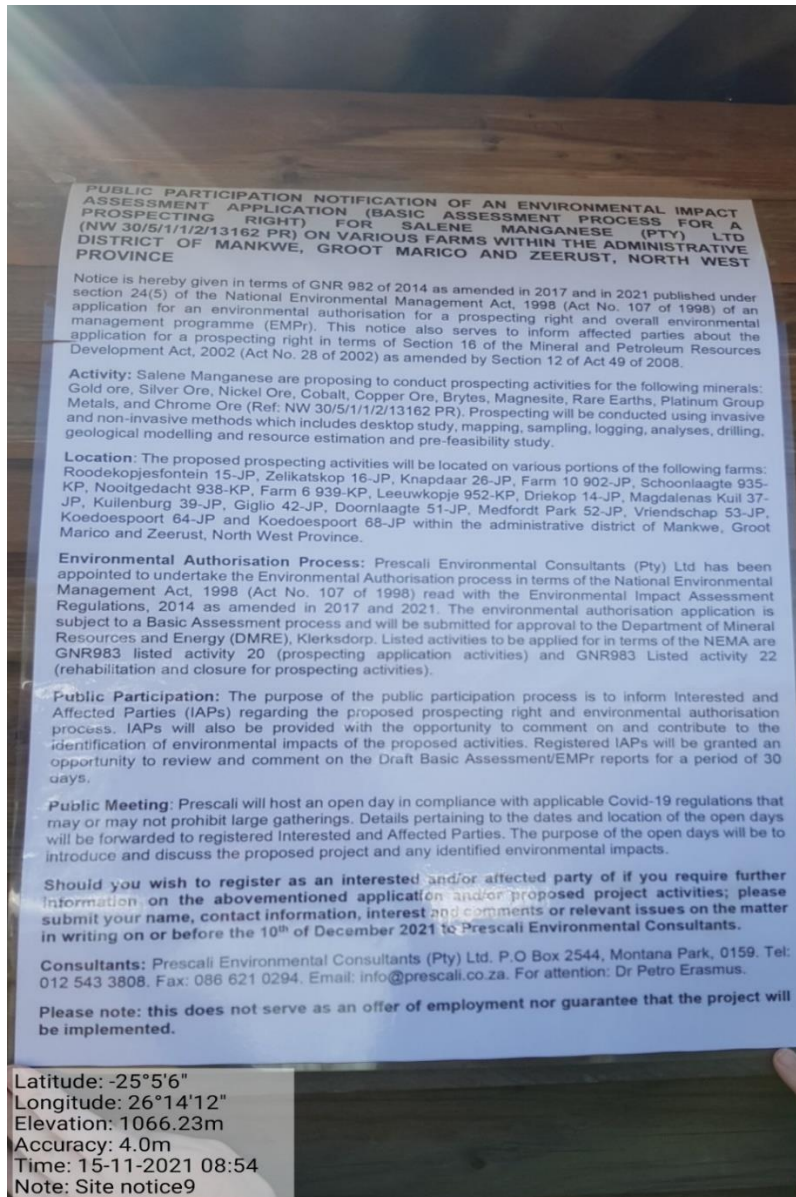


Figure 9-1: Examples of site notices placed around and in the vicinity of the project area (please refer to Appendix 5 for more photos)

9.2 SUMMARY OF ISSUES RAISED BY I&APS.

(Complete the table summarising comments and issues raised, and reaction to those responses)

Table 9-1: Summary of issues raised by I&APs

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
AFFECTED PARTIES					
Landowners	X				
P. J. Pretorius		12/12/2021	General discussion during BID handout and site notice placement. He does not have any objection to the proposed project.	The BID was provided and it was explained that the prospecting application was being applied for.	N/A
P. B. Makinita		16/12/2021	General discussion during BID handout and site notice placement. This person raised the concern on what impacts the prospecting activities will have on their properties and on the community.	The prospecting map was shown and he was assured that his property will be safe. It was also explained that the BID provided allows him to file his opinion about the prospecting application before the application process is completed.	N/A
Community Member		16/12/2021	General discussion during BID handout and site notice placement. Many concerns were raised: Firstly, he stated that he lost properties due to the expansion of mines, in which they drew up contracts that ensures compensation. However, according to the farmer, the agreed upon compensation was not received leading to thousands of rands in expenses on fighting legal battles. Secondly, he stated that he does not approve of the expansion from Salene mine in Zeerust. Unfortunately, he wanted to	The BID was provided and it was explained that the prospecting application was being applied for.	N/A

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			remain anonymous since he does not want to be associated with the project		
Lawful occupier/s of the land	X				
C. Pitout		10/12/2021	What is the prospecting method to be used?	Prospecting is to be conducted using invasive (10 exploration boreholes and sampling) and non-invasive methods which includes desktop studies, mapping, logging, analysing, geological modelling, a pre-feasibility study and resource estimation	N/A
C. Pitout		10/12/2021	Will grazing land be diminished and if so how much?	No grazing will be diminished.	N/A
C. Pitout		10/12/2021	Who should we contact if there are concerns that is to be raised during the prospecting?	You can contact Dr Petro Erasmus from Prescali Environmental Consultants on 012 543 3808 or info@prescali.co.za.	N/A
C. Pitout		10/12/2021	How will the project be done so that pollution of water resources is prevented?	The location of the boreholes has been placed to ensure that it is more than 100 m from a watercourse and more than 500 m from a delineated wetland using available desktop information.	N/A
C. Pitout		10/12/2021	Will there be a great influx of personnel, and vehicles on the farm and how will security be managed?	It is not expected that there will be a great influx of personnel or vehicles. The following is anticipated: <ul style="list-style-type: none"> · Moving of drill rig to location x 1 · Daily access to the drill rig. Agreements will be made with all property owners on which the proposed 10 boreholes are located. Only appointed contractors and their personnel will need access to the site thus security should not be impacted.	N/A
C. Pitout		10/12/2021	At which stage of the project development will parties be most affected (e.g.,	This is a prospecting right application. It is expected that parties will be affected during the drilling phase as	N/A

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			prospecting, extraction, decommissioning and rehabilitation at all stages)?	their properties are accessed. An agreement with all property owners will be in place.	
C. Pitout		10/12/2021	What precautions will be taken to prevent wildfires?	No open fires and wood collection will be allowed by the contractor and personnel. In addition, no activity will take place on site that could result in a potential fire hazard. Accommodation will be arranged for the contractor at a suitable location, potentially Zeerust.	N/A
C. Pitout		10/12/2021	Will they rehabilitate the land after prospecting and mining has been completed?	This application is for prospecting only and should it prove feasible then a separate mining right application will be applied for. Any impacts as a result of the proposed prospecting activities will be rehabilitated.	N/A
C. Pitout		10/12/2021	Who will be held accountable for any damages our client suffer as a result of prospecting and mining?	The applicant, Salene Manganese (Pty) Ltd will cover the cost of environmental damages suffered as a direct result of the prospecting activities. Agreements will be in place with surface right owners on which drilling activities will take place.	N/A
A. Andreini		10/12/2021	Do you work in specific areas?	We conduct work all over the country.	Refer to Appendix 2
A. Andreini		13/12/2021	Why are you concentrating the prospecting boreholes in the Medford Park area?	The original application area is a dead end as they already have mining rights. Historical information is available in that area and we want to expand the knowledge of what may or may not be there.	Refer to Section 4
A. Andreini		13/12/2021	So basically Salene is doing sightings right now?	Yes, from a cost perspective also that is the only way to do it because we are sitting with unknowns. This is a proper Greenfields project.	N/A

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
A. Andreini		13/12/2021	Are you aware of the 2 new mines on the same road going to the chrome mine?	I really don't know. I know that there might be a lot of illegal mining in that area as well.	N/A
A. Andreini		13/12/2021	I am attending as an affected party not as an interested party. Is there a possibility to become an interested party as far as the mine is concerned or not?	You are both. There is no restrictions on an interested or affected party.	N/A
A. Andreini		13/12/2021	Is it an opencast mine?	It is not an opencast mine but prospecting activities only.	Refer to Section 4
A. Andreini		13/12/2021	What is the depth of your borehole/core drilling?	Not exactly sure, but can be found out. We can confirm with the geologists and get back to you on this. However, it will be quite deep as its going through the chrome layers. It will be 200 m plus.	N/A
A. Andreini		13/12/2021	Will it be only 1 hole that you will be drilling on my property?	Yes, there is only 1.	Refer to Section 4
A. Andreini		13/12/2021	So are you flexible as to where you are going to drill?	Yes but not within 500 m from a watercourse or within 100 m from a watercourse.	Refer to Section 4
A. Andreini		13/12/2021	Is there no exact gps at the moment?	Locations were earmarked but can be moved.	Refer to Section 4
A. Andreini		13/12/2021	When they do the drilling, are we talking about sleepovers?	There will be no sleepovers on the farm. They will make arrangements for accommodation somewhere else.	N/A
A. Andreini		13/12/2021	How will the security work?	No access will be granted without the required criteria. There will be a surface base agreement with the owner.	N/A
A. Andreini		13/12/2021	Have desktop studies been done?	Yes, the desktop studies are very preliminary. Rio Tinto did a historical geology study and from the environmental side we have conducted and received 3 desktop	Refer to Appendix 6

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
				assessments that was done: Surface water, Ecology and Archaeological.	
A. Andreini		13/12/2021	Would a mine be interested in buying or leasing a property?	If the mine is opencast, a mine will usually buy the property but if it is an underground mine, it depends on the infrastructure but a mine would generally lease the property. For prospecting activities, the property will not be bought.	N/A
A. Andreini		13/12/2021	Would it be beneficial for a mine to have solar or would it be a conflict of interest?	It depends on where ESKOM is at that specific stage. Going forwards it will not make sense to ask ESKOM as ESKOM is trying to move to renewable energy. In future, solar companies can go via ESKOM. For any mine it would be beneficial to make use of solar power for their operations as it will ensure supply.	N/A
Landowners or lawful occupiers on adjacent properties	X		None thus far		
Municipal councillor	X		None thus far		
Dingaan Abislon Seakentoa		25/02/2022	When you do your prospecting on Doornlaagte JP 51, will you need the title deed?	No, when applying for a prospecting right we usually refer to the SG codes. That is usually done via the prospecting applicant. For a Water use license application, we need the Title deeds. Currently we only have the information page available from Windeed for the properties as there is problems with obtaining full title deeds for areas that was part of Bophuthatswana.	N/A
Dingaan Abislon Seakentoa		25/02/2022	In Doornlaagte, is this the first prospecting application?	This is the first for Salene Manganese.	N/A
Dingaan Abislon Seakentoa		25/02/2022	Please ensure that the prospecting area is separated from the livestock.	Depending on the property owner, it will be discussed. The prospecting area (about 10 x 10 m) may be	N/A

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
				fenced off to protect livestock if the owner agrees. .	
Dingaan Abislon Seakentoa		25/02/2022	How many meters will the drilling be? Drilling done in Doornlaagte was done up to around 85 / 86 meters.	As far as I'm aware they are looking at about 100 m.	N/A
Dingaan Abislon Seakentoa		25/02/2022	When will you be able to meet me on site?	Please let me know when would be a suitable date and I will arrange with Mr Neels Hoek and confirm with you to meet on site.	N/A
Dingaan Abislon Seakentoa		25/02/2022	Do you know about Marico mine, because apparently, they also doing mining that side?	Yes, I have been there, but I am not sure if the mine is operational or under care & maintenance.	N/A
Municipality	X		None thus far		
K.E. Matlala		22/02/2022	There was no advert in the local Newspaper (Zeerust News) about the proposed prospecting activities	Newspaper advertisements was placed in the Noordwester (distributed to Lichtenburg, Baberspan, Biesiesvlei, Buhrmansdrift, Coligny, Delareyville, Groot-Marico, Gerdau, Itsoseng, Koster, Mafikeng, Ottosdal, Ottoshoop, Sannieshof, Slurry, Vermaas, Zeerust.) and the Mahikeng Mail (Distributed to: Buhrmansdrift, Groot Marico, Itsoseng, Lichtenburg, Mafikeng, Mmabatho, Rooigrond, Rustenburg, Mogwase, Phokeng, Saulspoort, Tlhabane, Slurry, Swartruggens, Zeerust.)	Appendix 5
K.E. Matlala		22/02/2022	It is stated that the General Waste will be transported to the nearest landfill site and it is a concern that landfill site in Zeerust is not licenced and more clarity is required as to which landfill site will be used.	The appointed drill contractor will be made aware of this fact and will be contractually responsible for ensure that general waste is disposed off in accordance with the NEMWA. It is not expected that large quantities of general waste will be generated as a result of the drilling activities.	Part A Section 11

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
K.E. Matlala		22/02/2022	Authorization to enter the land on which the activities will be taking place should also be given to the inspectors from the Ngaka Modiri Molema DM so that continuous monitoring can take place to ensure that all practises are documented as it was raised as a security concern by one of the landowners.	In terms of the NEMA Environmental Management Inspectors are persons designated as such in terms of section 31 of the NEMA. From S31 of NEMA EMI's are authorised to enter sites and conduct inspections and should be granted access if so required.	N/A
Mr Wiseman Mmutlane		25/02/2022	Please can you assist the community with this mining project, provide jobs and build schools for them?	Such activities form part of the Social and labour plan and is agreed with between the applicant, the Municipality and the DMRE. AS this is a prospecting application such projects will be limited as compared to a Mining right / mining licence application.	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc.)			None thus far		
Communities	X				
G. C. Mokone		15/12/2021	General discussion during BID handout and site notice placement. The shop owner asked about the project, and he mentioned that he doesn't know of the mine,	The BID was provided and it was explained that the prospecting application was explained.	N/A
M.M. Dinake		15/12/2021	General discussion during BID handout and site notice placement. He wanted to know about the project, the mine, and her concern was job creation.	The BID was provided and it was explained that as consultants we do not have any influence on the authorisation of the project and that a public meeting will be held and all issues will be discussed there.	N/A
L. Khutlelang		16/12/2021	The family asked about the mine, where its located and general questions regarding	The BID was provided and it was explained and the prospecting application was being applied for.	N/A

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			the mine,(what happens at that mine, how will it affect them?). They also mentioned about the mines not benefiting the community.		
K. B. Menyatso		11/01/2022	His concern was, there are currently pending cases in high court that they are attending regarding the prospecting applications and mining activities and it involves the community. Therefore, he does not think the community will be interested in attending the meetings until those cases are resolved.	Noted and registered on database.	N/A
Ms Rosina Maoko		25/02/2022	Will this create job opportunities for the community?	Few job opportunities will be available during prospecting as borehole drilling does not need many employees. If someone from the community has a drilling rig, I recommend that they register with Salene Manganese as a service provider, alternative send me information to forward to Mr Hoek. When Salene Manganese goes on tender for the project then they can submit cost proposal to Salene Manganese.	N/A
Ms Rosina Maoko		25/02/2022	How will this project affect grazing?	The footprint is very small about 10 x 10 m, grazing will not be affected. When drilling, the prospecting area will be fenced off, provided if the owner of the property agrees.	Part A Section 5
Dept. Land Affairs			None thus far		
Traditional Leaders			None thus far		
Dept. Environmental Affairs			None thus far		

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Ms Portia Krisjan		18/02/2022	Regulation 11 states that though the application is dealt with as consolidated assessment process, the potential environmental impacts of the activity must be considered in terms of the location where the activity is to be undertaken.	No invasive activities will take place on 13 of the farms therefor no environmental impact as anticipated on these, only 4 farms will have invasive (drilling) activities. Roodekopjesfontein 15-JP, Farm 10 902-JP, Kuilenburg 39-JP, Giglio 42-JP: <ul style="list-style-type: none"> 1 borehole on Roodekopjesfontein 1 borehole on Giglio 2 boreholes on Farm 10 6 borehole on Kuilenburg. 	Part A Sections 5 and 12 Part A Table 12-2
Ms Portia Krisjan		18/02/2022	You are therefore advised to address the above statement (a) on all 17 farms, each farm must be individually assessed in terms of location and environmental impacts that may be caused by the project.		
Ms Portia Krisjan		18/02/2022	The exact magnitude of indigenous vegetation that will be cleared for the drilling of the ten boreholes and for each farm must be provided to determine whether other listed activities will be applicable.	39 JP: 547.5 m ² 42 JP: 22382 m ² 902 JP: 3658.56 m ² 16623.4 m ² Of the above: <ul style="list-style-type: none"> Drill sites: 1 000 m² Roads (linear activity): 4.2 Ha No additional activities triggered 	Part A Section 5
Ms Portia Krisjan		18/02/2022	Identified nature reserves on page 50 must be taken into account and be considered as interested and affected parties and thus they must be made aware of the proposed application to obtain their perspectives in its regard and supporting documents must be attached as proof.	An email was send to Madikwe Game reserve and feedback was still awaited during finalisation of this report. No contact details could be found for any of the other Private Nature Reserves. An email was send to Mr Bidiole North West Provincial Government contact for Hunters association of South Africa that potentially could assist. As yet no Feedback received.	Appendix 5
Ms Portia Krisjan		18/02/2022	Activity 22 of listing notice 1 is applied for, however the report does not make any	Due to the short nature of the prospecting right (5 years) application for closure of the drilling sites are	Part A Section 19 Part B Sections 4.1, 5, 6 and 9



Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			reference to that activity. You are therefore requested to provide information relating to aspects of this activity in the Basic Assessment Report	included in the application. Closure requirements are outlined in the required sections in Parts A and B as indicated.	
Other Competent Authorities affected			None thus far		
OTHER AFFECTED PARTIES					
O Tihapane		14/12/2021	Would like to be registered and kept informed of any future Scope of Work related to employment.	Noted and registered on database.	N/A



10 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES.

(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

10.1 CLIMATE

10.1.1 Regional Climate

Average temperatures in Zeerust¹⁴ vary between 4°C (minimum) in July to 31°C (maximum) in December / January. Rainfall is strongly seasonal, with most rainfall occurring as thunderstorms during the summer periods. Mean annual rainfall ranges from 400 to 800 mm, with the potential evaporation well in excess of the rainfall. Minimum, average and maximum temperatures are indicated in Figure 10-1.

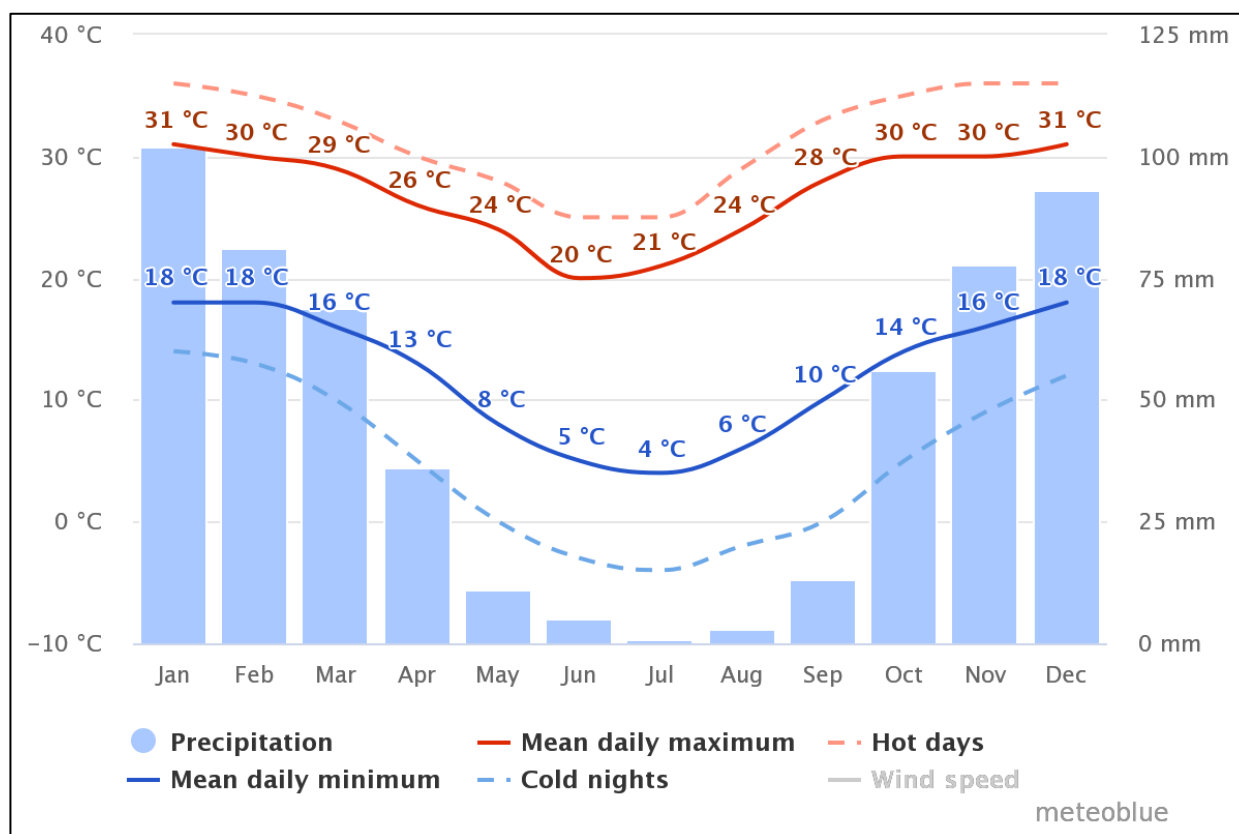


Figure 10-1: Temperature graph

10.1.2 Precipitation and Evaporation

Rainfall and evaporation data was sourced from the DWS and two locations near the proposed prospecting area were identified:

- A3E001 -Doornkraal: Data sourced from 1 October 1999 to 30 September 2019; and
- A3E004 – Lotteringskop: Data sources from 1October 2001 to 30 September 2021.

The majority of rain falls in the late summer months of December to March (Figure 10-3, Table 10-1), whilst the lowest rainfall records are recorded for the months of June, July and August. The mean monthly rainfall figures in mm for A3E001 and A3E004 are presented in Table 10-1. This is similar to the Mean Annual Precipitation as sources from WR2012 is indicated in Figure 10-2

¹⁴ https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/zeerust_republic-of-south-africa_937136 5 November 2021



Mean annual evaporation (A-pan) range between 2200 – 2600 mm per year, form the DWS information the S-pan was determined as 1959,1 and 1776,4 respectively and the A-pan as determined as 2102,5.

Table 10-1: Mean climatic rainfall conditions for the project area

Month	A3E001		A3E004		
	Rainfall	S-pan Evaporation	Rainfall	S-pan Evaporation	A-pan Evaporation
Total	445,2	1959,1	526	1776,4	2102,5
January	36,5	191,8	41,2	199,4	236
February	52,4	178,2	78,3	193,3	233,3
March	60,2	148,9	82,8	189,4	199,4
April	80,1	139,6	126,1	155,9	179,4
May	78,6	114,1	61,6	153,8	172,2
June	64,2	124,4	70,2	157,3	164,6
July	19,4	104,7	42,1	126,6	125
August	11,5	93,5	8,7	103,8	118
September	6,5	74,3	5,9	85,5	108,4
October	1,3	94,1	1,8	92	109,9
November	3,7	116,4	1,7	124,4	149,1
December	6,3	168,5	5,6	160,6	203

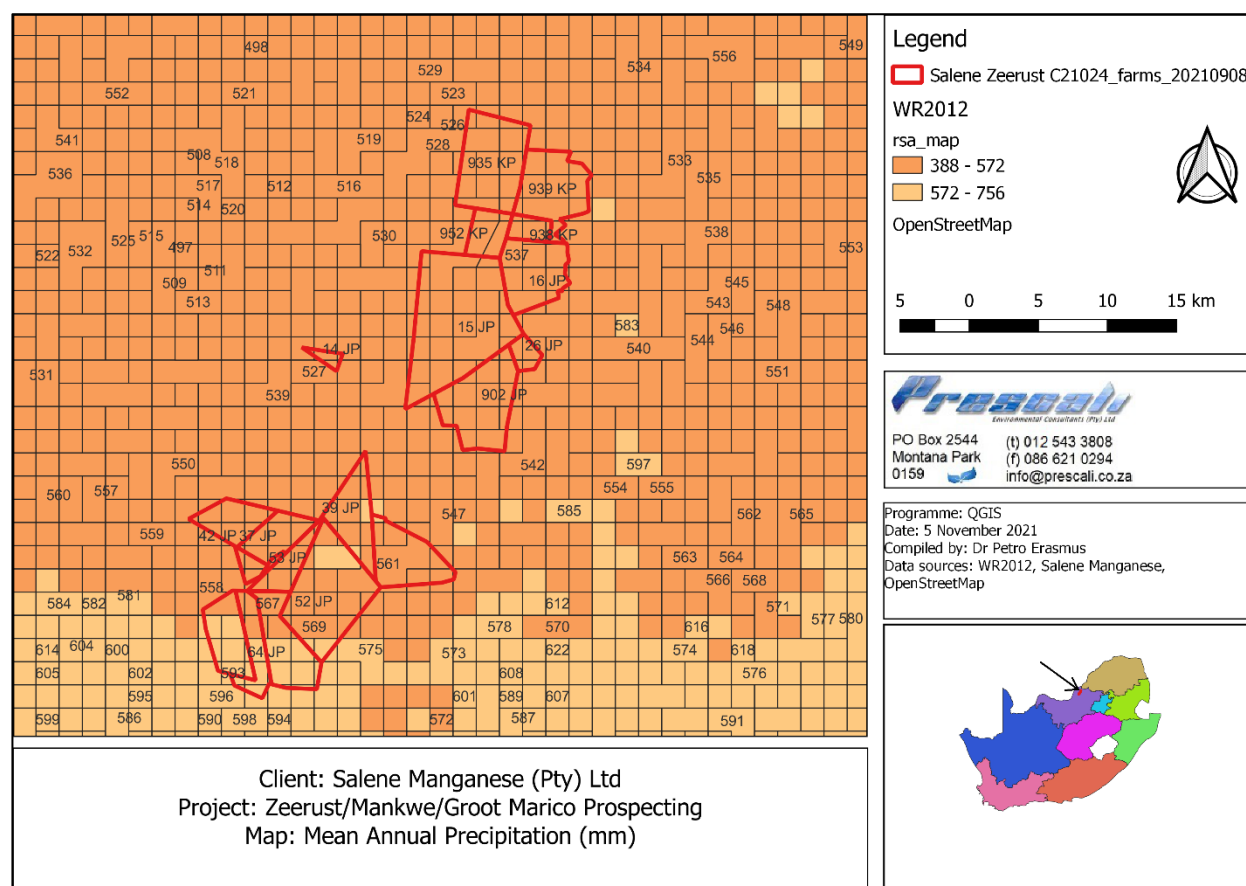


Figure 10-2: Mean annual Precipitation (WR2012)

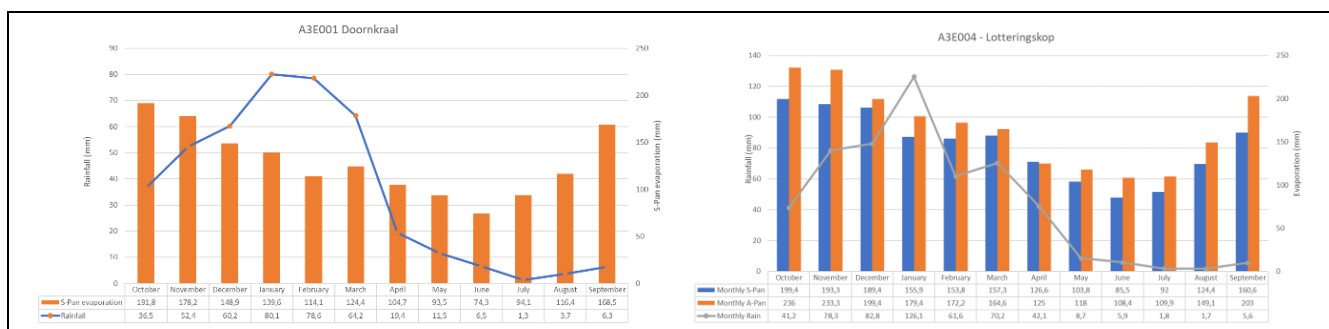


Figure 10-3: Annual rainfall and evaporation at A3E001 and A3E004

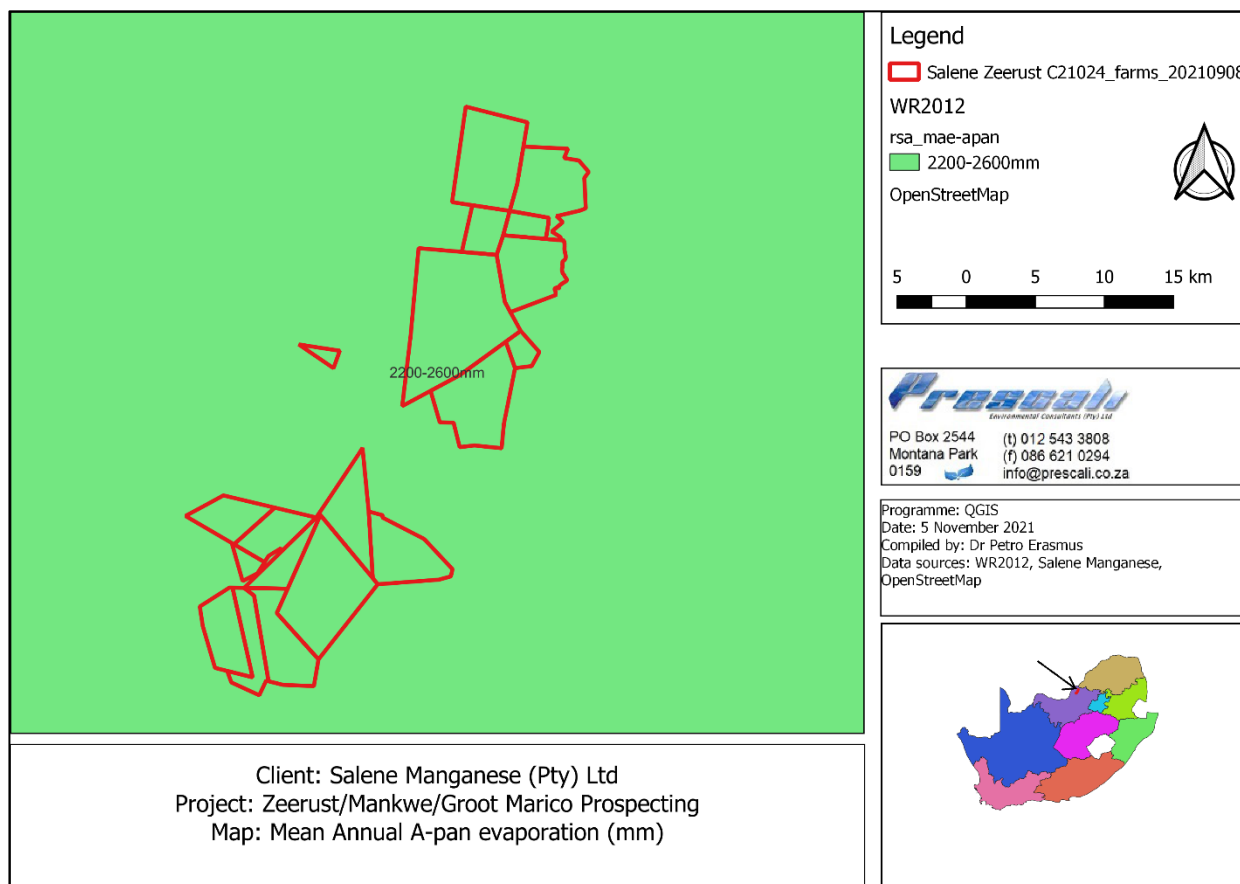


Figure 10-4: Mean Annual A-Pan Evaporation (WR2012)

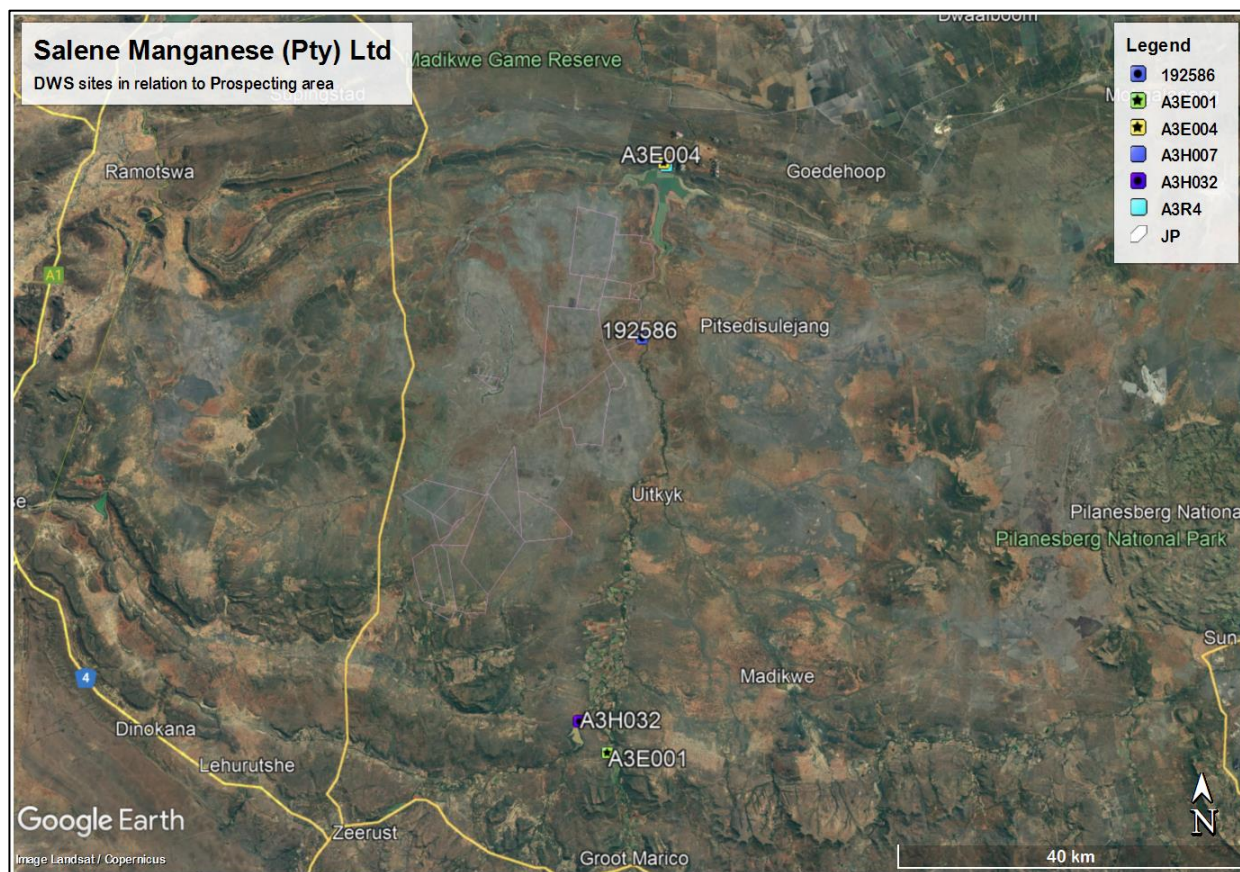


Figure 10-5: Location of DWS monitoring sites in relation to the prospecting footprint area

Generally, wind blows towards the South as per the wind rose below in Figure 10-6.

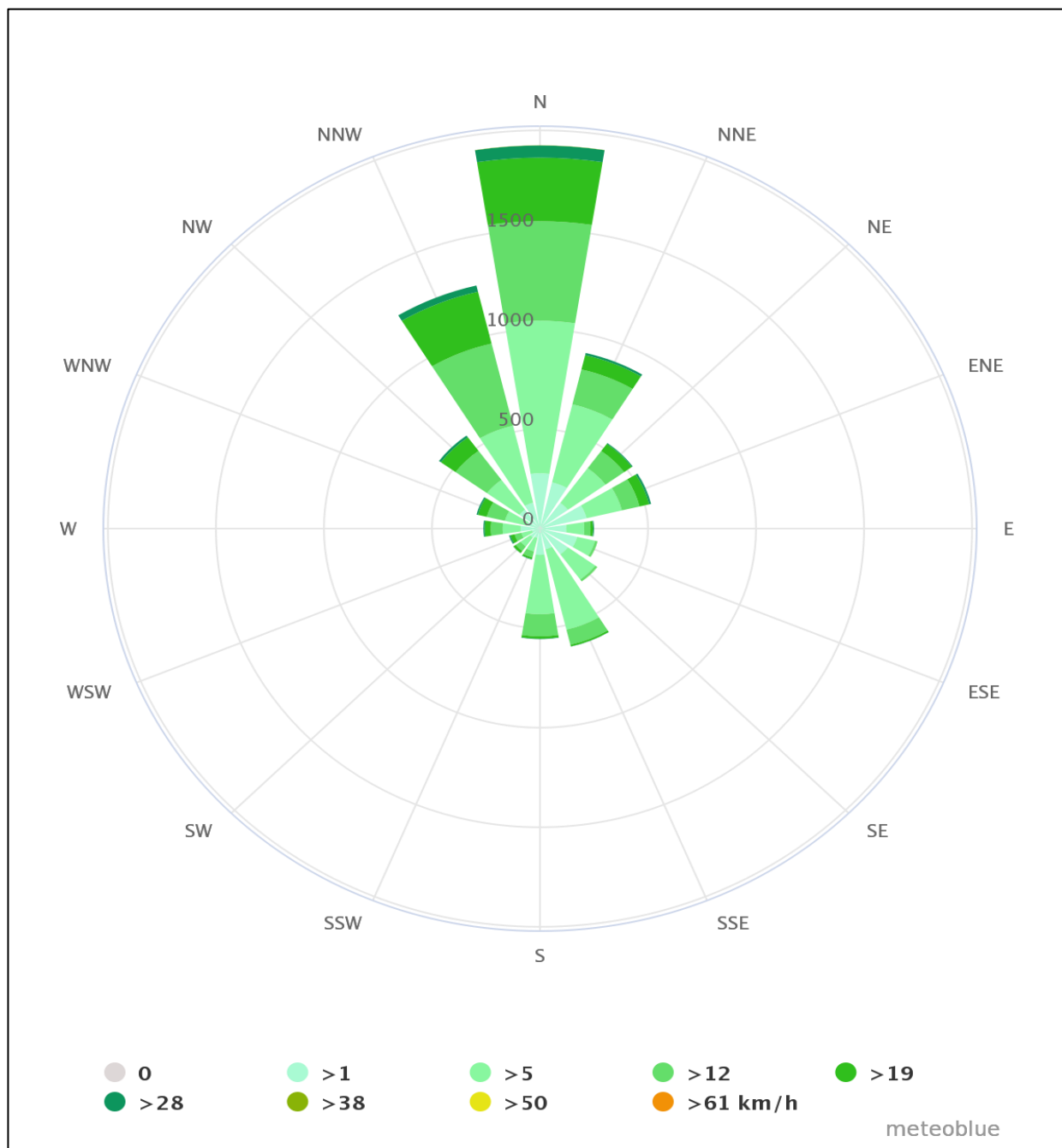


Figure 10-6: Wind rose¹⁴

10.2 TOPOGRAPHY

In general, the prospecting area have a fairly flat and open topography, although there are some rocky outcrops, ridges and small hills present as indicated within the report by APAC (APelser Archaeological Consulting, November 2021).

Based on aerial images (Google earth), The Driekop 14JP area has been fairly heavily disturbed already through mining activities (Marico Chrome Mine), while large sections of the other two areas have been altered and impacted through past and current agricultural actions that include ploughing/crop growing and livestock grazing.

A number of rivers, streams and their tributaries also run through these areas, some creating deep gullies and erosion dongas.



The topography of quaternary catchment areas A31G, H, J, A32A and C (Figure 10-7) comprises a series of dips and escarpments formed by the Pretoria Series quartzite ridges and shale valleys, with andesite and diabase forming wide valleys and plains (DWA, 2004) .

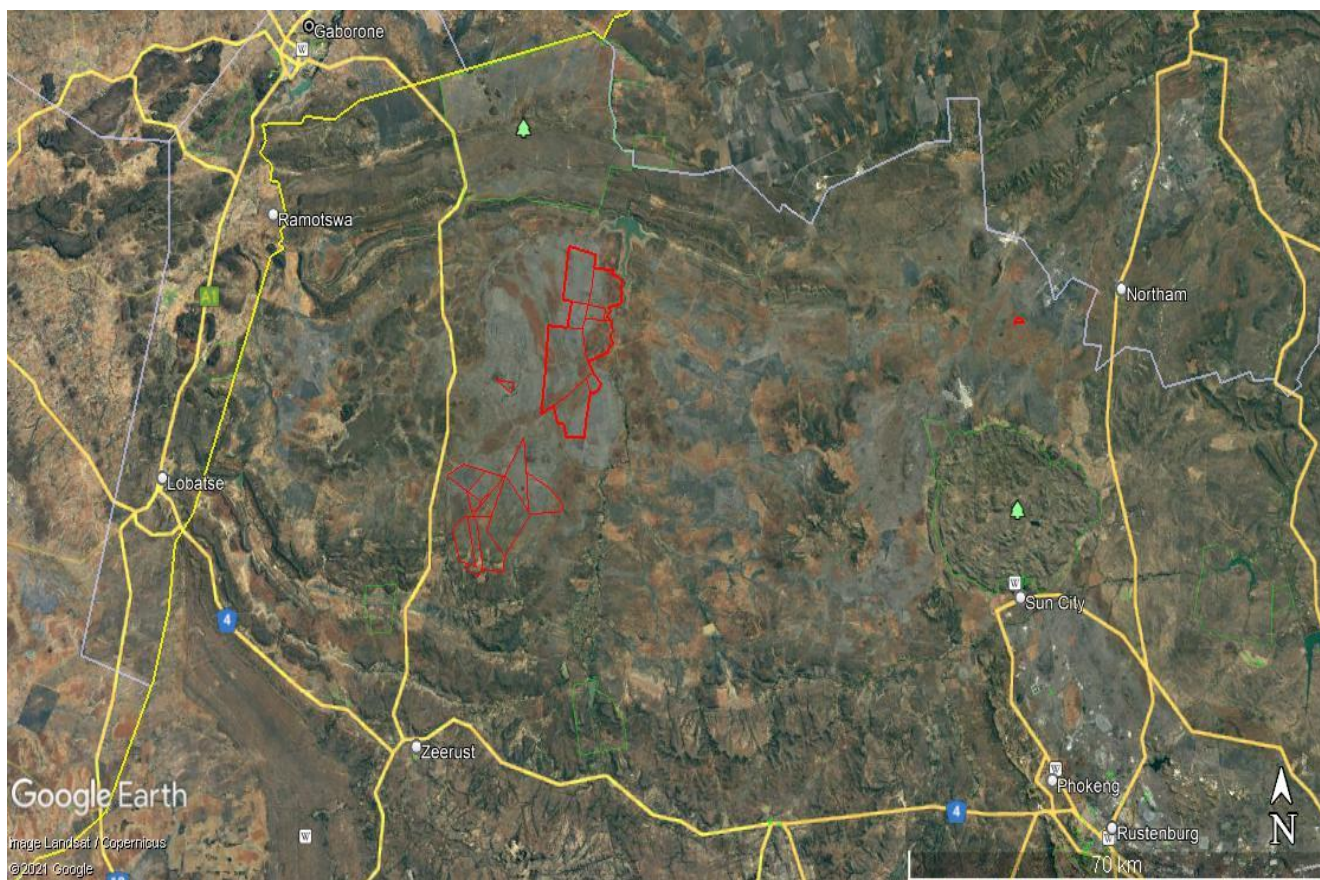


Figure 10-7 : General location of the study & application areas in red polygons (Google Earth 2021)

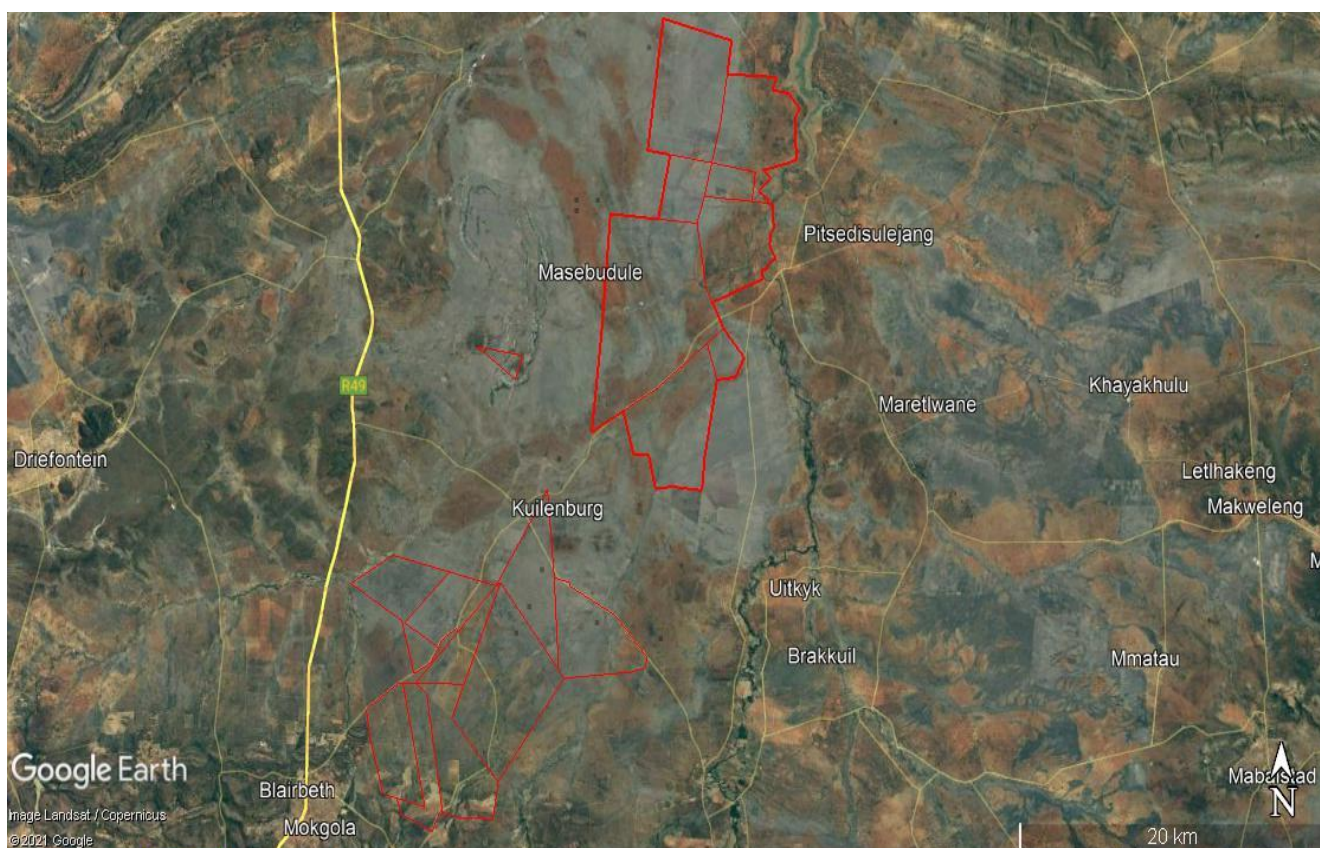


Figure 10-8 : A closer view of the location and footprints of the 3 areas (Google Earth 2021)



Figure 10-9 : Closer view of the Driekop 14JP area (Google Earth 2021)

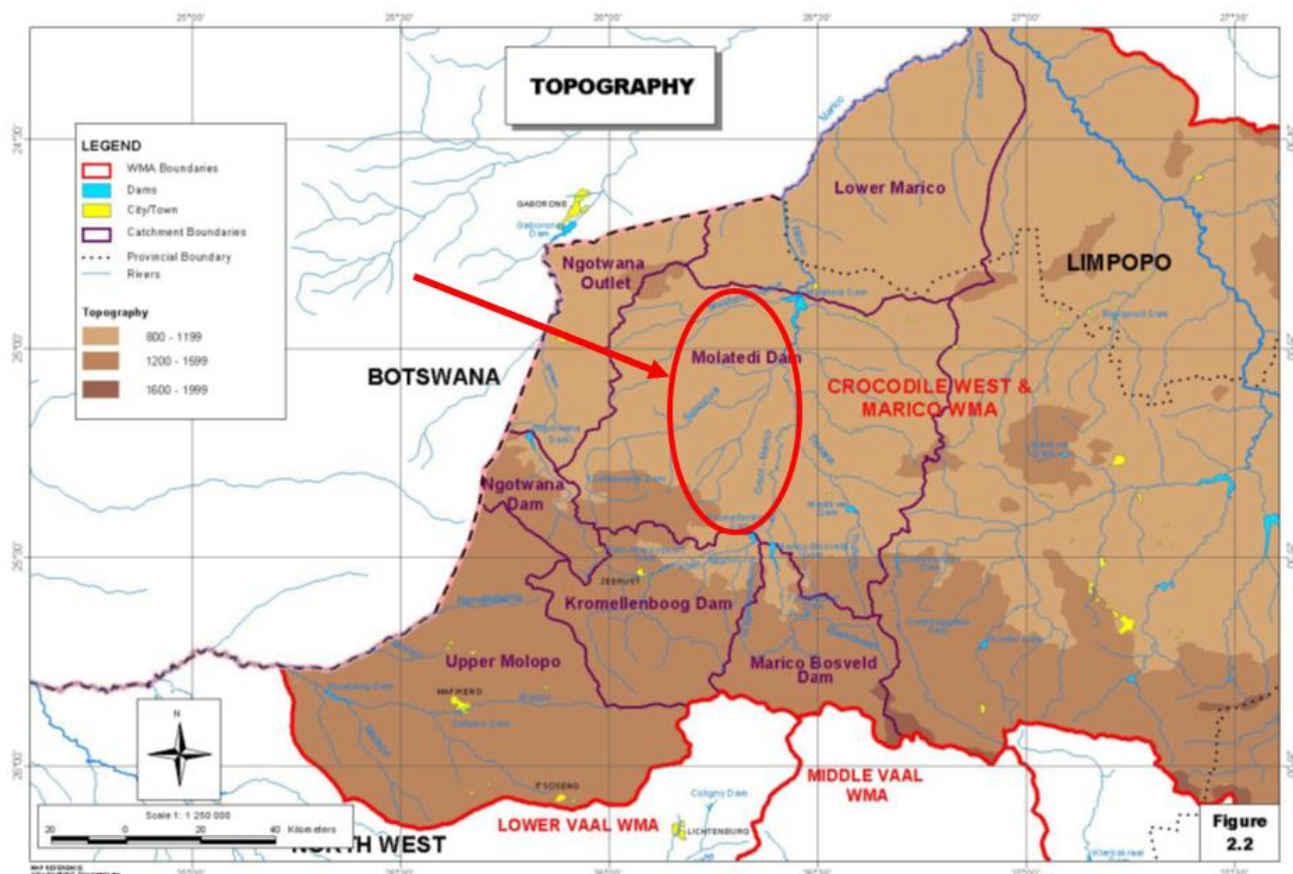


Figure 10-10 : Topography of the prospecting area (red circle) and surrounding areas (DWA, 2004)

10.3 GEOLOGY

The regional geology is shown in Figure 10-11 below (Prospecting Works Programme submitted for a Prospecting Right Application, 2021).

The project area is located within the Far-Western Limb of the Bushveld Complex. The immediate floor of the Complex in the area consists of quartzite and hornfels of the Transvaal Sequence. This is overlain by norite and minor pyroxenite of the Marginal Group, followed by several cyclic units of dunite-harzburgite-pyroxenite of the Lower Zone. Of specific economic significance is the overlying sequence of rocks termed the Critical Zone. The Critical Zone is subdivided into the Lower Critical Zone, or the pyroxenite subzone, and the Upper Critical Zone. Locally only the Lower Critical Zone appears to be present.

All economically exploited chromitite layers mined in the Far-Western Limb of the Bushveld Complex are derived from the Lower Critical Zone. Four main chromitite layers have been identified in the area, which are correlated with the LG1, LG2, LG3 and LG4 chromitite layers of the Western Limb. Isolated occurrences of PGE, Ni and Cu mineralization has also been reported in literature.



R.G. Cawthorn, H.V. Eales, F. Walraven, R. Uken and M.K. Watkeys

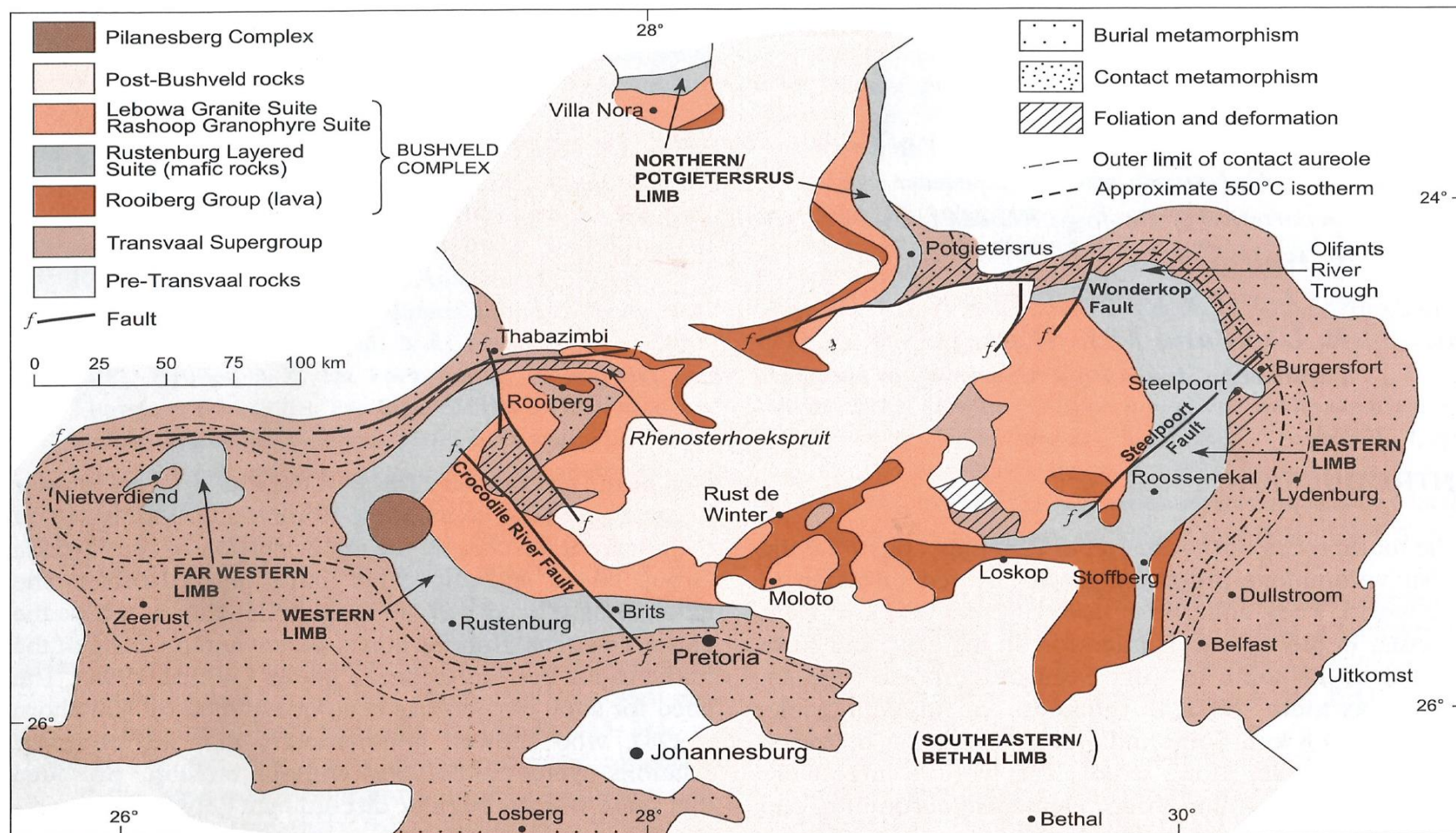


Figure 10-11: Simplified geology map of the Bushveld Complex showing the major limbs of the mafic layered rocks, as well as the contact metamorphic aureole within the Transvaal Supergroup country rocks

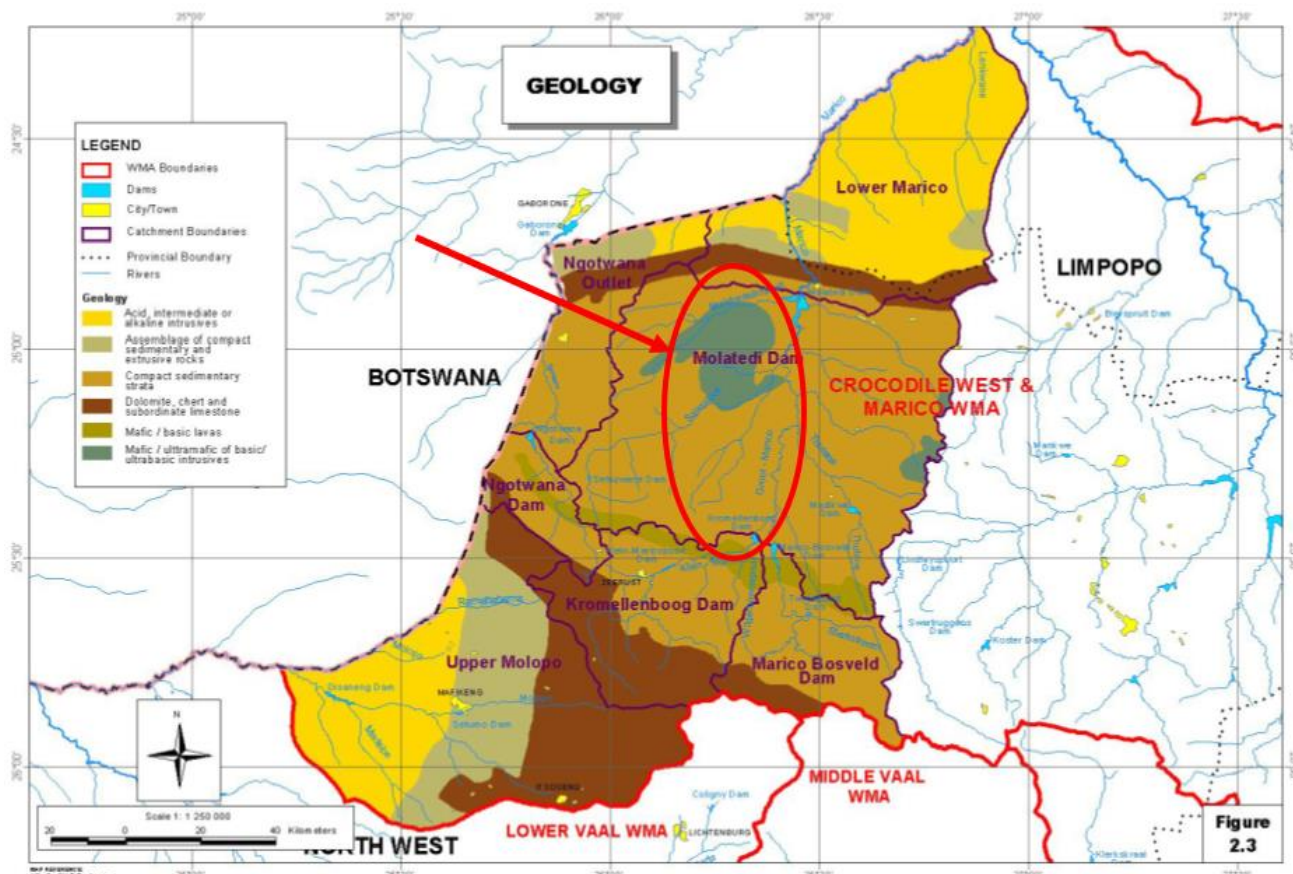


Figure 10-12 : Geology of the prospecting area (red circle) and surrounding areas (DWA, 2004)

10.4 FLORA

A desktop study was conducted by RedKite, (RedKite Environmental Solutions (Pty) Ltd, November 2021) to establish whether any potentially sensitive faunal species or species of conservation concern may possibly occur on site (Refer to Appendix 7.1).

10.4.1 Biomes

The project area lies within the Savanna Biome, which is the largest biome in South Africa, covering 34.3% of the country (about 435 000 km²). It is a mixture of grasses and trees or shrubs. Savanna stretches from the Kalahari in the north-west across to the lowveld in the north-east and southwards to the lowlands of KwaZulu Natal and the Eastern Cape. It is found from sea level to about 2 000 metres above sea level. More than 5 700 plant species grow in the Savanna Biome. They include various types of grasses (e.g. Rooigras) and trees like the Baobab, Mopane, Camel Thorn and Knob Thorn.

10.4.2 Vegetation Types

Three vegetation types, according to Mucina & Rutherford (2006), occur in the project area, namely Dwaalboom Thornveld (SVcb 1), Zeerust Thornveld (SVcb 3) and Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4).

A description of the vegetation types, extracted from the CD accompanying Mucina & Rutherford (2006), is presented below.

10.4.2.1 Dwaalboom Thornveld (SVcb 1)

Approximately 23 260 ha of the Prospecting Right area falls within the Dwaalboom Thornveld vegetation type which occurs in the Limpopo and North-West Provinces, on the flats north of the Dwarsberge and associated ridges, mainly west of the Crocodile River in the Dwaalboom area but including a patch around Sentrum. South of the ridges it extends eastwards from the Nietverdiend area, north of the Pilanesberg to the Northam area.

The vegetation type is characterised by plains with a layer of scattered, low to medium high, deciduous microphyllous trees and shrubs with a few broad-leaved tree species, and an almost continuous herbaceous layer dominated by grass species.

A list of expected common and dominant species in undisturbed vegetation includes the following (those with a "d" are considered to be dominant) (Mucina and Rutherford, 2006):

- **Trees:** *Vachellia erioloba*, *Vachellia erubescens* (d), *V. nilotica* (d), *V. tortilis* subsp. *heteracantha* (d), *Senegalia fleckii*, *S. mellifera* subsp. *detinens*, *Combretum imberbe*, *Searsia lancea*, *Ziziphus mucronata*.
- **Shrubs:** *Vachellia hebeclada* subsp. *hebeclada*, *Combretum hereroense*, *Diospyros lycioides* subsp. *lycioides*, *Euclea undulata*, *Grewia flava*, *Tarchonanthus camphoratus*, *Vachellia tenuispina* (d), *Abutilon austro-africanum*, *Aptosimum elongatum*, *Hirpicium bechuanense*, *Pavonia burchellii*, *Solanum delagoense*, *Kalanchoe rotundifolia*, *Talinum cafrum*.
- **Graminoids:** *Aristida bipartita* (d), *Bothriochloa insculpta* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Ischaemum afrum* (d), *Panicum maximum* (d), *Cymbopogon pospischilii*, *Eragrostis curvula*, *Sehima galpinii*, *Setaria incrassata*.
- **Herbs:** *Heliotropium ciliatum*, *Kohautia caespitosa* subsp. *brachyloba*, *Nidorella hottentotica*, *Rhynchosia minima*.

10.4.2.2 Zeerust Thornveld (SVcb 3)

Approximately 14 190 ha of the Prospecting Right area falls within the Zeerust Thornveld vegetation type which occurs in the North-West Province and extends along the plains from the Lobatsi River in the west via Zeerust, Groot Marico and Mabaalstad to the flats between the Pilanesberg and western end of the Magaliesberg in the east.

The vegetation type is characterised by deciduous, open to dense short thorny woodland, dominated by *Acacia* species with herbaceous layer of mainly grasses on deep, high base-status and some clay soils on plains and lowlands, also between rocky ridges of SVcb 4 Dwarsberg-Swartruggens Mountain Bushveld.

A list of expected common and dominant species in undisturbed vegetation includes the following (those with a "d" are considered to be dominant) (Mucina and Rutherford, 2006):

- **Trees:** *Senegalia burkei* (d), *Vachellia erioloba* (d), *Senegalia mellifera* subsp. *detinens* (d), *Vachellia nilotica* (d), *V. tortilis* subsp. *heteracantha* (d), *Searsia lancea* (d), *Senegalia fleckii*, *Peltophorum africanum*, *Terminalia sericea*.
- **Shrubs:** *Diospyros lycioides* subsp. *lycioides*, *Grewia flava*, *Mystroxydon aethiopicum* subsp. *Burkeanum*, *Agathisanthemum bojeri*, *Chaetacanthus costatus*, *Clerodendrum ternatum*, *Indigofera filipes*, *Searsia grandidens*, *Sida chrysantha*, *Stylosanthes fruticosa*.
- **Graminoids:** *Eragrostis lehmanniana* (d), *Panicum maximum* (d), *Aristida congesta*, *Cymbopogon pospischilii*.
- **Herbs:** *Blepharis integrifolia*, *Chamaecrista absus*, *C. mimosoides*, *Cleome maculata*, *Dicoma anomala*, *Kyphocarpa angustifolia*, *Limeum viscosum*, *Lophiocarpus tenuissimus*.

10.4.2.3 Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4)

Only approximately 28 ha of the Prospecting Right area is located in the Dwarsberg-Swartruggens Mountain Bushveld vegetation type which occurs in the North-West Province, on hills and ridges east of the Lobatsi River through the Zeerust and the Swartruggens areas to Mabeskraal and the Selons River Valley in the east. Also occurs on the parallel ridges of the Dwarsberge from Witkleigat in the west to the hills of the Dwarsberg area in the east.

The vegetation type is characterised by rocky low to medium high hills and ridges with some steep faces in places. Height above the surrounding plains can reach about 300 m. Variable vegetation structure depending on slope, exposure, aspect and local habitat—various combinations of tree and shrub layers often with dense grass layer. Bush clumps also occur.

A list of expected common and dominant species in undisturbed vegetation includes the following (those with a "d" are considered to be dominant) (Mucina and Rutherford, 2006):

- **Tree:** *Vachellia robusta* (d), *Senegalia caffra* (d), *S. erubescens* (d), *Burkea africana* (d), *Combretum apiculatum* (d), *Faurea saligna* (d), *Protea caffra* (d), *Combretum imberbe*, *C. molle*, *Cussonia paniculata*, *C. transvaalensis*, *Dombeya rotundifolia*, *Ozoroa paniculosa*, *Pappea capensis*, *Peltophorum africanum*, *Spirostachys africana*, *Vangueria infausta*, *Ziziphus mucronata*, *Aloe marlothii* subsp. *marlothii* (d).
- **Shrubs:** *Dichrostachys cinerea* (d), *Croton pseudopulchellus*, *Ehretia rigida* subsp. *rigida*, *Grewia flava*, *Mundulea sericea*, *Tarchonanthus camphoratus*, *Vitex zeyheri*, *Athrixia elata*, *Pavonia burchellii*, *Searsia magalismontana* subsp. *magalismontana*, *S. rigida* var. *rigida*, *Asparagus africanus*.
- **Graminoids:** *Aristida canescens* (d), *Cenchrus ciliaris* (d), *Chrysopogon serrulatus* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Enneapogon scoparius* (d), *Loudetia simplex* (d), *Schizachyrium sanguineum* (d), *Setaria lindenbergiana* (d), *Bewsia biflora*, *Bothriochloa insculpta*, *Cymbopogon caesius*, *C. pospischilii*, *Elionurus muticus*, *Eragrostis rigidior*, *Fingerhuthia africana*, *Heteropogon contortus*, *Melinis nerviglumis*, *Panicum maximum*, *Setaria sphacelata*, *Themeda triandra*, *Trachypogon spicatus*, *Tristachya biseriata*.
- **Herbs:** *Barleria macrostegia*, *Commelina africana*, *Hermannia depressa*, *Senecio venosus*. Geophytic Herbs: *Hypoxis hemerocallidea*, *Pellaea calomelanos*, *Tritonia nelsonii*.

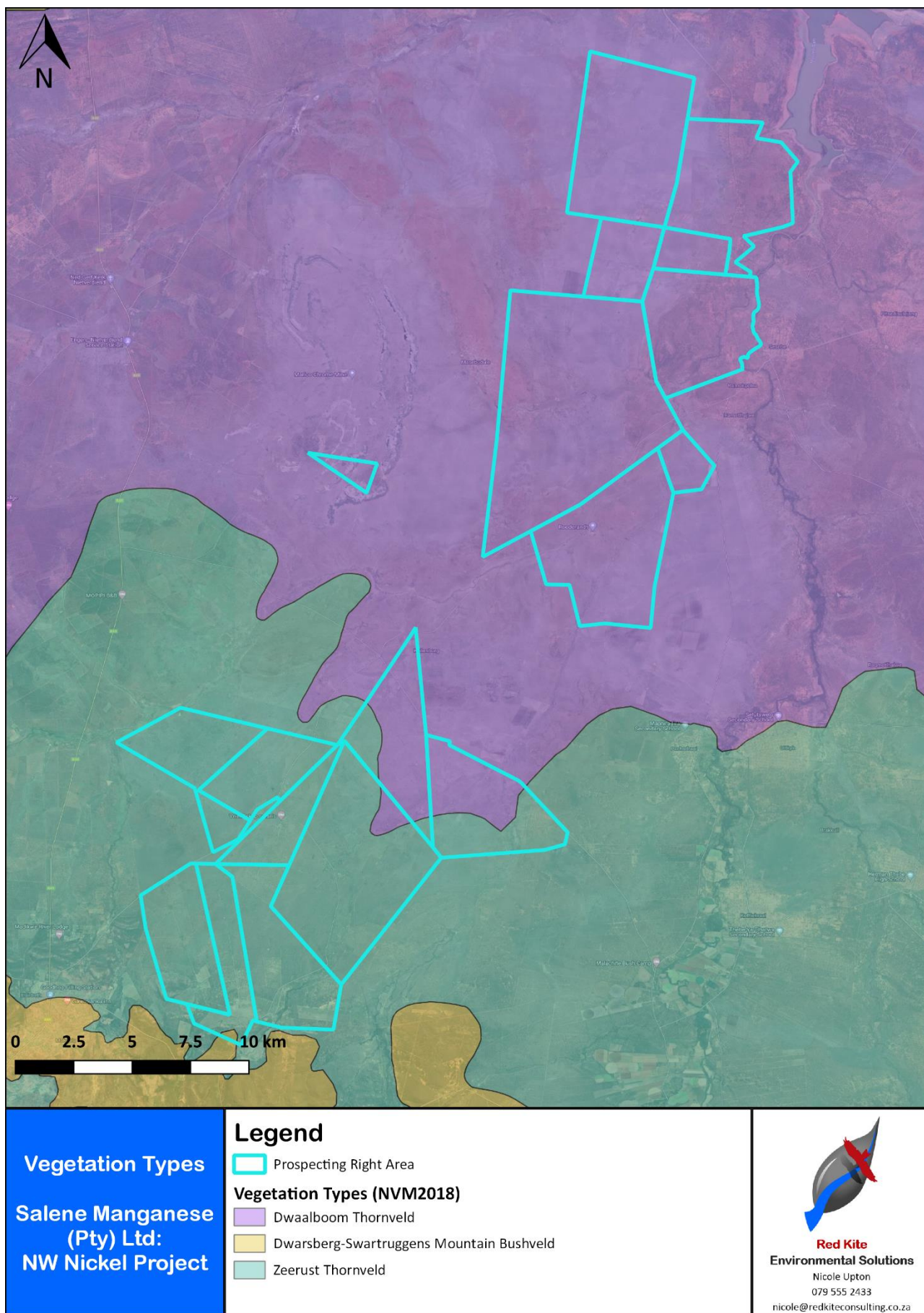


Figure 10-13: Vegetation types of the study site



10.4.3 Vegetation Conservation Status

The National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under NEMBA, lists national vegetation types that are afforded protection on the basis of rates of transformation. All three vegetation types occurring on the project area (Dwaalboom Thornveld, Zeerust Thornveld and Dwarsberg-Swartruggens Mountain Bushveld) are not listed in the “National List of Ecosystems that are Threatened and need of protection”, and as Least Concern by the 2018 National Biodiversity Assessment.

There is one main conservation management plan for the province, namely the North West Biodiversity Sector Plan (NW BSP). The purpose of a Biodiversity Sector Plan is to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.

The NW BSP comprises two spatial components: maps of critical biodiversity areas (CBAs); and a set of land-use guidelines that are important for maintaining and supporting the inherent biodiversity values of these critical biodiversity areas.

- Critical Biodiversity Areas (1) (CBA1): Irreplaceable Sites. Areas required to meet biodiversity pattern and/or ecological processes targets. No alternative Sites are Available to Meet targets. Maintain In a natural state with limited or no biodiversity loss. Rehabilitate degraded areas to a natural or near natural state, and manage for no further degradation.
- Critical Biodiversity Area (2) (CBA2): Best Design Selected Sites. Areas selected to meet biodiversity pattern and/or ecological process targets. Alternative sites may be available to meet targets. Maintain in a natural state with limited or no biodiversity loss. Maintain current agricultural activities. Ensure that land use is not intensified and that activities are managed to minimize impact on threatened species.
- Ecological Support Areas (1) (ESA1): Natural, Near natural and degraded areas supporting CBAs by maintaining Ecological processes. Maintain ecosystem functionality and connectivity allowing for limited loss of biodiversity pattern.
- Ecological Support Areas (2) (ESA2): Areas with no natural habitat that is important for supporting ecological processes. Avoid additional / new impacts on ecological processes.
- Other Natural Areas (ONA): Natural and intact but not required to meet targets, or identified as CBA or ESA. No management objectives, land management recommendations or land-use guidelines are prescribed.
- No natural habitat remaining: Areas with no significant direct biodiversity value. Not Natural or degraded natural areas that are not required as ESA, including intensive agriculture, urban, industry; and human infrastructure. No management objectives, land management recommendations or land-use guidelines are prescribed.

The study area contains the following classes from the NW BSP:

- CBA2: A few smaller, isolated CBA2 areas are located on the Prospecting Right area. These CBA2 areas on the project area appear to be largely associated with ridges and koppies and potential wetland features.
- ESA1: Larger, continuous ESA1 areas occur on the project area. The majority of the ESA1 areas are located on the eastern sections of the Prospecting Right area. These areas were most likely identified as ESA 1 areas due to their appearance as natural areas and their function as ecological corridors providing connectivity.
- ESA2: A few small, isolated ESA2 areas are located on the project footprint. These areas appear to be associated with vegetation previously disturbed by agricultural activities that fall within the ESA1 areas.

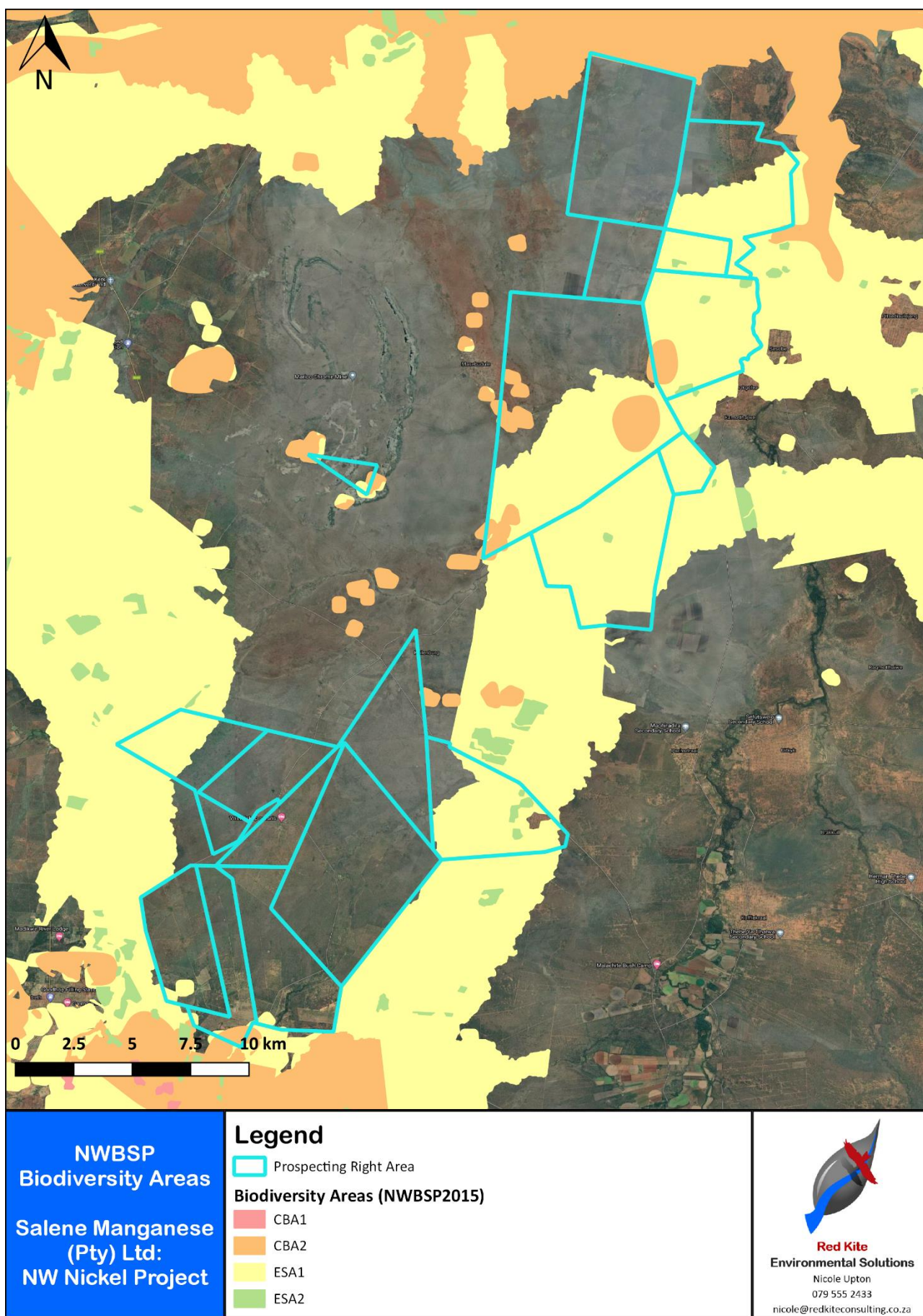


Figure 10-14: NWBSP Biodiversity areas on the project area



According to the South African Protected Areas Database (SAPAD) a number of Protected Areas, in terms of NEMPAA, are located within 10 km of the Prospecting Right area:

- Madikwe Nature Reserve – 6 km north of PR area;
- Tweekoppiesfontein Private Nature Reserve – adjacent to western border of northern-most PR portion;
- Nellie Private Nature Reserve – 1 km west of PR area;
- Drie Annie Private Nature Reserve – adjacent to western-most portion of PR area;
- Koos Swart Private Nature Reserve – 4 km west of PR area;
- Thys Snyman Private Nature Reserve – 6 km west of PR area; and
- Hillendale Private Nature Reserve – 8 km south of PR area.

The NW/Gauteng Bushveld NPAES area is located on portions of the northern sections of the Prospecting Right area.

No other conservation areas are located on the project area or within 10 km of the project area.

10.4.4 POSA Plant Species

Information on plant species previously recorded for the project area was extracted from the POSA online database hosted by SANBI. A list of plant species that have previously been recorded in the project area is provided in Appendix C of the RedKite reports (in Appendix 7). The results indicate that 90 plant species have been recorded in the area queried, consisting of 36 families.

Of the 90 species previously recorded for the area, two are Species of Conservation Concern (SCC) in terms of their Red List status. One additional flora species was listed for the project area in the Environmental Screening Tool Report.

The table below list the flora SCC previously recorded for the greater area along with the likelihood of the species occurring on the project footprint. It is important to note that the specialist has taken a conservative approach regarding the likelihood of occurrence as the assessment is based on desktop findings and does not include a site survey.

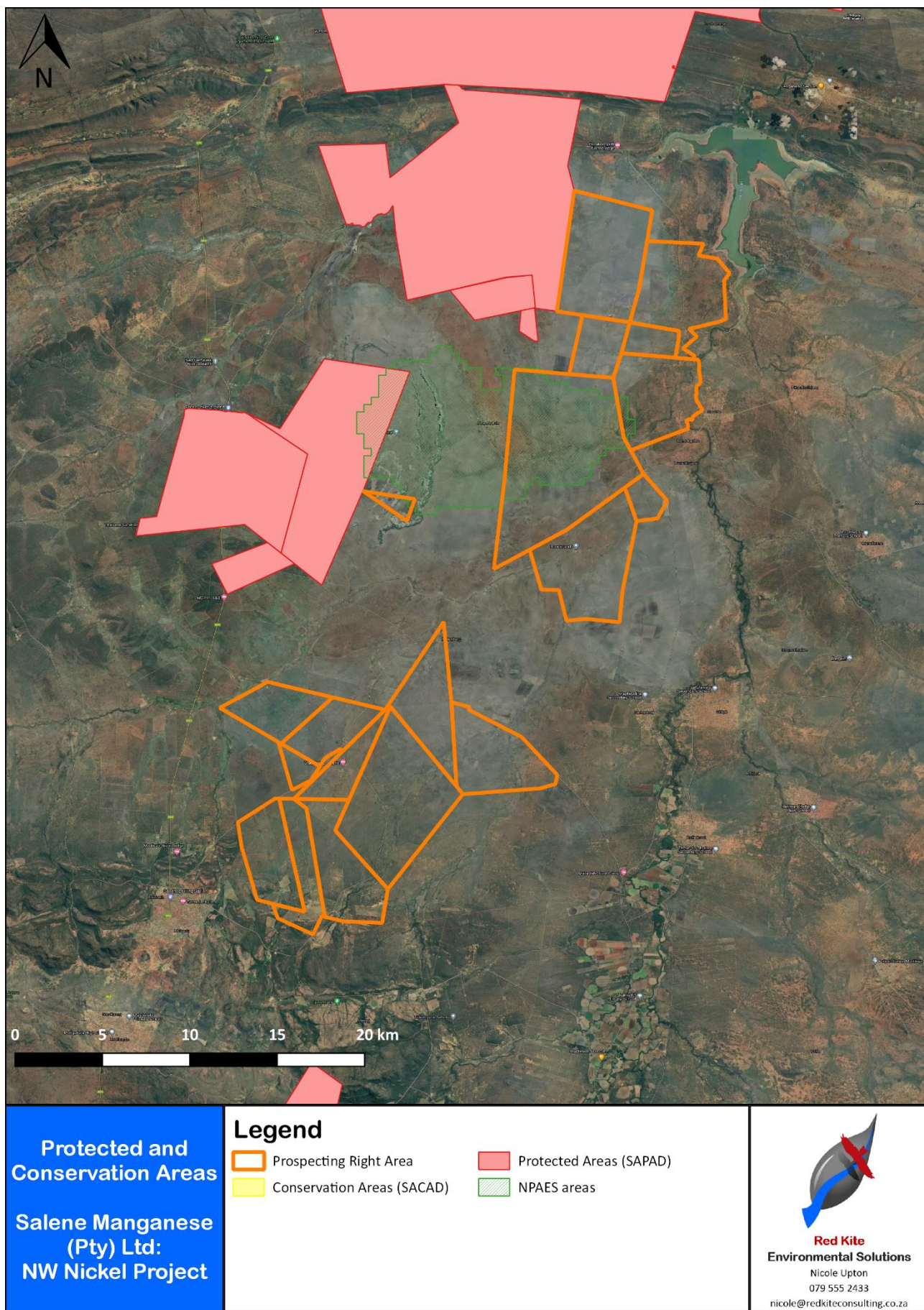


Figure 10-15: Protected and conservation areas

Table 10-2: Flora SCC recorded for the area on POSA



Species	Conservation	Likelihood of occurrence
Sensitive species 695	Red List Status: EN	Plants remain at two to five locations within a restricted area (1277 km ²). Occurs in the Marico district north of Zeerust in the Dwarsberg-Swartruggens Mountain Bushveld. This species is found in woodland and thornveld, wedged among large rocks on the slopes of quartzitic ridges, at altitudes of 1000-1200 m. This species is considered to have a low likelihood of occurrence on the project footprint.
<i>Ceropegia insignis</i>	Red List Status: EN	A range-restricted species (164 km ²), occurring at two to three locations. Occurs in northern North West province and adjacent areas in Limpopo between Ramotswa and Dwaalboom, in Dwaalboom Thornveld. This species occurs on stony slopes and sandy soils in grassland and open savanna. Based on the distribution of the species provided by the SANBI Red List of South African Plants, this species is considered to have a low likelihood of occurrence on the project footprint.
<i>Searsia maricoana</i>	Red List Status: VU	Known from three locations in the Zeerust District. Occurs in Dwaalboom Thornveld, Carletonville Dolomite Grassland, and Klerksdorp Thornveld. This species is found in grassland, at the transition from bushveld, in dark soil among igneous rocks. This species is considered to have a low likelihood of occurrence on the project footprint.

Two of the flora species recorded on POSA for the area are listed as protected in the NWBMA:

- *Ceropegia insignis*; and
- *Euphorbia inaequilatera*.

Two protected tree species, in terms of the NFA, have been recorded on POSA for the area queried, namely:

- *Boscia albitrunca* (Shepherd's tree); and
- *Sclerocarya birrea* (Marula).

Seven of the flora species recorded on POSA for the area are known to have medicinal uses:

- *Convolvulus sagittatus*;
- *Diospyros lycioides*;
- *Dombeya rotundifolia*;
- *Euclea undulata*;
- *Senegalia caffra*;
- *Vachellia karroo*; and
- *Ziziphus mucronate*.

One exotic plant species were recorded to occur within the area queried, namely *Bidens bipinnata* (Black jack).

Five endemic plant species were recorded to occur within the area queried:

- *Blepharis innocua*;
- *Indigofera glaucescens*;
- *Indigofera leendertziae*;
- *Lotononis burchellii*; and
- *Triumfetta sonderi*.

10.5 FAUNA

A desktop study was conducted by RedKite, (RedKite Environmental Solutions (Pty) Ltd, November 2021) to establish whether any potentially sensitive faunal species or species of conservation concern (SCC) may possibly occur on site. The Virtual Museum and Animal Demography Unit (ADU) was used to compile species lists based on the sightings and data gathered from the South African Biodiversity Institute for the 2436CD, 2526AA, 2526AB, 2526AC and 2526AD Quarter Degree Squares (QDS). The avifaunal species list was obtained from SABAP2 for the pentads applicable to the project area.

It is important to note that a QDS covers a large area: $\pm 27 \times 25 \text{ km}$ ($\pm 693 \text{ km}^2$) and a pentad (SABAP2 Protocol) an area of $\pm 8 \times 7.6 \text{ km}$ ($\pm 60.8 \text{ km}^2$) and it is possible that suitable habitat will exist for a certain Red Data avifaunal species within this wider area surrounding the study site. However, the specific habitat(s) found on site may not suit Red Data species, even though it has been recorded for the QDS or pentad.

Species and habitat were identified as possibly sensitive within the framework of this study. Sensitive species were determined according to their close relationship and dependence on the vegetation type and habitat found to occur on the project site.

Appendix D in the Specialist report list the faunal species for the five QDS applicable to the project, i.e. 2436CD, 2526AA, 2526AB, 2526AC and 2526AD QDS. National SCC include mammalian and avifaunal species which are known to occur in the regional area where the project is proposed (Table 10-3). Provincially protected species could also be expected to occur in the region and are shown below and within the appendices.

Table 10-3: Fauna SCC found in QDS that may be relevant to the Salene Manganese PR

Scientific Name	Common Name	Conservation Concern
Mammals		
Possible occurrence		
<i>Damaliscus lunatus</i>	(Southern African) Tsessebe	Vulnerable (2016), TOPS
<i>Smutsia temminckii</i>	Ground Pangolin	Vulnerable (2016), TOPS
<i>Otomys auratus</i>	Southern African Vlei Rat	Near Threatened (2016)
<i>Aonyx capensis</i>	African Clawless Otter	Near Threatened (2016), NWBA Schedule 2 & 5
<i>Crocidura mariquensis</i>	Swamp Musk Shrew	Near Threatened (2016), NWBA Schedule 2
<i>Pipistrellus (Pipistrellus) rusticus</i>	Rusty Pipistrelle	Near Threatened
<i>Hippotragus equinus</i>	Roan Antelope	Endangered (2016), TOPS
<i>Hippotragus niger niger</i>	Sable	Vulnerable (2016), NWBA Schedule 2
<i>Kobus leche</i>	Lechwe	Near Threatened (2017)
<i>Pelea capreolus</i>	Vaal Rhebok	Near Threatened (2016), NWBA Schedule 2 & 5
Not likely to occur		
<i>Leptailurus serval</i>	Serval	Near Threatened (2016), TOPS
<i>Panthera leo</i>	Lion	Least Concern (2016) – Listed large predator, TOPS
<i>Panthera pardus</i>	Leopard	Vulnerable (2016) – Listed large predator, TOPS
<i>Hippopotamus amphibius</i>	Common Hippopotamus	Least Concern (2016), NWBA Schedule 2 & 5, Flagged by Screening Tool Report
<i>Crocuta crocuta</i>	Spotted Hyaena	Near Threatened (2016) – Listed large predator, TOPS
<i>Hyaena brunnea</i>	Brown Hyena	Near Threatened (2015), TOPS
<i>Lycaon pictus</i>	African wild dog	Endangered (2016) – Listed large predator (NWBA), TOPS, Flagged by Screening Tool Report



Scientific Name	Common Name	Conservation Concern	
<i>Loxodonta africana</i>	African Bush Elephant	Vulnerable A2a (2008), TOPS	
<i>Acinonyx jubatus</i>	Cheetah	Vulnerable (2016) – Listed large predator, TOPS, Flagged by Screening Tool Report	
Avifauna		Regional Status	Global Status
<i>Polemaetus bellicosus</i>	Eagle, Martial	EN, NWBA Schedule 2, TOPS	VU (EN 2021)
<i>Falco biarmicus</i>	Falcon, Lanner	VU, NWBA Schedule 2	LC
<i>Phoenicopiterus roseus</i>	Flamingo, Greater	NT, NWBA Schedule 2	LC
<i>Certhilauda chuana</i>	Lark, Short-clawed	NT, NWBA Schedule 2	LC
<i>Coracias garrulus</i>	Roller, European	NT, NWBA Schedule 2	LC
<i>Pterocles gutturalis</i>	Sandgrouse, Yellow-throated	NT, NWBA Schedule 2	LC
<i>Sagittarius serpentarius</i>	Secretarybird	VU, NWBA Schedule 2 – Flagged by Screening Tool Report	VU
<i>Ciconia abdimii</i>	Stork, Abdim's	NT, NWBA Schedule 2	LC
<i>Mycteria ibis</i>	Stork, Yellow-billed	EN, NWBA Schedule 2	LC
<i>Torgos tracheliotos</i>	Vulture, Lappet-faced	EN, NWBA Schedule 2, TOPS	EN
<i>Gyps africanus</i>	Vulture, White-backed	CR, NWBA Schedule 2, TOPS	CR

10.5.1 Mammals

Ninety-four (94) mammal species were found to possibly occur within the QDS, of which many are provincial SCC. Eighteen (18) species are SCC in a national context. The other species, largely game species, have a provincially protected status, which regulates handling of these species, and may be viewed in the Appendices.

Those species with a high likelihood of occurrence include the following:

- *Damaliscus lunatus lunatus* (Southern African Tsessebe) - VU (2016), TOPS;
- *Hippotragus equinus* (Roan Antelope) – EN (2016), TOPS;
- *Hippotragus niger niger* (Sable) - VU (2016), NWBA Schedule 2;
- *Kobus leche* (Lechwe) – NT (2017);
- *Pelea capreolus* (Vaal Rhebok) - NT (2016), NWBA Schedule 2 & 5;
- *Leptailurus serval* (Serval) – NT (2016), TOPS;
- *Smutsia temminckii* (Ground Pangolin) - VU (2016), TOPS;
- *Otomys auratus* (Southern African Vlei Rat) – NT (2016);
- *Aonyx capensis* (African Clawless Otter) - NT (2016), NWBA Schedule 2 & 5;
- *Crocidura mariquensis* (Swamp Musk Shrew) – NT (2016), NWBA Schedule 2; and
- *Pipistrellus rusticus* (Rusty Pipistrelle) – NT.

The following SCC species listed for the QDS are unlikely or have a low likelihood of occurrence on the project site due to anthropogenic movement and activities in the area:

- *Lycaon pictus* (African wild dog) - EN (2016), Listed large predator (NWBA), TOPS, Flagged by Screening Tool Report;
- *Loxodonta Africana* (African Bush Elephant) - VU A2a (2008), TOPS;
- *Acinonyx jubatus* (Cheetah) - VU (2016), Listed large predator, TOPS, Screening Tool Report;
- *Panthera pardus* (Leopard) – VU (2016), Listed large predator, TOPS;
- *Crocuta Crocuta* (Spotted Hyaena) - NT (2016), Listed large predator, TOPS;
- *Hyaena brunnea* (Brown Hyena) – NT (2015), TOPS;
- *Panthera leo* (Lion) - LC (2016) – Listed large predator, TOPS; and
- *Hippopotamus amphibius* (Common Hippopotamus) - LC (2016), NWBA Schedule 2 & 5, Screening Tool Report.



10.5.2 Avifaunal

According to data collected during the Southern African Bird Atlas Project 2 (SABAP2) <http://sabap2.adu.org.za>, the site is located within several pentads of which the following nineteen (19) pentads overlap with the prospecting right:

2450_2615, 2450_2620, 2455_2615, 2455_2620, 2500_2610, 2500_2615, 2500_2620, 2505_2610, 2505_2615, 2505_2620, 2510_2610, 2510_2615, 2510_2620, 2515_2605, 2515_2610, 2515_2615, 2515_2620, 2520_2610 and 2520_2615.

Two hundred and seventy-four (274) bird species are listed for the pentads associated with the project area.

Eleven (11) avifaunal SCC have been indicated for the specific pentad and listed in the Screening Tool Report relevant to the development:

- Eagle, Martial (*Polemaetus bellicosus*) - EN, NWBA Schedule 2, TOPS (Regional), VU (EN 2021) (Global);
- Falcon, Lanner (*Falco biarmicus*) - VU, NWBA Schedule 2 (Regional), LC (Global);
- Flamingo, Greater (*Phoenicopterus roseus*) - NT, NWBA Schedule 2 (Regional), LC (Global);
- Lark, Short-clawed (*Certhilauda chuana*) – NT, NWBA Schedule 2 (Regional), LC (Global);
- Roller, European (*Coracias garrulus*) - NT, NWBA Schedule 2 (Regional), LC (Global);
- Sandgrouse, Yellow-throated (*Pterocles gutturalis*) - NT, NWBA Schedule 2 (Regional), LC (Global);
- Secretarybird (*Sagittarius serpentarius*) - VU, NWBA Schedule 2 – Flagged by Screening Tool Report (Regional), VU (Global);
- Stork, Abdim's (*Ciconia abdimii*) - NT, NWBA Schedule 2 (Regional), LC (Global);
- Stork, Yellow-billed (*Mycteria ibis*) - EN, NWBA Schedule 2 (Regional), LC (Global);
- Vulture, Lappet-faced (*Torgos tracheliotos*) - EN, NWBA Schedule 2, TOPS (Regional), EN (Global); and
- Vulture, White-backed (*Gyps africanus*) - CR, NWBA Schedule 2, TOPS (Regional), CR (Global).

The closest Important Birding Areas are located more than 50 km from the project area.

10.5.3 Butterflies

Seventy-six (76) butterfly species were found for the 2436CD, 2526AA, 2526AB, 2526AC and 2526AD QDS, none of which are categorised as SCC in terms of their national status.

However, all *Charaxes* butterflies are provincially protected:

- *Charaxes achaemenes Achaemenes* (Bushveld charaxes) - LC (SABCA 2013), NWBA Schedule 2;
- *Charaxes jahlusa rex* (Pearl-spotted charaxes) – LC (SABCA 2013), NWBA Schedule 2;
- *Charaxes saturnus saturnus* (Foxy charaxes) - LC (SABCA 2013), NWBA Schedule 2; and
- *Charaxes vansonii* (Van Son's charaxes) – LC (SABCA 2013), NWBA Schedule 2.

10.5.4 Other Invertebrates

Nine Lacewing species, 24 Dung beetles and four Odonata were listed for the QDS, none of which are listed as SCC on the IUCN Red list. None of these species have a national red listed status, however, all Dung beetle species are provincially protected.

10.5.5 Reptiles

Thirty-six (36) reptile species were recorded for the QDS. None of the species are categorised as SCC in terms of the national red list. Several others enjoy provincial protection:

- Sensitive Species 12 - LC (SARCA 2014), NWBA Schedule 2, Flagged by Screening Tool Report;
- *Chamaeleo dilepis* (Common Flap-neck Chameleon) – LC (SARCA 2014), NWBA Schedule 2;
- *Telescopus semiannulatus semiannulatus* (Eastern Tiger Snake) - LC (SARCA 2014), NWBA Schedule 2;
- *Cordylus jonesii* (Jones' Girdled Lizard) - LC (SARCA 2014), NWBA Schedule 2;
- *Cordylus vittifer* (Common Girdled Lizard) - LC (SARCA 2014), NWBA Schedule 2;
- *Gerrhosaurus flavigularis* (Yellow-throated Plated Lizard) - LC (SARCA 2014), NWBA Schedule 2;

- *Varanus albigularis albigularis* (Rock Monitor) – LC (SARCA 2014), NWBA Schedule 2; and
- *Varanus niloticus* (Water Monitor) – LC (SARCA 2014), NWBA Schedule 2.

10.5.6 Amphibians

Twenty (20) amphibian species were listed within the QDS, none of which are red listed.

10.6 SURFACE WATER

Desktop surface water assessment was conducted by Prescali, (Prescali Environmental Consultants (Pty) Ltd, November 2021), refer to Appendix 7.2.

10.6.1 Affected River basin

The proposed prospecting area is located within the Limpopo Water Management Area (WMA), specifically, the Marico Sub-WMA (DWAf, 2004). This WMA border on Botswana in the north-west to north. The main river in the Marico catchment is the Marico River and at the confluence of this river with the Crocodile River the Limpopo River is formed.

Economic activities in the Marico catchment mainly the primary consists mainly of agriculture on the dolomite areas and mining around Zeerust, Tourism has also been growing in the lower Marico in the game reserves of Madikwe (DWA, 2004).

It is important to note that the Marico River and its tributaries supply water to Gaborone based on the TSWASA agreement signed in 1988 between Botswana, South Africa and the former homeland of Bophuthatswana (DWA, 2004).

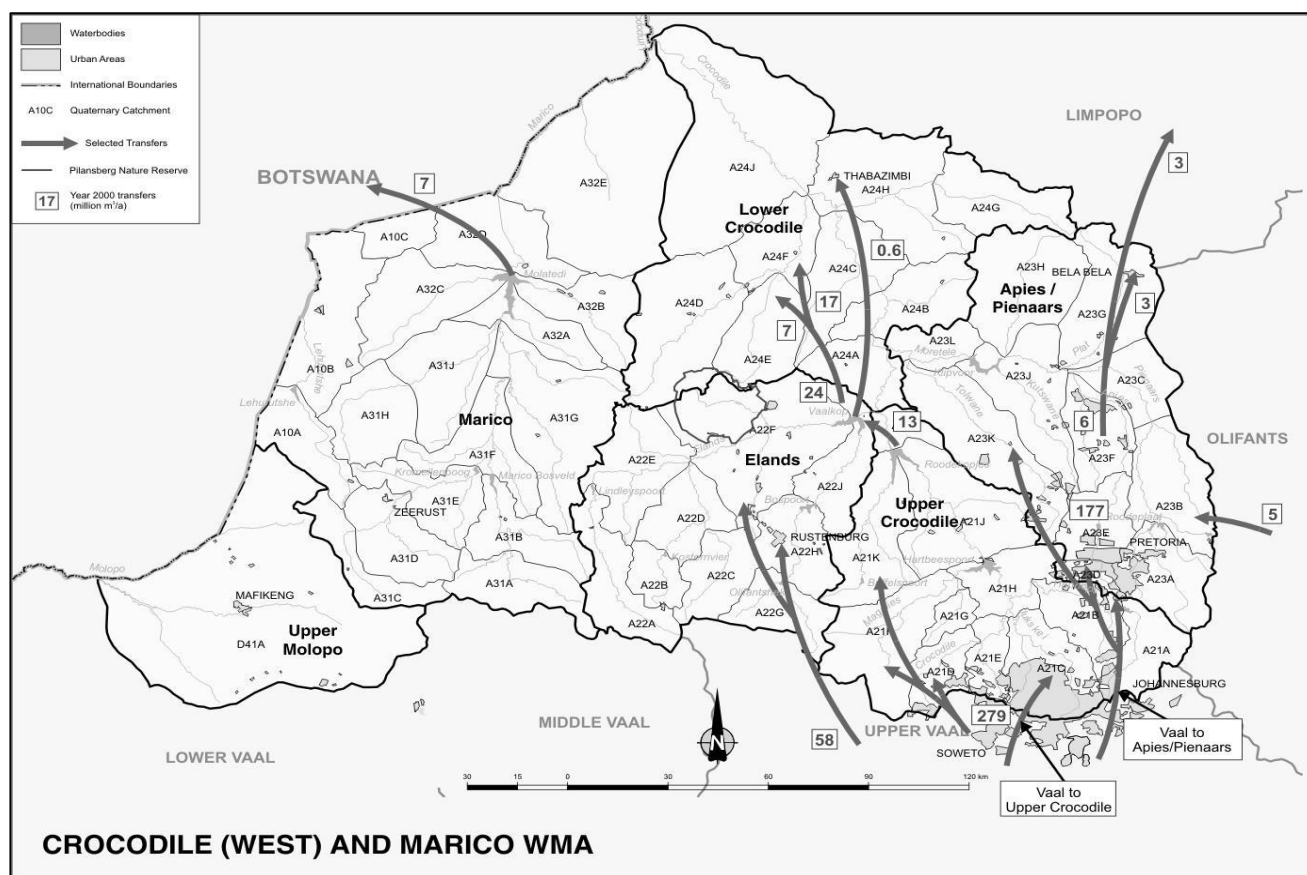


Figure 10-16: Marico Water Management Area (DWAf, 2004)

Water resources within the Marico Catchment is fully utilised and this is illustrated in Table 10-4.

Table 10-4: Reconciliation of water requirements and availability for the applicable sub-management area Year 2005 (million m³/a) (DWAf, 2004)



Marico					
Natural resource		Usable return flow	Total local yield (1)	Transfers in	Grand Total
Surface water	Ground water				
14	12	6	32	0	32
Local Requirements		Transfers out	Balance		
40		7	-15		
(1) After allowance for the impacts on yield of: ecological component of Reserve, River losses, alien vegetation, rain-fed agriculture and urban runoff					

10.6.2 Quaternary catchment

The prospecting rights application area is located across five (5) different quaternary catchments as indicated in Table 10-5, Figure 10-17, and Figure 10-18.

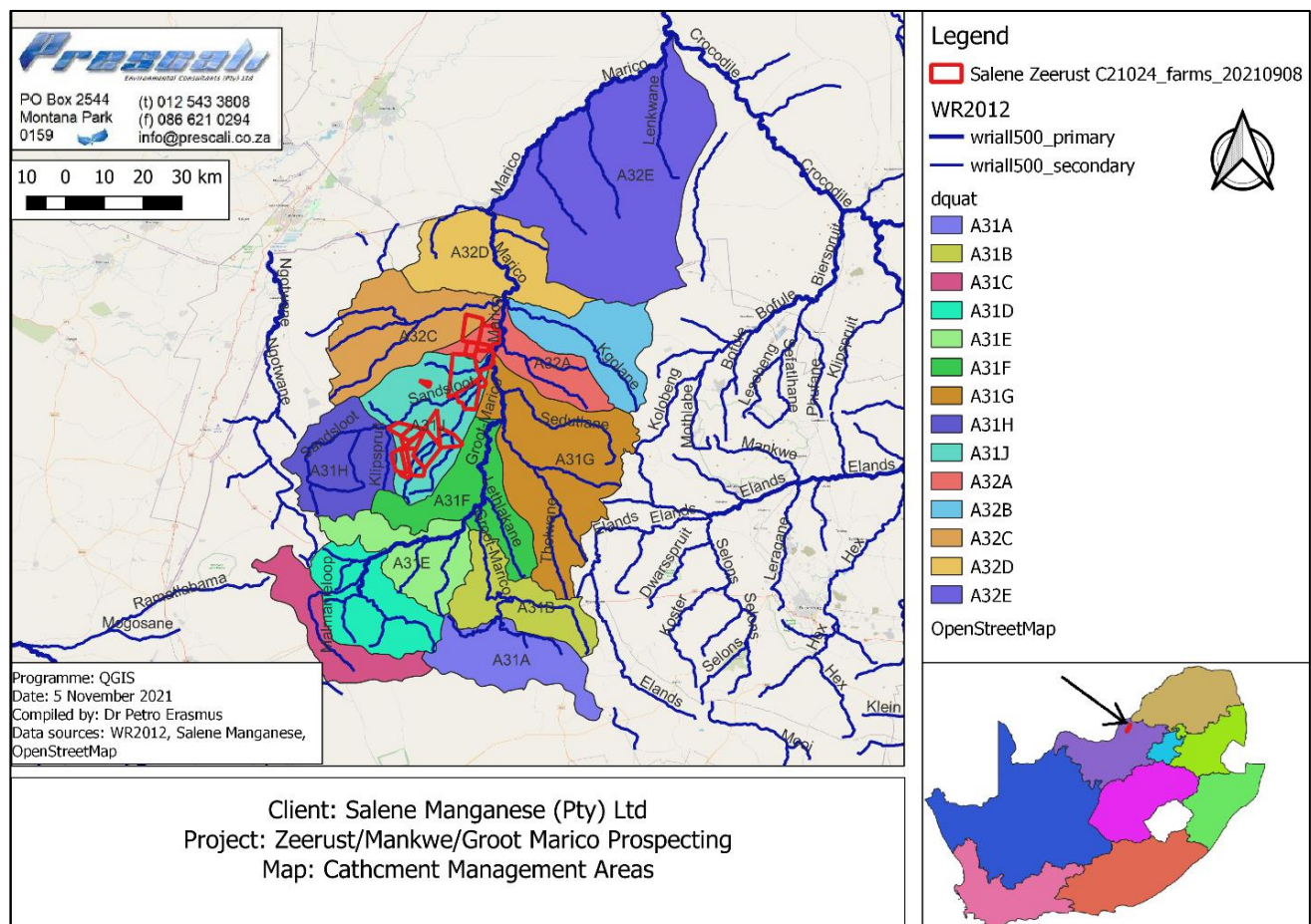


Figure 10-17: Groot Marico Catchment Quaternary areas

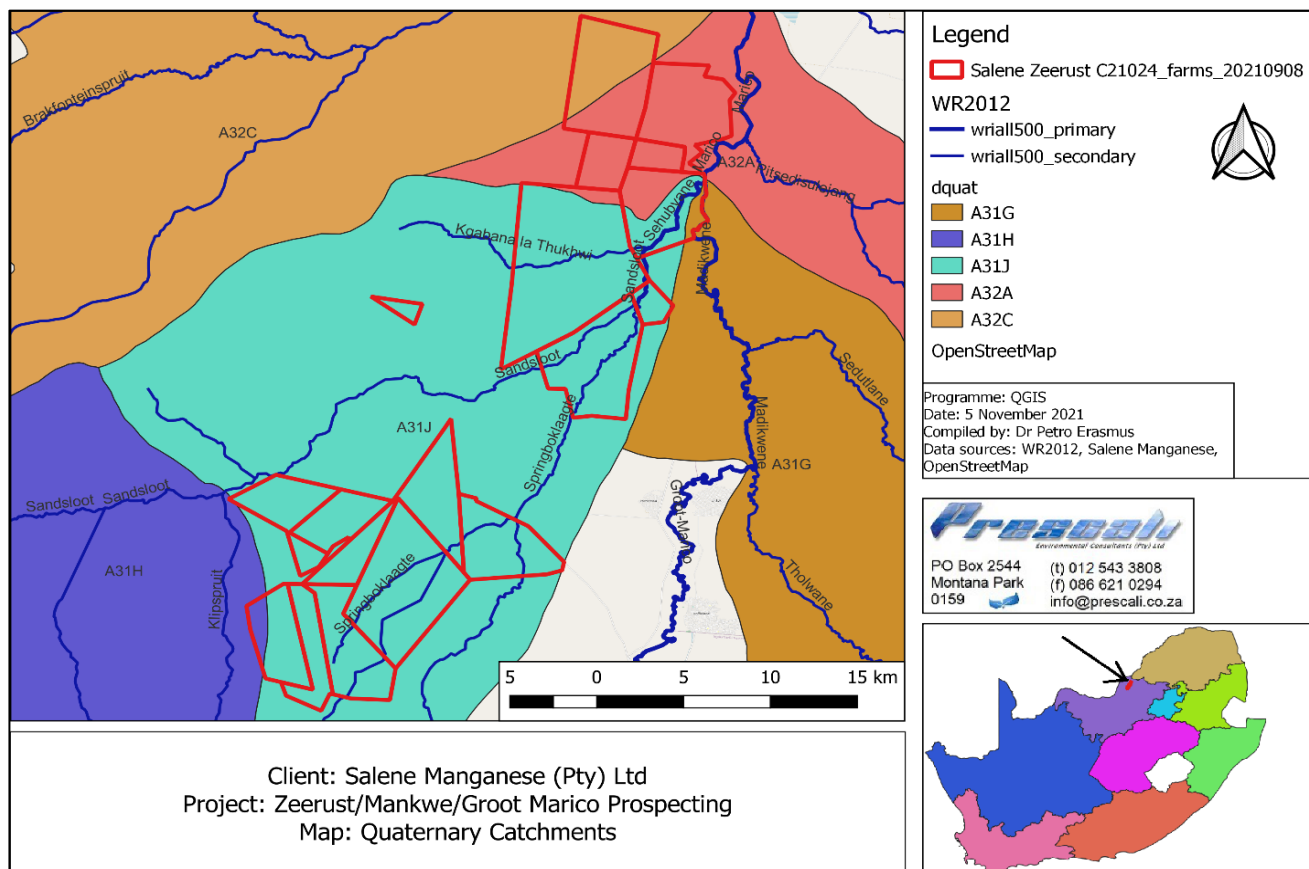


Figure 10-18: Location of the prospecting rights application area in relation to quaternary catchment boundaries

The mean annual evaporation, mean annual precipitation and MAR for the quaternary catchments are indicated in Table 10-5.

Table 10-5: Applicable catchment areas MAR, MAP and MAE information (Baily & Pitman, 2015)

Area	Watercourse	Catchment area		MAE (mm) (S-pan)	MAP (mm)	Natural MAR (million m ³ /a)
		Nett (km ²)	Gross (km ²)			
Marico (A31 and A32)		12049	10363	1913 (avg)	557 (avg)	64 (avg)
A31G	Tholwane Lesigwane Metsolodi Sedutlane Madikwene	1427	1427	1849	583	21.76
A31H	Sandsloot Klipspruit	685	685	1949	579	5.21
A31J	Sandsloot Springboklaagte Kgabana la Thukhwi Sehubyana	846	846	1949	552	5.19
A32A	Pitsedisulejang Marico	473	473	1901	547	3.6
A32C	Brakfonteinspruit	904	841	1949	526	5.81
A31G	Prospecting footprint area	2,5228				0,038
A31H		3,6776				0,028
A31J		279,8572				1,717
A32A		65,7217				0,5

Area	Watercourse	Catchment area		MAE (mm) (S- pan)	MAP (mm)	Natural MAR (million m ³ /a)
		Nett (km ²)	Gross (km ²)			
A32C		20,6253				0,133

10.6.3 River Resource Classification

10.6.3.1 Ecological Status

The ecological status (EcoStatus) of a river refers to its overall condition or health, i.e., the totality of the features and characteristics of the river and its riparian areas, which manifests in its ability to support a natural array of species. This ability relates directly to the capacity of the system to provide a variety of goods and services.

The Minister of Human Settlement, Water and Sanitation is required to establish a classification system, and to determine the class and resource quality objectives for all or part of the resources considered to be significant.

From the desktop data assessment it can be seen that the Present Ecological Status (PES) from the 1999 assessment to the 2018 assessment remained mostly the same Class C. The Ecological Importance and Sensitivity Class (EI and ES) (Figure 10-19) of the prospecting right area range from moderate to high and from Low to High.

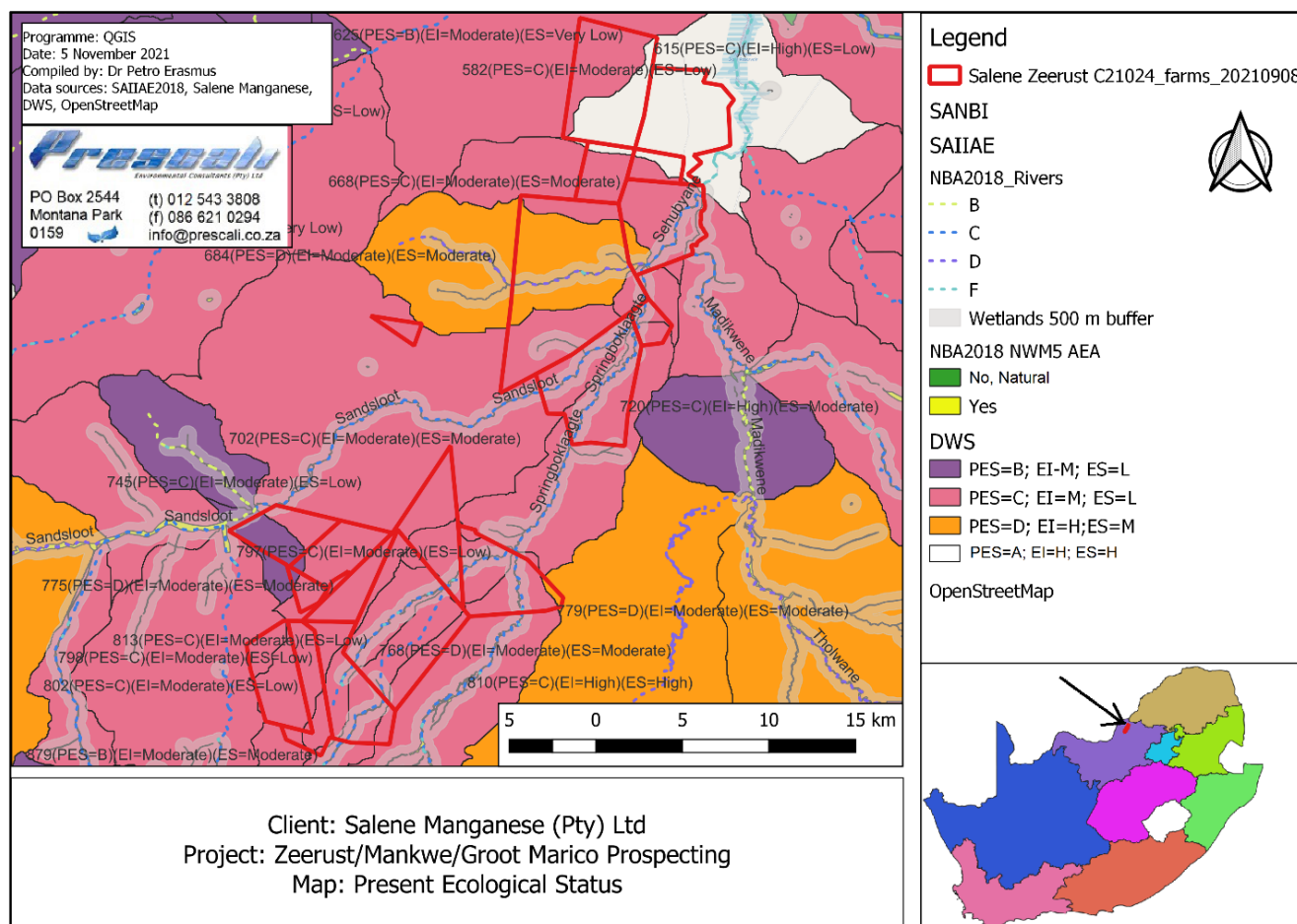


Figure 10-19: Present Ecological Status (CSIR, 2018) and Department of Human Settlements, Water and Sanitation)

The following is applicable to the identified EcoRegions (Kleynhans, Thirion, & Moolman, 2005):

- Ecoregion 7 (19365,5 km²) Western Bakenveld:
 - Dominant Morphology: Lowlands, Hills and Mountains, Moderate and High relief, Open hills, Closed hills.
 - Dominant vegetation types: Waterberg Moist Mountain bushveld; Miced Bushveld.
- Ecoregion 8 (32460,1 km²) Bushveld Region:

- Dominant Morphology: Plain Low Relief.
- Dominant vegetation type: Mixed Bushveld.

10.6.3.2 Preserve determination and protection status

A comprehensive reserve determination was conducted and published in 2017 (DWS, 2017). The prospecting area falls within the Resource Unit (RU) 11a_1 (Groot Marico from outflow Marico Bosveld Dam to Molatedi Dam, all tributaries) and upstream of 11a_2 (Molatedi Dam).

- 11a_2: The Integrated Unit of Analysis (IUA) is a Class III (heavily used) and the PES is a C/D category. The Groot Marico has a high Ecological Importance and Sensitivity (EIS) as the reach forms a natural refugium with a number of perennial pools. The land area is degraded due to over grazing and development: e.g., the Madikwe WWTW discharges into the Tholwane River and smaller dams that supply water to local communities (Pella Dam, Madikwe, Sehujane Dam) are present on the tributaries. Water quality must be protected. The prospecting footprint area does not intercept the priority wetland identified in this unit namely the Lower Lenkwane River wetland which is located north near the confluence with the Limpopo River.
- 11a_2: The IUA is a Class III and must be protected as releases from the dam are made in respect of meeting the international obligations with Botswana and for downstream irrigation use (Derdepoort). In addition, the dam habitat must be maintained for fish refugia and mammals. Some recreational activities (e.g., angling – due to good populations of fish) take place at the dam.

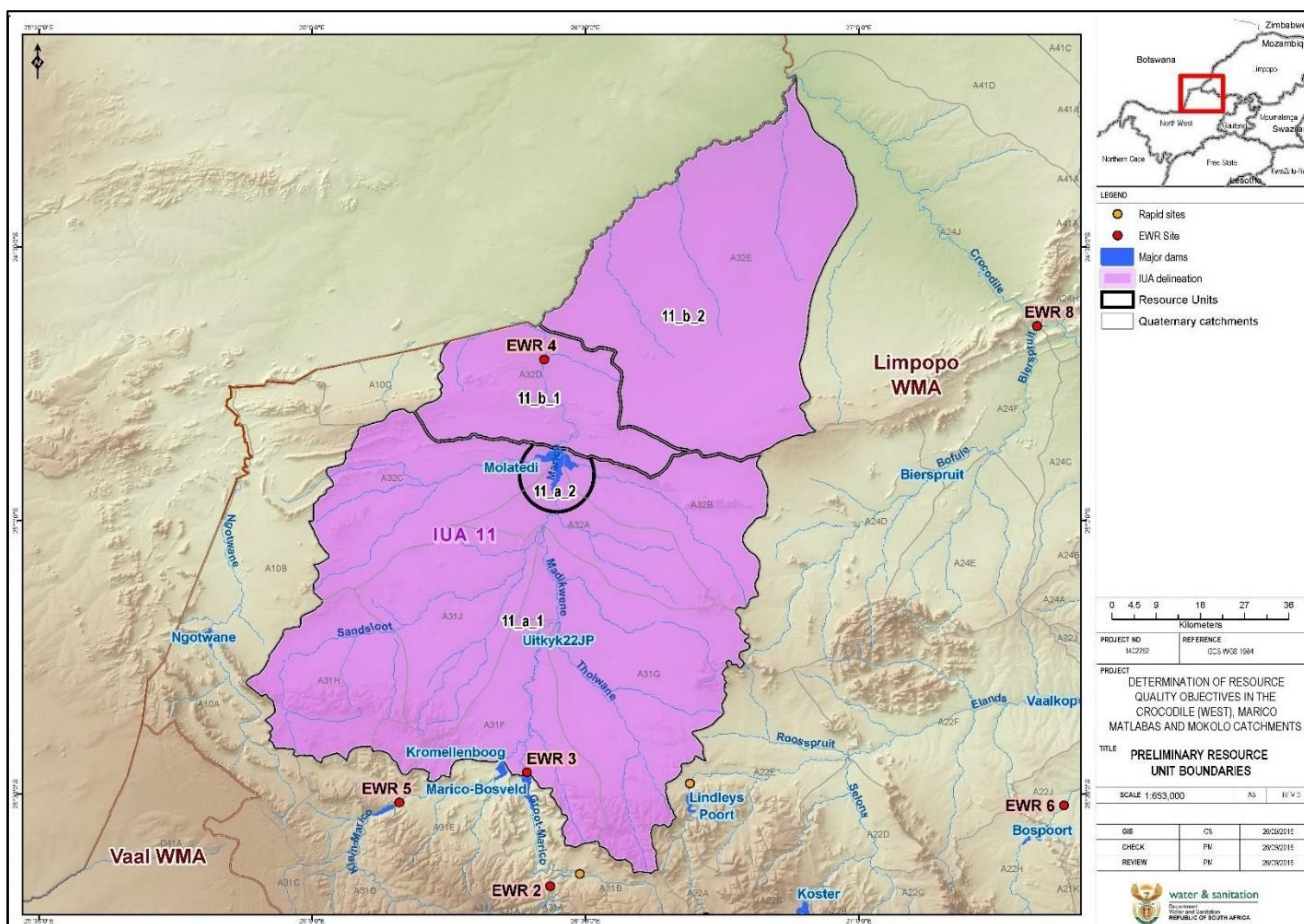


Figure 10-20: Delineation of RU11 (DWS, 2017)

Table 10-6: Classification of the selected River Reaches near / crossing the prospecting footprint area (CSIR, 2018) (CSIR, 2011)

Aspect	Brakfontein spruit	Klipspruit	Sandsloot	Kgabana la Thukhwi	Sehubyane	Madikwene	Marico
Distance to prospecting area	1,753 m	322 m	0 m	0 m	0 m	0 m	0 m
Reach Number	A79	A70	A41	A261	A41	A307	A307
Flow	E: Ephemeral	P: permanent / seasonal					
Order	2	1	3	1	3	3	4
Mainstem	1	0	1	0	1	1	1
PES1999	C: Moderately modified					D: Largely modified	C: Moderately modified
Ecoregion	7_1	8_6	8_6	8_6	8_6	8_6	8_6
Geomorphic Zone	E: Lower foothills	D: Upper foothills	E: Lower foothills		Z: Lowland River	E: Lower foothills	
River Type	7_N_L	8_P_U	8_P_L	8_P_L	8_P_L	8_P_L	8_P_L
FFRID	0	0	0	0	0	0	0
FFRREGION	Null	Null	Null	Null	Null	Null	Null
FFRFlagship	0	0	0	0	0	0	0
PES_2018	C: Moderately modified						
NBA2018ETS	Endangered	Critically endangered					
NBA2018PL	Not Protected						
FRID_2018	0	0	0	0	0	0	0
FRFAG_2018	0	0	0	0	0	0	0

- FFRID: Free flowing river identification. Each system and its tributaries have the same identifier.
- FFRREGION: The lumped ecoregion into which free-flowing rivers fall, used to achieve representation of free-flowing rivers across the country.
- FFRFlagship: Flagship free-flowing rivers as identified through an expert review process.
- PES_2018: Data that became available between 2011 and 2017 from Reserve or Ecological Water Requirement (EWR) and Water Resource Classification System (WRCS) studies.
- NBA2018ETS: Ecosystem threat status (ETS) of river ecosystem types: this was based on the extent to which each river ecosystem type had been altered from its natural condition.
- NBA2018PL: Ecosystem protection level (EPL) of river ecosystem types: river ecosystem types in protected areas needed to be in good condition rivers (A or B ecological category) to be considered as protected. Well protected, moderately protected, poorly protected river ecosystem types have at least 100%, 50%, 5% of their biodiversity target in protected areas and in natural or near-natural ecological condition; not protected river ecosystem types have < 5%.
- FRID_2018: Free-flowing river ID. Each system and its tributaries have the same identifier.
- FRFAG_2018: In NBA 2018 where no river condition changes were recorded the free-flowing/flagship rivers remained unchanged.



10.6.4 Background Water Quality

Background water quality data was sourced from the DWS and the following two sites were used:

- WMS A31_192586¹⁵: Ramokgolela Nooitgedacht: 16 samples were taken from 2011-05-16 to 2011-09-20 however data for only 8 was available and only included pH: the pH ranged from 7.81 to 8.42.
- A3R4 (WMS A32_90326)¹⁶: Molatedi Dam at Eerstepoort: 661 samples were taken from 1988-05-09 to 2017-11-02.

Generally, the water is of good quality and suitable for domestic (DWAF, 1996) and agricultural use (DWAF, 1996) with only Chloride and Electrical conductivity exceeding the irrigation limits (DWAF, 1996).

Table 10-7: Average water quality at A3R4

Parameter		Marico	Aquatic	Domestic	Agriculture	
					Livestock	Irrigation
Alkalinity	mg CaCO ₃ /l	124,815	N/A	N/A	N/A	N/A
Calcium	mg Ca/l	19,37	N/A	< 32	< 1000	N/A
Chloride	mg/l	6,12	N/A	100	<1500 Monogastrics and poultry; <3000 other livestock	<1
Electrical conductivity	mS/m	27,76	15% from normal	< 70	156 (Dairy Pigs and Poultry), 313 Cattle & Horses, 469 (Sheep)	6,25
Fluoride	mg/l	0,35	< 0.75	< 1	< 2 All other livestock; < 6 ruminants	< 2
Magnesium	mg/l	17,34	N/A	< 30	< 500	N/A
Nitrate and nitrite	mg/l	0,11	N/A	< 6 NO ₃ and NO ₂	< 100 NO ₃ ; < 10 NO ₂	N/A
pH	pH units	8,18	5% from normal	6 - 9	N/A	6.5 - 8.4
Potassium	mg/l	5,49	N/A	< 50	N/A	N/A
Silicon	mg/l	3,82	N/A	N/A	N/A	N/A
Sodium	mg/l	7,24	N/A	< 100	< 2000	< 70
Sulphate	mg/l	11,25	N/A	< 200	< 1000	N/A

10.6.5 Surface Water Quantity

10.6.5.1 Mean Annual Runoff

The MAR is indicated in Table 10-5.

10.6.5.2 Flow

Flow data was available for several points in the system and two were selected:

- A3H032 (Klien Marico @ Veeplaats) for 1979-11-07 to 1999-10-31; and
- A3H007 (Groot Marico River @ Eerstepoort) for 1957- 1984-11-05.

Unfortunately, issues were experienced and Realtime flow meter data could not be downloaded as the webpage generated error codes. Zip files for the maximum recorded at a specific date per year was available for download and based on that the following is noted:

- A3H031 maximum flow recorded for the applicable period was 81.34 cumec on 2000-02-10; and
- A3H007 maximum flow recorded for the applicable period was 86.774 cumec (several dates and all levelled as A: above rating).

¹⁵ www.dwa.gov.za/iwqs/wms/data/A31/A31_192586.zip 5 November 2021

¹⁶ http://www.dwa.gov.za/iwqs/wms/data/A32/A32_90326.zip 5 November 2021

10.6.6 Wetland areas

A wetland is defined as “land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil”. As described by (DWA, 2005) the word “wetland” refers to ecosystems of which the primary driving force is water. Its prolonged presence in wetlands is a fundamental determinant of soil characteristics and plant and animal species composition. Any part of the landscape where water accumulates for long enough and often enough to influence the plants, animals and soils occurring in the area is thus a wetland. The objective for the delineation procedure is to identify the outer edge of the temporary zone. This outer edge marks the boundary between the wetland and the adjacent terrestrial areas.

Wetlands must have one or more of the following factors:

- Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation;
- The presence, at least occasionally, of water loving plants (hydrophytes);
- A high-water table that results in saturation at or near the surface, leading to anaerobic conditions developing in the top 50cm of the soil; and
- Terrain unit indicator to identify the locality of the wetland within the landscape.

Using the information as sourced from the 2018 Wetlands assessment (SAIIAE) (CSIR, 2018) several wetland systems were identified, mostly connected to the rivers in that area.

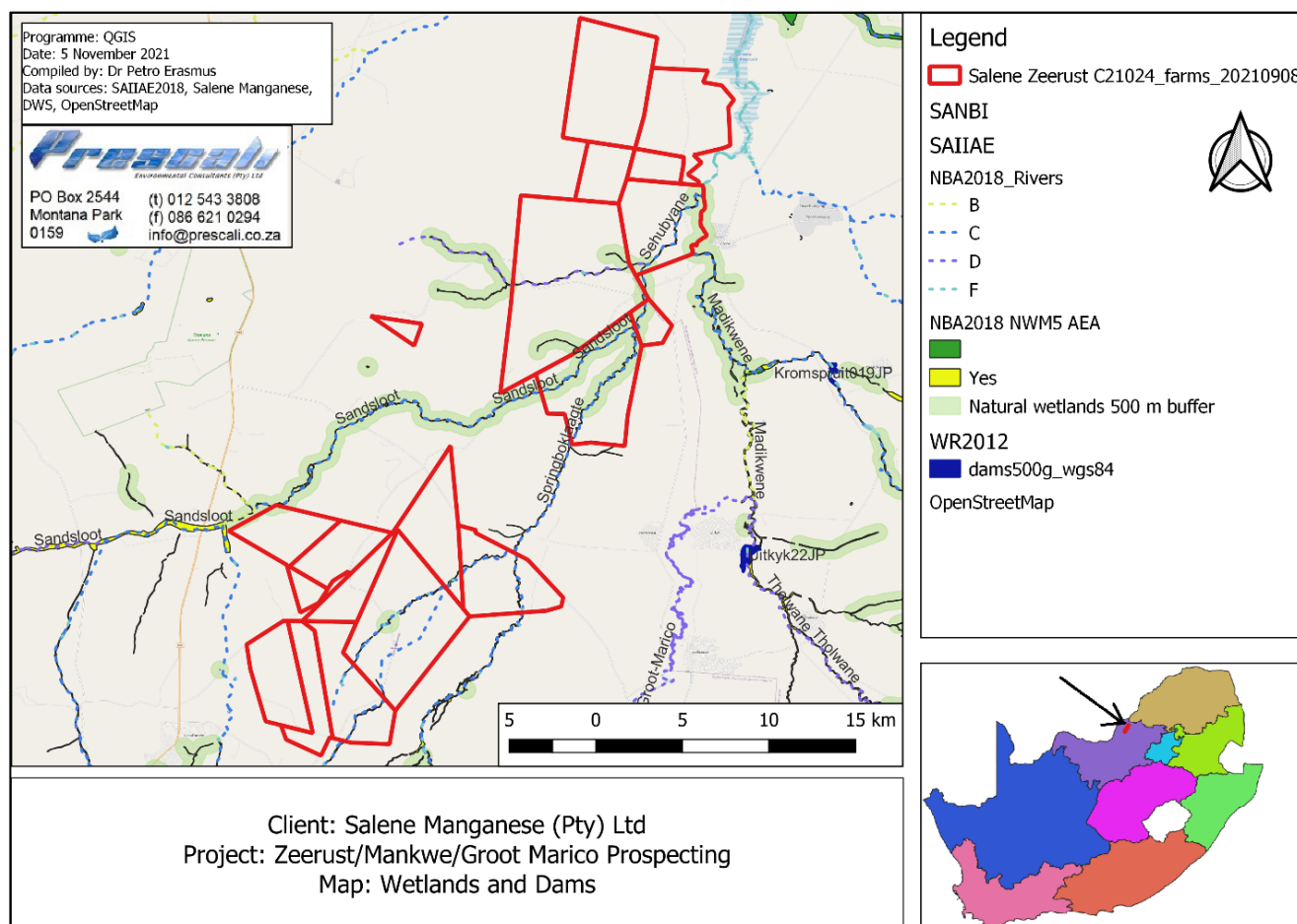


Figure 10-21: Wetlands as per the SAIIE database

10.6.7 Site specific Aquatic Ecosystem Descriptions

10.6.7.1 Aquatic Ecosystem Types

Aquatic ecosystems can be classified into two types namely:

- Lentic Ecosystems: and



- Lotic Ecosystems.

10.6.7.2 Lentic Ecosystems – Wetlands, Impoundments, Lakes

Lentic ecosystems refer to standing or basin ecosystems and include lakes, impoundments and wetlands

Generally, lakes are formed in basins created by geological activities e.g. warping and faulting of the earth's crust or as a result of glacial activities. There are no lakes within the prospecting rights area.

Impoundments, or dams are manmade infrastructures and can be onstem (i.e. the watercourse itself is dammed) or offstem (i.e. the dam is located a distance from the watercourse and water is pumped from the watercourse / underground reservoir to the dam). There are several dams located in or near the prospecting area (DWA, 2004):

- A31G: in the Thulane River is the Madikwe Dam that is owned by DWS and has a yield of 1.2 million m³/a allocated for domestic use.
- A31G: in the Thulane River is the Pella Dam that is owed by DWS, has a yield of 0.74 million m³/a and it is also allocated to Domestic use.
- A31H: in the Sandsloot River is the Sehujwane Dam, owed by DWS with a yield of 0.52 million m³/a allocated for domestic use.
- A32A/B/C in the Groot Marico River is the Molatedi Dam, owed by DWS this dam has a yield of 21 million m³/a that is allocated to irrigation and domestic water use.

10.6.7.3 Lotic ecosystems – Rivers, streams etc.

Lotic systems include rivers and the most outstanding feature of such habitats are flowing water which moulds the characteristics of the water bed and influences the distribution of the organisms therein.

A water course is defined by the NWA as:

- River or spring;
- A natural channel in which water flows regularly, or intermittently;
- A wetland, lake or dam into which, or from which water flows (refer to Section 10.6.7.2); and
- Any collection of water that the Minister may, by notice in the Gazette, declare to be a water course, and a reference to a watercourse includes where relevant, its bed and banks.

For the purpose of this assessment, the applicable river / watercourse reaches was classified according to the guidelines by DWS in "A practical field procedure for identification and delineation of wetlands and riparian areas" as shown in Figure 10-22. Using this classification, three sections along the length of a watercourse are defined based on their position relative to the zone of saturation in the riparian area:

- Section "A" is defined as being above the zone of saturation and it therefore does not carry baseflow. They are mostly too steep to be associated with alluvial deposits and are not flooded with sufficient frequency to support riparian habitat or wetlands. This type does however carry storm runoff during fairly extreme rainfall events, but the flow is of short duration, in the absence of baseflow. The "A" watercourse sections are the least sensitive watercourses in terms of impacts on water yield from the catchment.
- Section B reaches are in the zone of the fluctuating water table, baseflow is intermittent and dependant on the current height of the water table and as the channel bed is in contact with or in close proximity to the water table residual pools are often observed when flow cease. The top end of the B Section is marked by the most headward extent of base flow in the channel during wet periods, when the water table is high, and the bottom end of the B Section is marked by the most downstream extent of zero flow during dry periods (when the water table is low). With regards to slope, the channel bed is flat enough to allow for the deposition of material and initial signs of flood plain development may be observed.
- Section C streams are perennial streams and thus always have contact with the zone of saturation (except during extreme drought conditions). These sections are very flat and a flood plain is usually present.

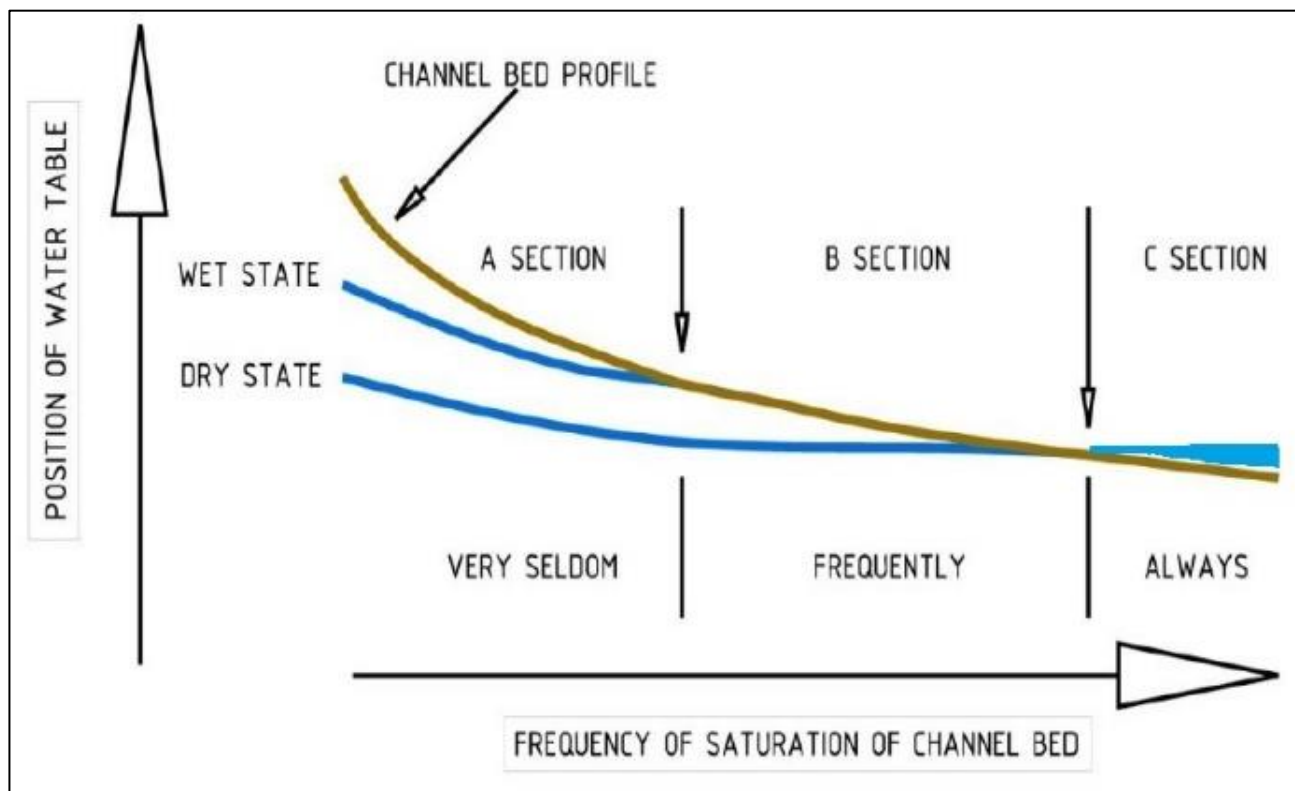


Figure 10-22: River Classification (DWAf, 2005)

The rivers flowing through the prospecting right area were deemed to be Section B and C Rivers due to the perennial / season classification as per Table 10-6.

10.6.8 Drainage Density

Due to the size of the prospecting right area, it was divided into three areas:

- 14 JP;
- Northern area; and
- Southern area.

10.6.8.1 14 JP

The drainage density at 14 JP was determined as 0 km/km².

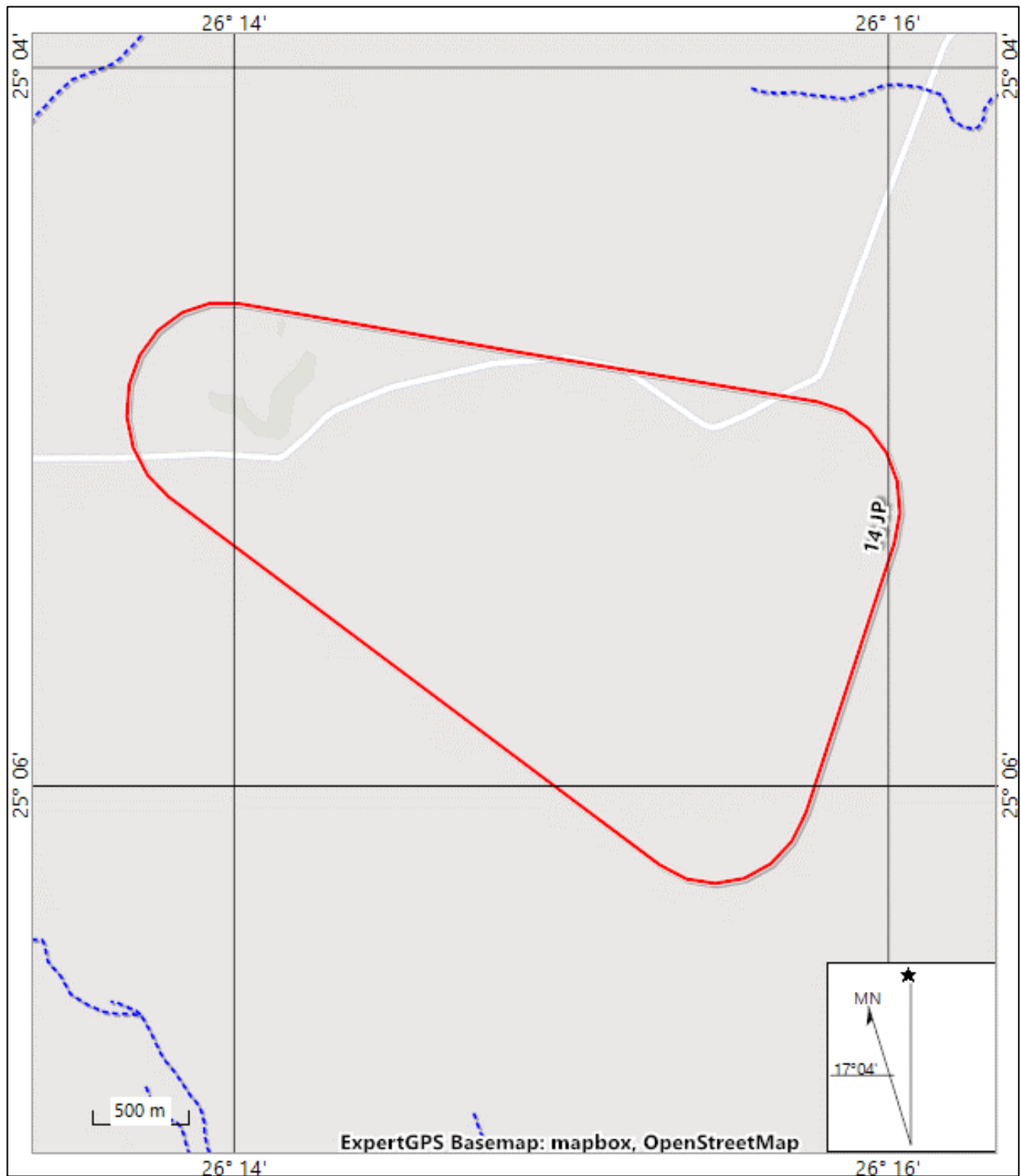


Figure 10-23: 14 JP drainage density

10.6.8.2 Northern area

The drainage density at Northern area was determined as 0,88172477 km/km².

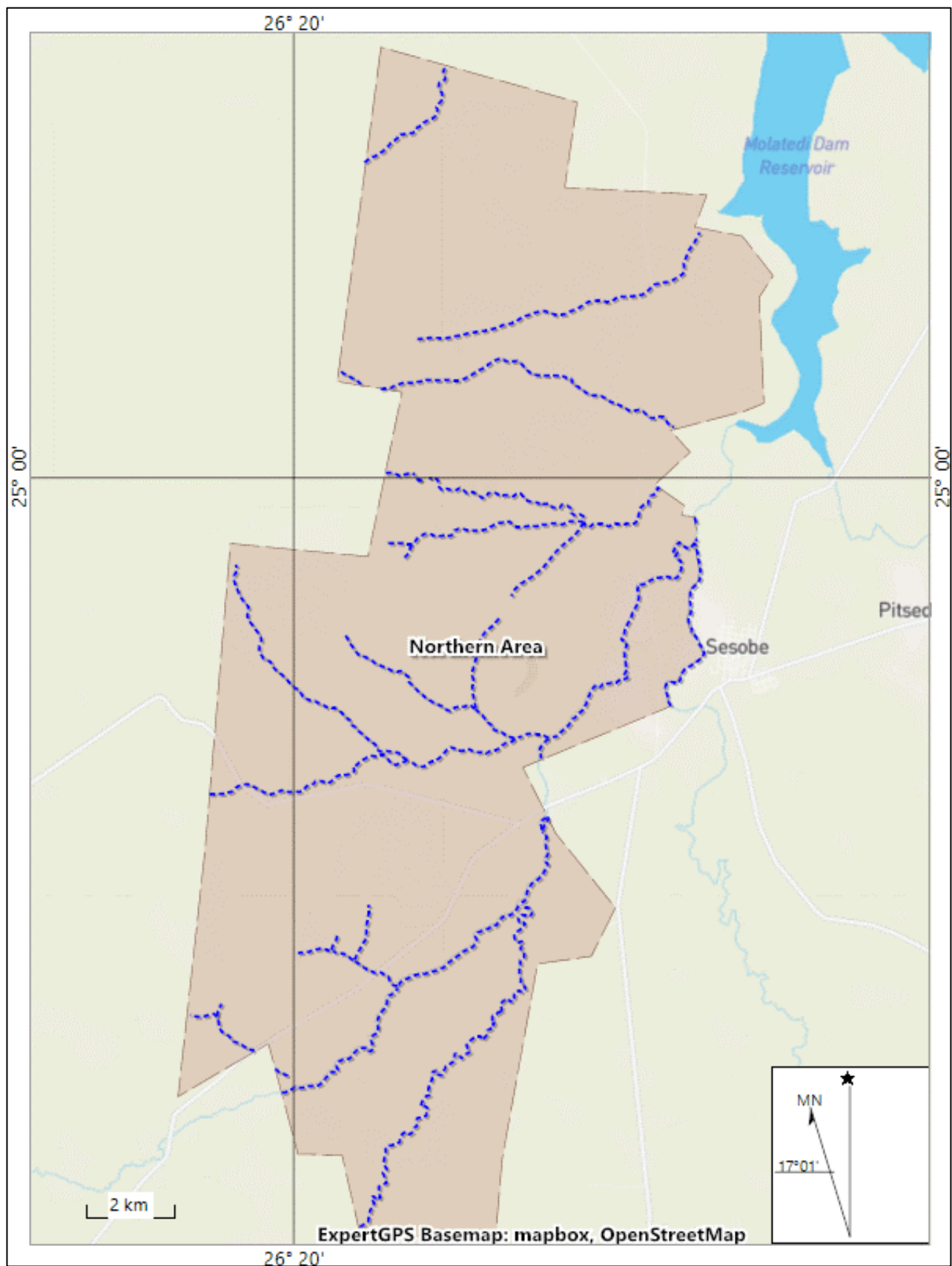


Figure 10-24: Drainage density for the northern area

10.6.8.3 Southern area

Drainage density at the Southern area was determined at 0,037164732 km/km².

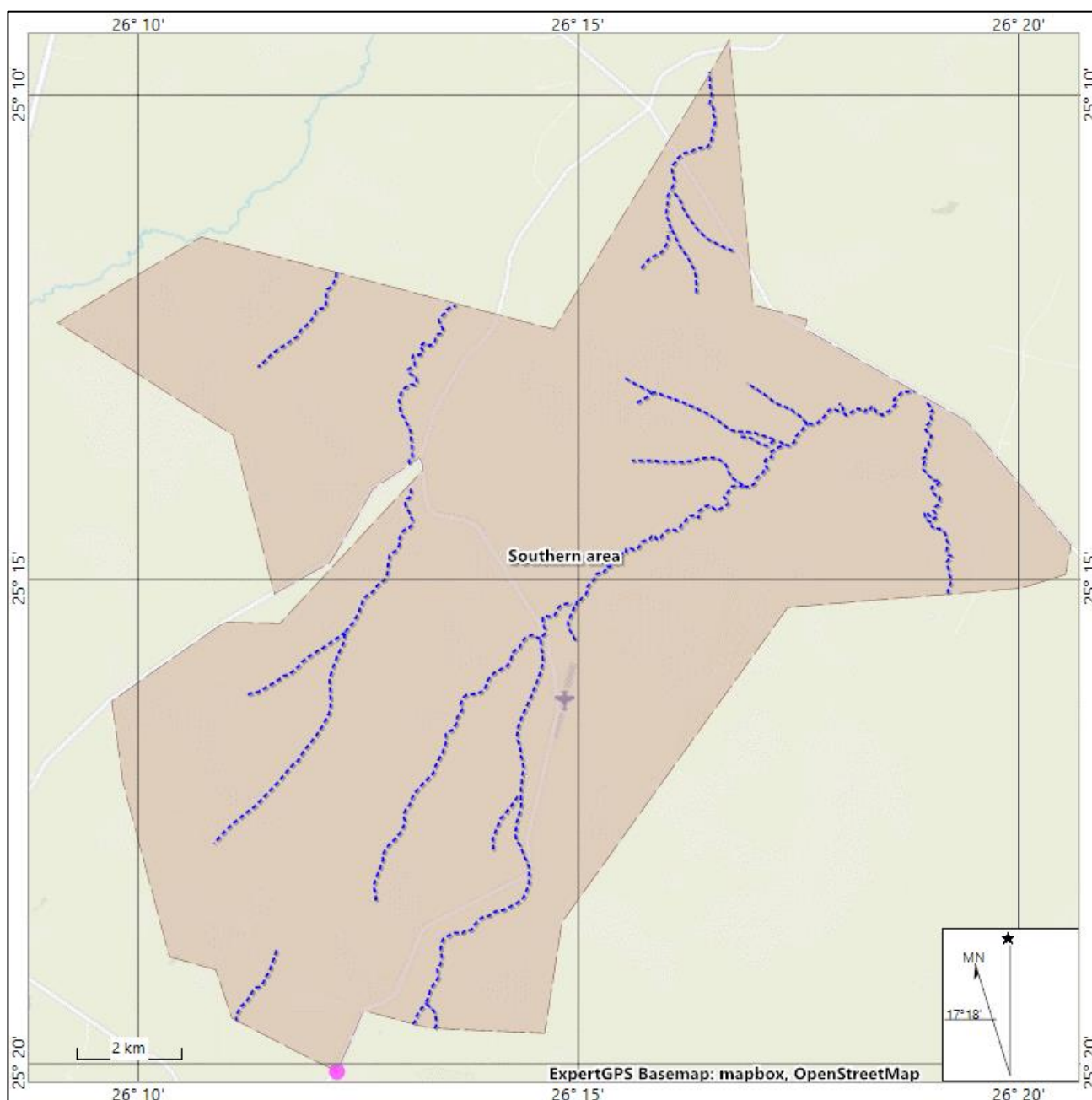


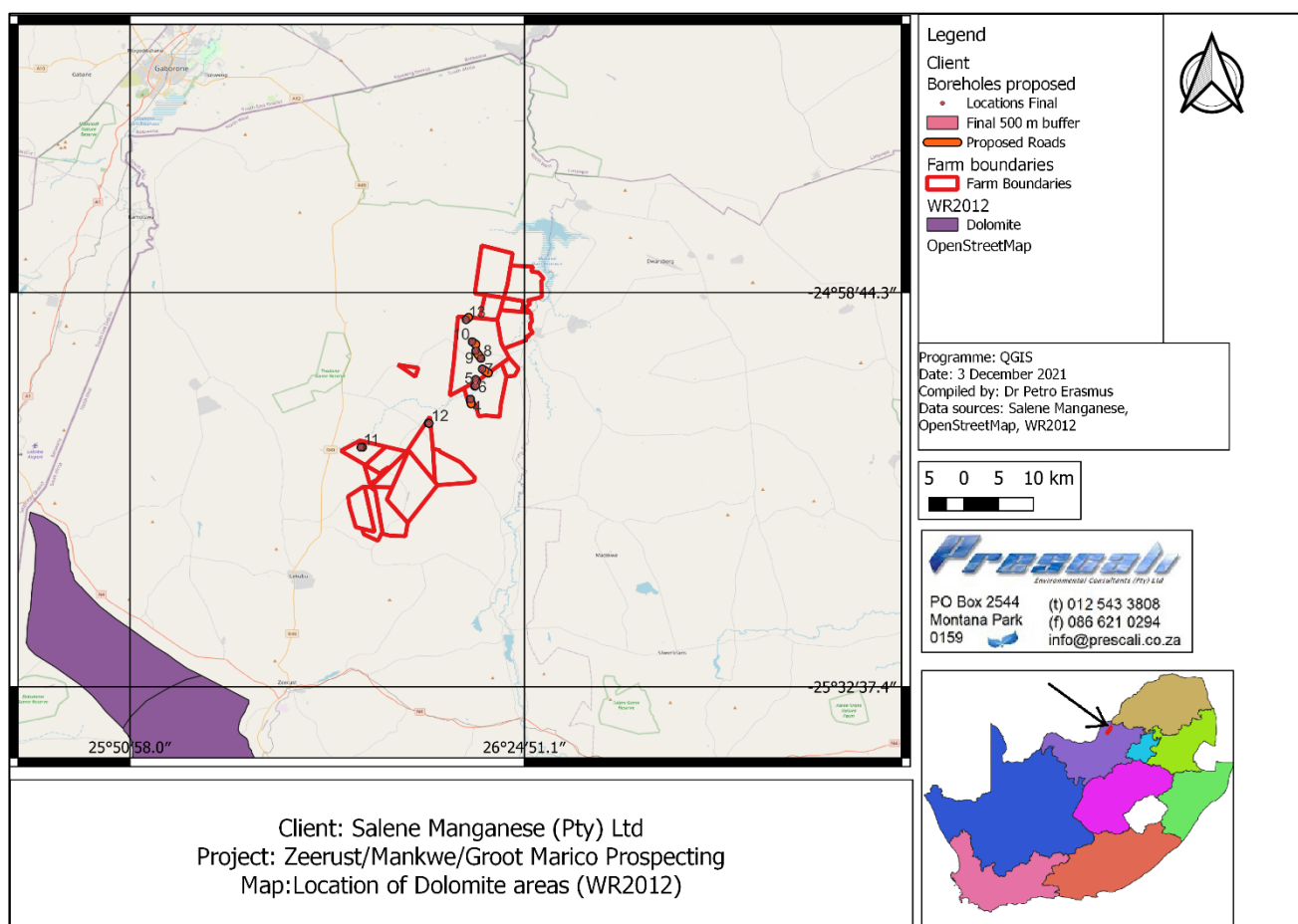
Figure 10-25: Southern area drainage density

10.6.9 Flood Lines

No flood lines were determined or available for inclusion into this report.

10.7 GROUNDWATER

An important feature with regard to the water resources in the Crocodile (West) and Marico water management area, are the large dolomitic aquifers which occur along most of the southern part of the water management area from Pretoria to Mafikeng. Large quantities of water are abstracted from these aquifers, mainly for urban and irrigation use, while a significant portion of the base flow of several tributary rivers originates as springflow from these aquifers. Some dolomitic aquifers extend across the boundaries of water management areas while inter-connections between aquifers also occur. The prospecting area is not underlain by dolomites as per WR2012.



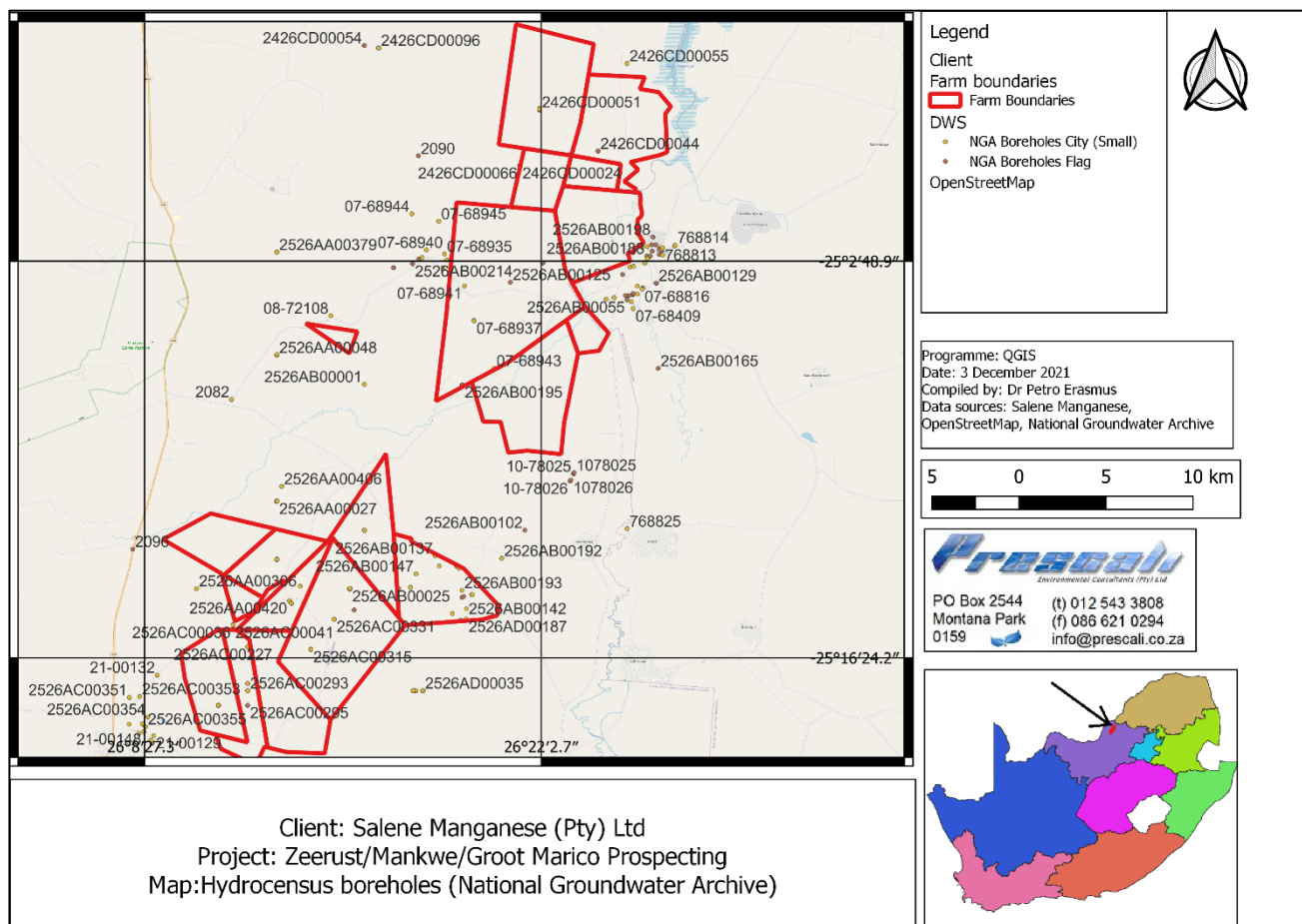


Figure 10-27: Hydrocensus boreholes (National Groundwater Archive)

10.8 AIR QUALITY

Given the arid nature of the area, current levels of particulate matter (PM) in the atmosphere are expected to be low. Existing land uses such as agriculture contribute to baseline pollutant concentrations via the following sources:

- Unpaved and paved roads: Emissions from unpaved roads constitute a major source of emissions to the atmosphere in the South African context. Dust emissions from unpaved roads vary in relation to the vehicle traffic and the silt loading on the roads. Emission from paved roads is significantly less than those originating from unpaved roads, however they do contribute to the particulate load of the atmosphere. Particulate emissions occur whenever vehicles travel over a paved surface. The fugitive dust emissions are due to the re-suspension of loose material on the road surface.
- Wind erosion and open areas: Windblown dust generates from natural and anthropogenic sources. Erodible surfaces may occur as a result of agriculture and/or grazing activities.
- Vehicle tailpipe emissions: Emissions resulting from motor vehicles can be grouped into primary and secondary pollutants. While primary pollutants are emitted directly into the atmosphere, secondary pollutants form in the atmosphere as a result of chemical reactions. Significant primary pollutants emitted combustion engines include carbon dioxide (CO₂), carbon (C), sulphur dioxide (SO₂), oxides of nitrogen (mainly NO), particulates and lead. Secondary pollutants include NO₂, photochemical oxidants such as ozone, sulphur acid, sulphates, nitric acid, and nitrate aerosols (particulate matter).

Realtime air quality data is available from <https://aqicn.org/map/southafrica/> for Mahikeng and based on data collected from the website on 3 December 2021 the air quality in the area is considered to be Good.

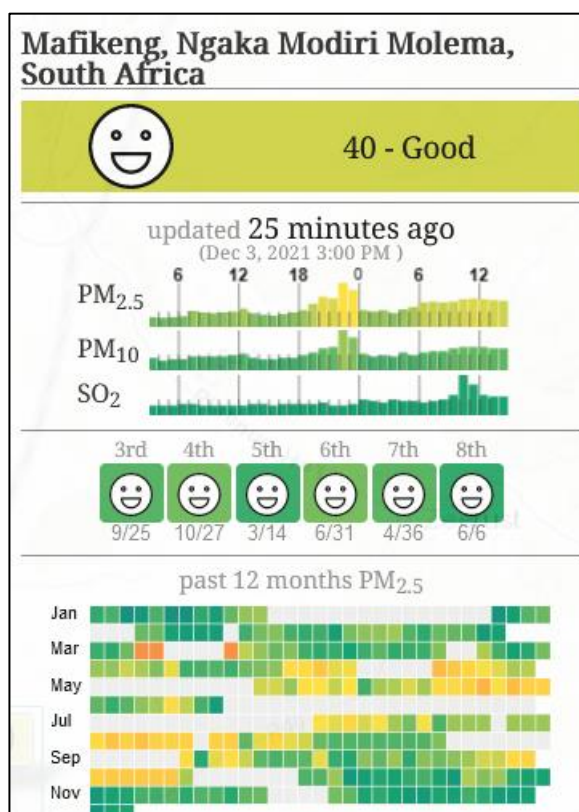


Figure 10-28: Air Quality in Mahikeng (<https://aqicn.org/map/southafrica/> 4 December 2021)

10.9 HERITAGE AND CULTURAL RESOURCES

APelser Archaeological Consulting (APAC) was appointed by Prescali Environmental Consultants (Pty) Ltd on behalf of Salene Maganese (Pty) Ltd to conduct a desktop-based Heritage Impact Assessment for their Salene Zeerust Prospecting Rights Application. (Refer to Appendix 7.3).

There are some known Stone Age sites in the study area, including rock art (engravings) sites located in the larger geographical area a few kilometers west of Zeerust and near Groot Marico to the east of Zeerust (Bergh 1999: 5 as cited in the Specialist report). A number of individual MSA/LSA stone tools were also identified in the area of Zeerust during recent assessments by the author (Pelser 2013 & 2016 as cited in the Specialist report).

In a band stretching roughly from Brits in the east to Zeerust in the west there are many known Iron Age sites (Bergh 1999: 7-8 as cited by APAC). These all belong to the Later Iron Age (Bergh 1999:8-9). No EIA sites are known to occur in the area (Bergh 1999: 6). By the end of the 18th century the Ba Hurutshe stone walled sites (capitals) were located at Kaditshwene and Tshwenyane north of Zeerust (Bergh 1999: 106). Prof. J.Boeyens of UNISA did extensive archaeological research on this and other sites in the region (Boeyens 2003). A number of Late Iron Age stone walled sites and features were also located during a recent assessment in the Zeerust area by the author (Pelser 2013: 15-16; 18-20) as cited by APAC.

During earlier times the area was settled by the Fokeng. In the 19th century this group inhabited this area with other Tswana groups including the Kwena and the Po (Bergh 1999: 9-10). During the difaqane these people moved further to the west, but they returned later on (Bergh 1999: 11).

Tom Huffman's research work shows that Iron Age sites, features or material could possibly be found in the area. This could include the so-called Uitkomst facies of the Urewe Tradition dating to between AD1650 and AD1820 (Huffman 2007: 171 as cited by APAC); Rooiberg facies of the same tradition dating to between AD1650 and AD1750 (p.175); Olifantspoort facies of Urewe dating to between AD1500 and AD1700 (p.191); the Madikwe facies of the Urewe Tradition dating to between AD1500 & AD1900 (p.193) and finally the Buispoort facies of the same tradition dating to between AD1700 and AD1840 (Huffman 2007: 203).



Early travellers have moved through this part of the Northwest Province. This included David Hume in 1825, Robert Scoon and William McLuckie in 1829 and Dr Robert Moffat and Reverend James Archbell in 1829 (Bergh 1999: 12, 117-119). Hume again moved through this area in 1830 followed by the expedition of Dr. Andrew Smith in 1835 (Bergh 1999: 13, 120-121). In 1836 William Cornwallis Harris visited the area. The well-known explorer Dr. David Livingstone passed through this area between 1841 and 1847 (Bergh 1999: 13, 119-122).

A number of battles were fought in the larger area during the Anglo-Boer War (1899-1902), including the battle of Kleinfontein on the 5th of September 1901 and the battle of Marico River on the 24th of October 1901 (Bergh 1999: 54).

With no physical field assessments conducted in the study and Prospecting Rights Area it is difficult to determine if any sites, features or material of cultural heritage origin or significance are located here and if there will be any impacts on such sites as a result of the planned prospecting and any resultant future mining. It needs to be mentioned here as well that large sections of the area have been extensively impacted by mining (Driekop 14JP), while others have been impacted heavily by recent past and current agricultural activities. If any sites, features or material of archaeological and/or historical origin and significance did exist in these specific areas it would have been substantially disturbed or destroyed as a result of these activities.

It is evident from the desktop study that archaeological/historical sites and finds do occur in the larger geographical landscape within which the specific study area is located. Based on this it is very possible that open-air Stone Age sites could be found in the area, especially in the form of varying densities of stone tool scatters around the many streams and rivers in the area. Erosion dongas caused by these are the likely areas that will host these types of sites. The possibility of Iron Age sites (especially stone-walled Late Iron Age sites) in the areas can also not be excluded, specifically close to and around rocky ridges and hills. Recent historical sites and features that could be present in the area includes historic farmsteads/homesteads and farm labourer houses. Informal farm cemeteries and more formal graveyards associated with these farmsteads and rural villages in and around the area is also a possibility. This could also include previously unknown and unmarked graves.

Google Earth images of the area were scrutinized to see if any possible sites or features are visible, and some could be identified from these. Although open-air Stone Age sites and material could obviously not be identified from these aerial images, various farmsteads and related structures, recent settlements, as well as Late Iron Age stone-walling (e.g. on Zelikatskop 16JP) could be recorded. This should only be seen as examples of the types of sites that could be present in the various application areas and it is highly likely that many similar sites are distributed throughout the study area. Dense vegetation cover would make many sites and features indiscernible from the aerial images, while the subterranean nature of archaeological and historical remains should always be taken in mind.

10.10 SOCIO ECONOMY

10.10.1 Ngaka Modiri Molema District Municipality

The prospecting area falls within the Ngaka Modiri Molema District Municipality and the Ramotshere Local Municipality. Ngaka Modiri Molema District Municipality falls within one of the four district municipalities of the North West Province. Ngaka Modiri Molema District Municipality has a population of 961 960.

Table 10-8 shows population of Ngaka Modiri District Municipality by gender. The number of females recorded was 493 707 persons and the males recorded was 469 252 persons. Gender proportions show that there are more females than males in the district 51.31% females and 48.69% males (Ngaka Modiri Molema District Municipality, 2020).

Table 10-8: Population distribution by Sex for the Ngaka Modiri Molema District

Gender	Population	Percentage %
Female	493 707	51.31%
Male	468 252	48.69%

Table 10-9 summarizes the number of persons by population group type. Black Africans make up 94.24% of the total population followed by Whites who make up 3.38%, then Coloureds who equate to 1.56% of the total population. The smallest group of the District is the Asian Group who makes up 0.72% (Ngaka Modiri Molema District Municipality, 2020).

Table 10-9: Population distribution by Race for Ngaka Modiri Molema District Municipality

Race	Number	Percentage
Black African	893 000	94.34%
Coloured	14 800	1.56%
Asian	6 840	0.72%

Setswana (88.92%) is the most widely spoken language of the District followed by Afrikaans (3.29%) and Sesotho (2.26%) (*Department of Cooperative Governance & Traditional Affairs, 2020*).

Due to the location of the Ngaka Modiri Molema District Municipality, there are great employment opportunities which drive the economic development of the District. The main reasons as to the high employment opportunities is due to the Platinum Corridor, the N4 and the N18 Western Frontier Corridor N18. The number of people who are formally employed in the Ngaka Modiri Molema District Municipality equates to 204 593 according to 2019 statistics which is around 84.69% of the total employment rate of the District. The main economic sectors that drive employment of the District are the trade sector (17.7%), the electricity sector (0.6%) and the mining sector (2.5%) (Ngaka Modiri Molema District Municipality, 2020).

The unemployment rate of the District was 19.2% in 2019 which is lower than the rate of unemployment of the North West Province which is at 28.8% (Ngaka Modiri Molema District Municipality, 2020).

Education is often a means to expand the range of career options a person may choose from and influence a person's income and ability to meet their basic needs. Education levels and income levels thus become important indicators of human development. In 2018, 162 000 individuals of the District were considered to be illiterate while the number of literate individuals was 469 000 (Ngaka Modiri Molema District Municipality, 2020). Table 10-10 shows the percentage of individuals within the District population at the different education levels.

Table 10-10: Education Levels

Education Level	Percentage
No Schooling	11.74%
Matric	24.25%
Matric and Diploma/Certificate	4.22%
Matric and Degree	3.77%

10.10.2 Ramotshere Moiloa Local Municipality

The following information has been extracted from the Ramotshere Moiloa Local Municipality (RMLM) Integrated Development Plan of 2020/2021.

According to the Ramotshere Moiloa Local Municipality (RMLM) Integrated Development Plan of 2020/2021, is the municipality a category B municipality, which is located in the North West Province and is part of the Ngaka Modiri Molema District Municipality. The municipality was demarcated into 19 wards as part of the ward delimitation process towards the 2016 local government elections, as a result the municipal council has 19 ward councillors and 19 proportional representation councillors.

Ramotshere Moiloa Local municipality covers a total area of 7 191.6 km² and shares borders with Botswana in the north, Moses Kotane and Kgetleng Rivier Local Municipalities in the east and Ditsobotla and Mafikeng Local Municipalities in the south.

The dominant economic activities in the municipal area are crop and livestock farming and small mining operations of minerals. The service industry is the dominant employer in the municipality and as a result there is a need to diversify the economy by investing more in agriculture and manufacturing. The location of the municipal area along the border with Botswana also contribute to the local economy due to cross border trades by the residents of Botswana and travellers passing through the municipality, especially through the N4 toll road.

The main economic activities of the municipality are crop and livestock farming as well as small mining operations of minerals. The main employer in the municipality is the service sector and thus there is a greater need for to invest in agriculture and manufacturing.

The area jurisdiction of Ramotshere Local Municipality has over 40 villages located from distances of up to 120 km from the main town of Zeerust. As a result, the municipality is 70% rural, with the majority of its inhabitants living in villages, which are sparsely built and poorly serviced.

Most of the villages in the municipality falls under the traditional authorities and are led by Dikgosi or chiefs. The majority of the population of the municipality belong to the Batswana Tribe and as such they speak Setswana as their native language. Setswana is spoken by about 84% of the population followed by Afrikaans (4.4%) and English (3.7%).

The majority of households in the municipality stays in formal houses while 2 461 households stay in traditional houses. The mushrooming of informal settlements is worrying because they are normally accompanied by illegal land occupations. The informal settlements are concentrated on 22% of the municipality which is urban in nature.

With regard to home ownership, 82% of houses are owned by residents, while 42% are headed by females. The high number of females headed households can also be attributed to the limited job activities available in the municipal area.

Households in RMLM are relatively poor with almost 14, 66% earning no income at all. 93, 90% of the households earn less than R12 800/month. There has been significant growth in the income bracket earning between R3 500 and R12 800/month (growth of 17, 46%) – a clear signal for rental or gap market housing options.

As can be seen from the table below, about 88% of municipal households have access to clean piped water, while 12% have access to water through stand pipes, wells and other sources. The provision of clean and reliable water is one of the priorities of the municipality and a number of projects will be implemented to ensure that access to clean water is extended to all areas of the municipality.

Table 10-11 Access to clean water (Source: StatsSA 2016)

Level of Service	Number of households
Pipe water	42 722
Other	5 348

Access to toilet facilities remains a challenge in the municipality where the majority of households use VIP or pit toilets. These households are located in the tribal areas where about 29 456 are classified as using other forms of sanitation. About 16 505 of households have access to flush toilets, while only 2 108 do not have toilet facilities.

Table 10-12 Access to toilet facilities (Source: StatsSA 2016)

Level of Service	Number of households
Flush toilet	16 505
Other	29 456
None	2 108

The provision of electricity in the municipal area is shared by the municipality and Eskom, whereby Eskom supplies the greater part of the villages and the municipality supplies electricity in Zeerust, which is the urban section of the municipality. As reflected in the table below, the majority of the households in the municipal area have access to electricity, while only 4 309 do not have access. The majority of the households without electricity are concentrated in the informal settlements.

Table 10-13 Access to electricity (Source: StatsSA 2016)

Level of Service	Number of households
Connected to electricity	42 962
Other	800
None	4 309

According to 2011 Census, 20, 5% of households have refuse removed by the local authority, while 71,7% use own refuse dump and only 5, 9% of households have no refuse removal at all.

Table 10-14 Access to refuse Removal Service

Refuse disposal	Number of households	% Households
Removed by local authority/private company at least once a week	8 013	19,7%
Removed by local authority/private company less often	330	0,8%
Communal refuse dump	315	0,8%
Own refuse dump	29 160	71,7%
No rubbish disposal	2 400	5,9/5
Other	441	1,1%

In terms of household density, Ramotshere Moiloa LM has a low average household density per hectare at 1.34 household/ha (households per hectare). This is primarily because the municipality is 70% rural and rural areas are characterised by sparsely located households.

10.11 DESCRIPTION OF THE CURRENT LAND USES

The predominant land use in this area is bare unused land (low shrubland) mining and agricultural (dry land agriculture and cattle grazing). Residential areas in and around townships area also applicable. The Driekop 14 JP area has been fairly heavily disturbed already through mining activities (Marico Chrome Mine). Please refer to Figure 10-33.

10.12 DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE

Rio Tinto previously conducted exploration near the application prospecting area and this historic prospecting data will be captured and evaluated in addition to the data collected by this prospecting application. Drilling will only be considered after completion of all the sourced historic exploration results and an estimated 10 holes will be drilled in this phase. After evaluation of these exploration boreholes information, more drilling will be planned if required.

10.12.1 Surface water features

As per the Desktop Surface Water Assessment conducted by Prescali, November 2021, environmentally sensitive areas are defined as landscape elements or places which are vital to the long-term maintenance of biological diversity, soil, water or other natural resources both on the site and in a regional context, includes:

- wildlife habitat areas inclusive of:
 - focus areas for contributing to biodiversity thresholds that are likely to become future protected areas;
 - private nature reserves, conservancies, core areas of biosphere reserves and other protected areas that are part of a stewardship programme or provincial protected area expansion strategy;
 - National and Provincial Parks and Reserves as defined in the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003), as amended;
 - National Parks view-shed protection areas that contain sensitive view areas around National Parks as identified by SANParks;



- priority areas in the vicinity of National Parks that have been identified for the long-term survival of biodiversity around the National Parks or upon which the long-term survival of the parks depend to a significant extent; and
 - critically endangered and endangered ecosystems as identified by the South African National Biodiversity Institute in the Limpopo;
- steep slopes consisting of:
 - all areas with a slope of 8 degrees or steeper; and
 - important topographical features topographical features that were delineated using the 20 m contour interval terrain model of South Africa and based on the inherent scenic value of these features;
- rivers, wetlands and other water bodies consisting of rivers with a potential zone of influence buffer of 32 metres on each side from the banks of the rivers, wetlands with a potential zone of influence of 10 metres from the edge of the wetlands and dams with a potential zone of influence of 10 metres from their high-water lines, please refer to the sections below; and
- prime agricultural lands.

Also included in the sensitive features are the regulated areas as per the NWA:

- 1 in 100-year flood;
- 100 m buffer for watercourses;
- 500m buffer for wetlands; and
- Riparian area.

The interconnectivity of these sensitive areas creates greenway corridors that consist of networks of linked landscape elements that provide ecological, recreational, and cultural benefits to a community. Taking into consideration that riparian vegetation visible using Google Earth™ is located in the bed / within a very close distance to the bed of watercourses, the 32 m buffer area for all watercourses and natural wetlands are classified as High sensitivity. The 100 m regulated area for watercourses and the 500 m buffer for natural wetlands are considered to be Medium sensitivity. A 500 m area around the Molatedi Dam was deemed to have a high sensitivity due to the international importance of the dam. From the Screening tool mapping information Aquatic Critical Biodiversity areas were also included as High sensitivity.

Based on the above assessment, the high sensitivity areas are thus as indicated in Figure 10-29.

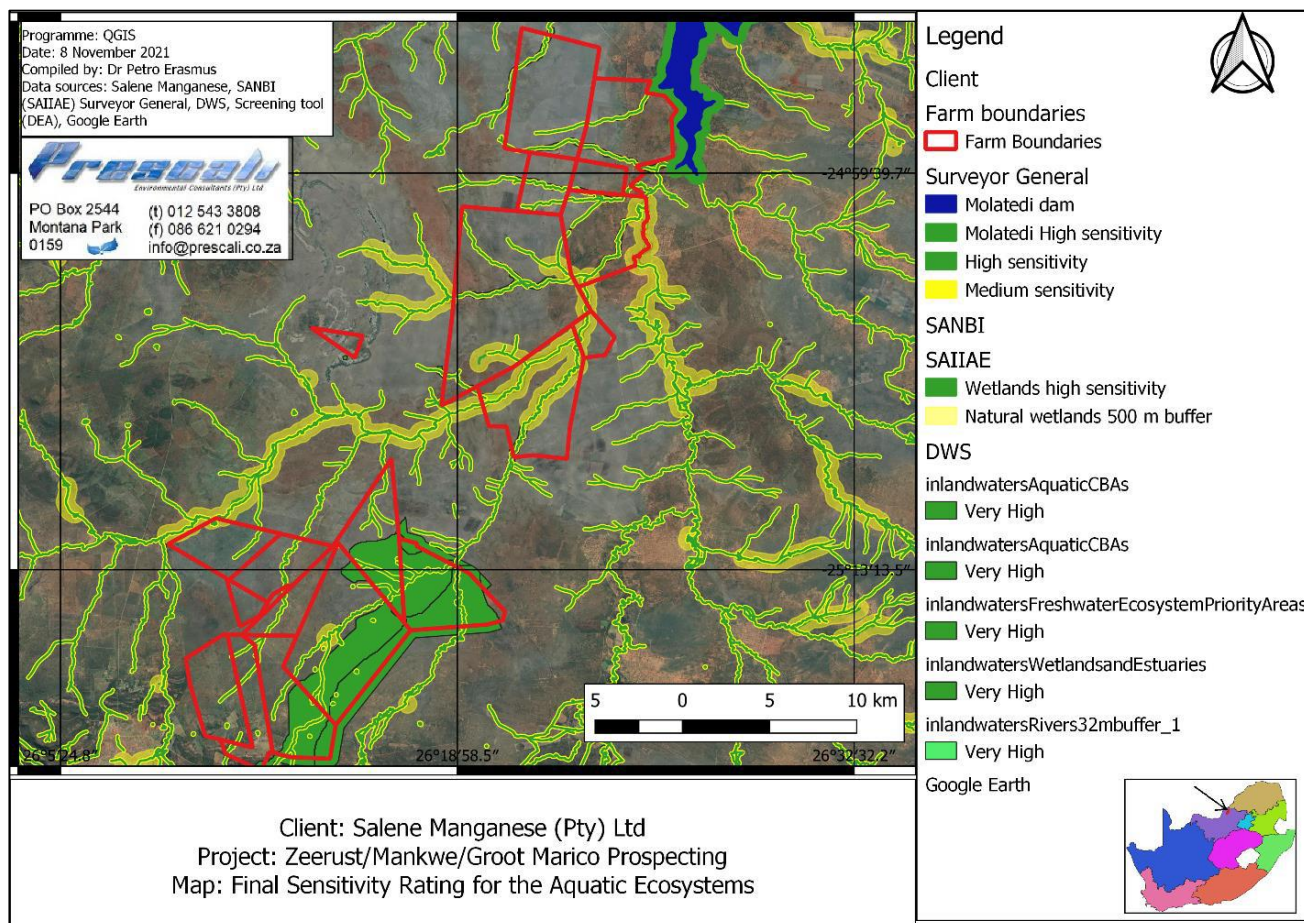


Figure 10-29: Surface water sensitivity classification

10.12.2 Ecological Features

The project area is located on three vegetation types, namely Dwaalboom Thornveld (SVcb 1), Zeerust Thornveld (SVcb 3) and Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4). All three vegetation types occurring on the project area are not listed in the “National List of Ecosystems that are Threatened and need of protection”, and as Least Concern by the 2018 National Biodiversity Assessment.

The study area contains the following classes from the NWBSP as indicated in Figure 10-13, Figure 10-14 and Figure 10-15:

- CBA2: A few smaller, isolated CBA2 areas are located on the Prospecting Right area. These CBA2 areas on the project area appear to be largely associated with ridges and koppies and potential wetland features.
- ESA1: Larger, continuous ESA1 areas occur on the project area. The majority of the ESA1 areas are located on the eastern sections of the Prospecting Right area. These areas were most likely identified as ESA 1 areas due to their appearance as natural areas and their function as ecological corridors providing connectivity.
- ESA2: A few small, isolated ESA2 areas are located on the project footprint. These areas appear to be associated with vegetation previously disturbed by agricultural activities that fall within the ESA1 areas.

According to the South African Protected Areas Database (SAPAD) a number of Protected Areas, in terms of NEMPAA, are located within 10 km of the Prospecting Right area:

1. Madikwe Nature Reserve – 6 km north of PR area;
2. Tweekoppiesfontein Private Nature Reserve – adjacent to western border of northern-most PR portion;
3. Nellie Private Nature Reserve – 1 km west of PR area;
4. Drie Annie Private Nature Reserve – adjacent to western-most portion of PR area;
5. Koos Swart Private Nature Reserve – 4 km west of PR area;
6. Thys Snyman Private Nature Reserve – 6 km west of PR area; and



7. Hillendale Private Nature Reserve – 8 km south of PR area.

The NW/Gauteng Bushveld NPAES area is located on the sections of the northern sections of the Prospecting Right area.

Various perennial and non-perennial rivers and streams flow across the Prospecting Right area. The most notable are:

- The Sehubyane River and its tributary, the Sandsloot River, flow through the southern section of the Prospecting Right area.
- The Madikwene River flows along the eastern border of the northern section of the Prospecting Right area.
- The Sehubyane River and Madikwe River confluence to form the Marico River, which flows in proximity to the eastern border of the northern section of the Prospecting Right area

Rivers and streams serve as ecological corridors, enable site and landscape level connectivity, and support ecological processes and are therefore considered to be of high ecological sensitivity.

The Prospecting Right area is located in a Freshwater Ecosystem Priority Area (FEPA), Phase 2 FEPA and Upstream FEPA.

Although some flora SCC were previously recorded for the area queried, all are considered to have a low likelihood of occurrence on the project area (refer to Table 10-2).

A number of mammalian and avifaunal SCC may potentially occur on the project site (refer to Table 10-3).

From satellite imagery of the project area the following impacts are apparent:

- A number of formal and informal roads are located across the Prospecting Right area. Impacts from human and vehicle movement on these roads are expected.
- Mining activities have taken place or are currently taking place in the western-most portion of the Prospecting Right area.
- Current and historic agricultural activities, including crop farming and grazing.

Based on the desktop assessment findings, the specialist concurs with the sensitivity as presented on the National Web-based Environmental Screening Tool, with the inclusion of all rivers and stream as high sensitivity.

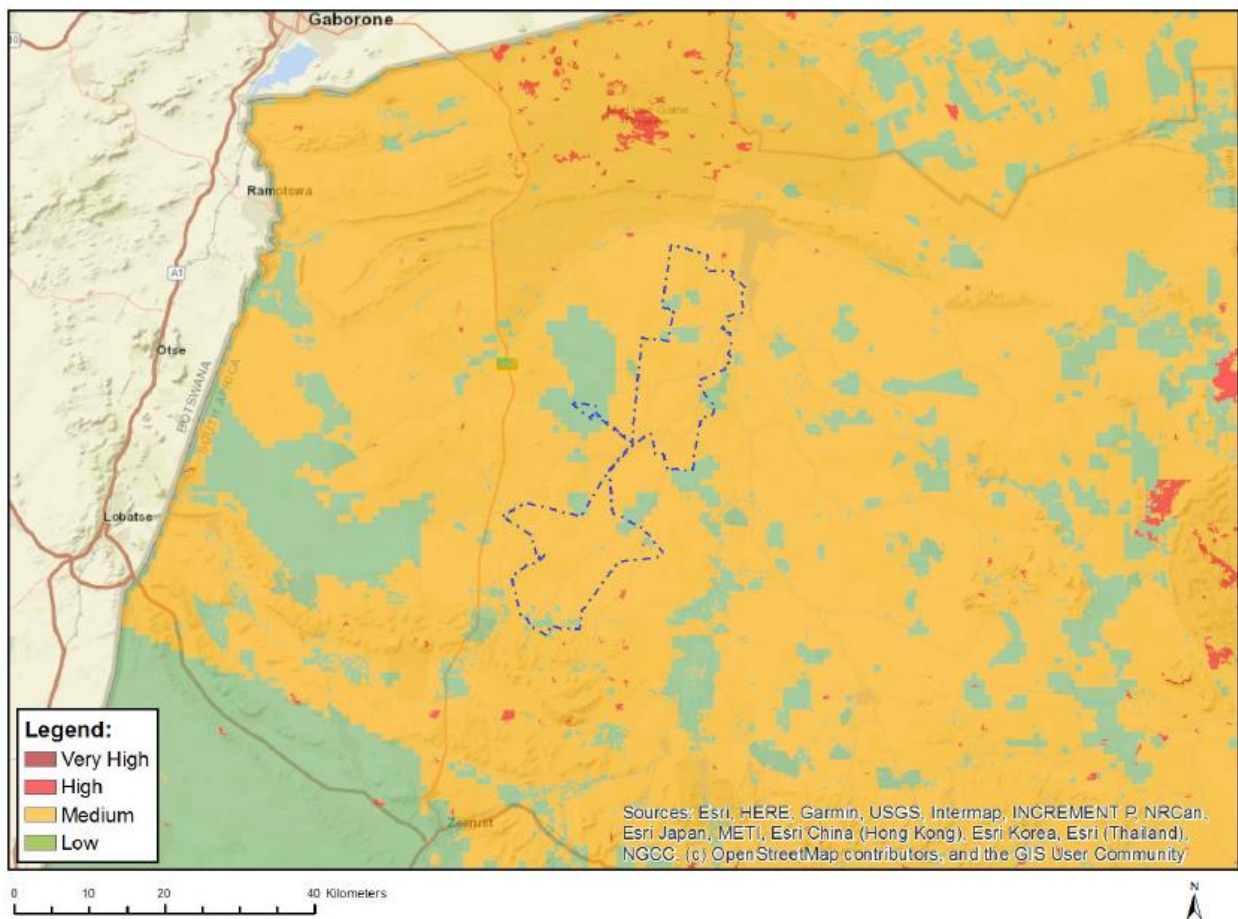


Figure 10-30: Environmental Screening Tool map of animal species theme sensitivity

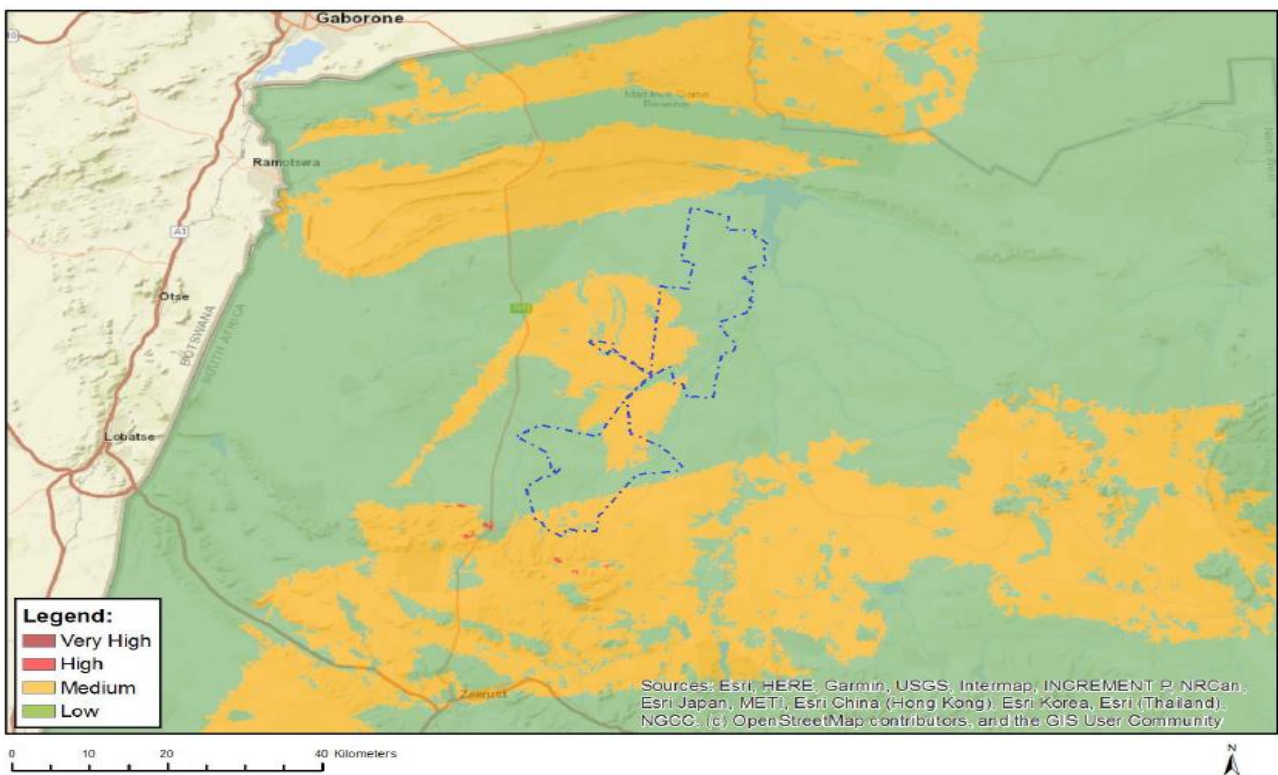


Figure 10-31: Environmental Screening Tool map of plant species theme sensitivity

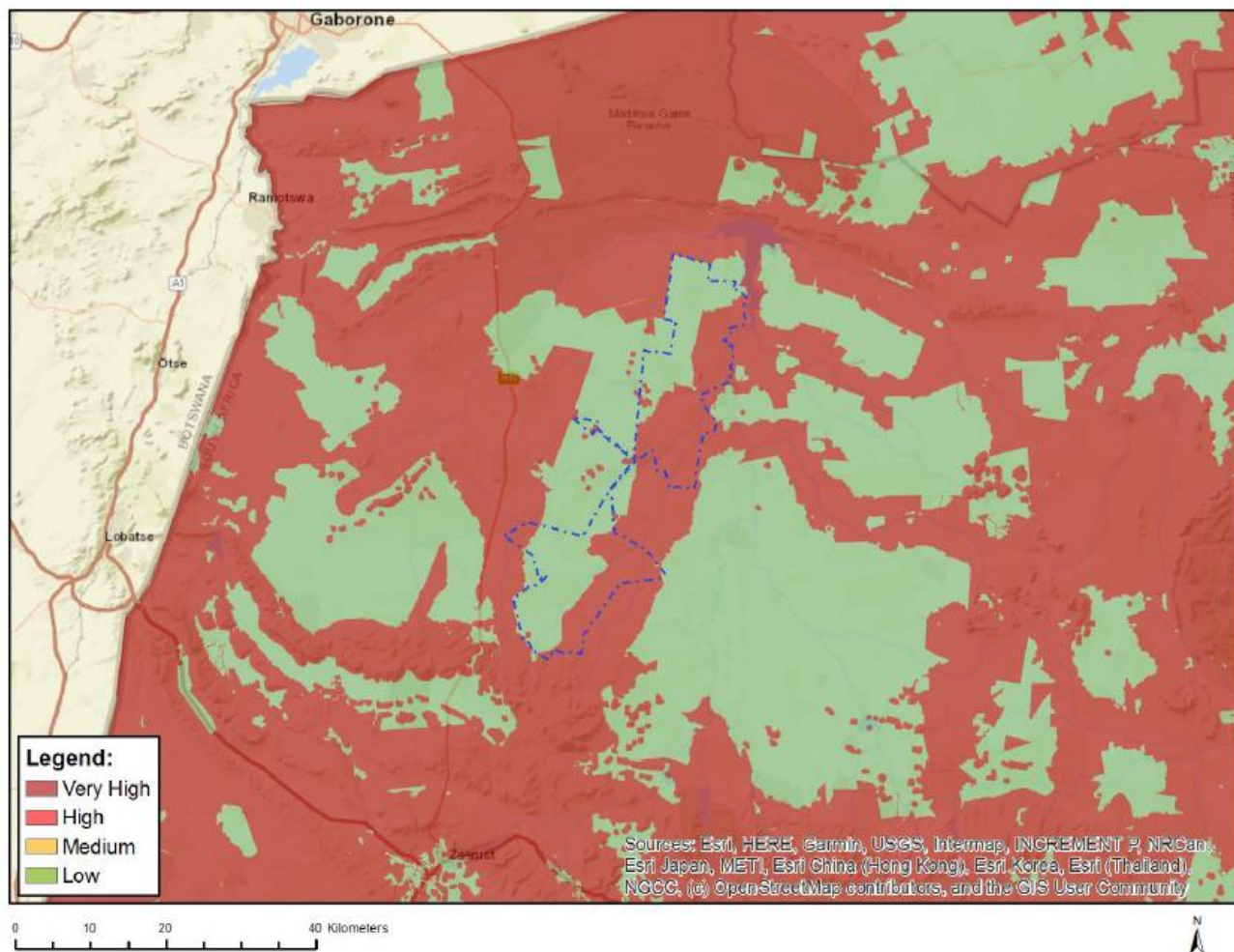


Figure 10-32: Environmental Screening Tool map of terrestrial biodiversity theme sensitivity

10.12.3 Archaeological

It is highly likely that sites, features or material of archaeological and/or historical origin or significance would be located in the study & Prospecting Rights Application areas. This could include open-air surface scatter of Stone Age tools as well as Late Iron Age stone-walled settlement sites and recent historical sites, structures and features related to farming in the area. Both formal and informal cemeteries, individual graves and previously unknown & unmarked graves could also be present.

10.13 ENVIRONMENTAL AND CURRENT LAND USE MAP

(Show all environmental, and current land use features)

Please refer to Figure 10-33.

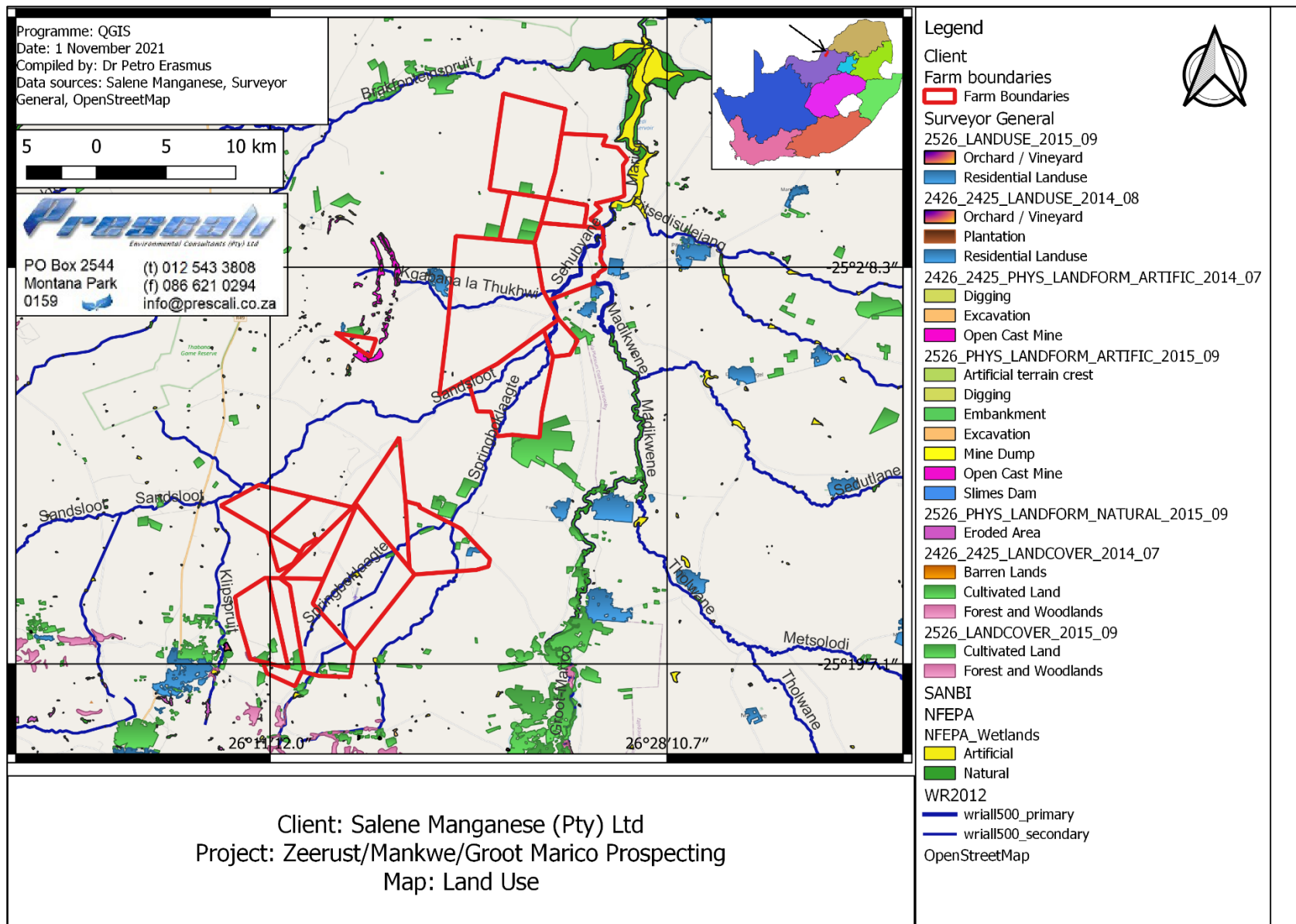


Figure 10-33: Land Use Map



11 POSITIVE AND NEGATIVE IMPACTS IDENTIFIED THAT THE PROPOSED ACTIVITY AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED

The proposed prospecting activities to be undertaken include the use of both invasive and non-invasive prospecting techniques. The positive impact of the proposed activity is the discovery of economically viable mineral resources within Ngala Modiri Molema District Municipality, whose economy is dependent on the mining industry

The access roads may over time and continuous use deteriorate and become damaged. Based on the recommended access roads to the prospecting borehole locations, no watercourses will be affected by the access roads needed provided that the existing roads as indicated by the Surveyor General is correct. Should the required access roads be constructed using foreign materials this could affect nearby.

The removal of natural vegetation to accommodate the sampling and drilling site and their associated access roads may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area, at least temporarily. Vegetation clearance could result in silt entering watercourses if the topsoil stockpiles are not managed correctly or as a result of erosion on the cleared area. Access to the application area for the topographical and geophysical survey, prospecting sampling will be required which may interrupt the existing land uses, such as grazing and existing mines. Provisions have been made for the rehabilitation of all areas disturbed during prospecting, including access tracks.

Drilling will only be considered after completion of all the sourced historic exploration results and an estimated 10 boreholes will be drilled in this phase. It is more cost effective and will have less of an impact than bulk sampling activities will have. Trenching (mini-bulk sampling) will need for a bigger area of vegetation to be removed and will result in the establishment of topsoil, and other mine residue deposits and stockpiles such as overburden. This could be done in future in selected areas based on the outcome of the drilling programme and is thus not applicable at the moment

The prospecting activities will generate general waste during the operational phase. This waste must be collected during site visits and be disposed of at appropriate landfill sites. It is understood that the Zeerust landfill site is not licenced and the appointed contractor must thus ensure that any general waste generated will be disposed off in terms of the NEMWA requirements.

A summary of the positive and negative impacts of the proposed activity are provided in below.

Table 11-1: Identified Positive and Negative Impacts

ASPECT	IMPACT	PHASE	POSITIVE/NEGATIVE
Soil	Pollution of soil	O	Negative
	Erosion due to improper rehabilitation	D	Negative
	Loss of topsoil during stripping, handling and placement on rehabilitated areas	C, D	Negative
	Disturbances/losses of soil due to erosion as well as contamination of soils	C, O, D	Negative
Flora	Invasive prospecting and associated activities will lead to destruction and damage of habitat and overall loss of floral and faunal species within the clearance and operational area. As a result of the activities degradation or compression may occur if heavy construction vehicles are not kept to the demarcated roads	O	Negative



ASPECT	IMPACT	PHASE	POSITIVE/NEGATIVE
	Vegetation clearance will likely destroy habitats and lead to possible invasive and/or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. Bare areas may become vulnerable to Alien and Invasive Plant species and these may compete with indigenous species, likely leading to the migration of sensitive species from the site to a more favourable habitat.	O	Negative
	Invasive prospecting and associated activities may impact on areas designated as high sensitivity, including critical biodiversity areas, ecological support areas, koppies, ridges and watercourses situated in and around the Prospecting Right area. The activity may lead to the loss of floral species of conservation concern. However, based on the desktop study findings, no flora SCC are considered to be likely to occur on the project area.	O	Negative
	Rehabilitation could be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance. Without the necessary mitigation measures, rehabilitation will be less successful and the ecology of the impacted areas may not recover to a pre-prospecting state. Without mitigation the alien invasive species may increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and agriculture.	CI	Negative
Fauna	The onset of activities might result in impacts to the natural environment and fauna due to increased movement, traffic and large machinery to the area.	O	Negative
	River and streams occurring on the Prospecting Right area may be impacted due to the invasive prospecting and related activities and may result in the destruction of riparian habitat for sensitive species. Impacts within these areas could lead to destruction and degradation of habitats and food associated with these drainage / riverine areas.	O	Negative
	The operational activities might result in impacts to the natural environment and faunal species due to prolonged activity and movement to and from the area.	O	Negative
	Increased activity and traffic within a shorter timeframe (closure phase) may degrade the area. The possibility exists for rehabilitation to be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance.	CI	Negative
Surface Water	Vegetation clearance could result in silt entering watercourses if the topsoil stockpiles are not managed correctly or as a result of erosion on the cleared area.	C	Negative
	The construction and operation of a sump at the drill pad to capture slurry generated by the drilling activity will impact on the water quantity (run-off) from the area reaching the nearby watercourse.	C, O	Negative
	Should foreign material be brought in to construct required access roads these could result in siltation of nearby watercourses if the material is not adequately compacted. No additional impact foreseen as the proposed access roads needed does not cross a watercourse.	C	Negative
	Dust generated could settle on nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse.	C, O, CI	Negative



ASPECT	IMPACT	PHASE	POSITIVE/NEGATIVE
	Slurry generated if not captured could flow to nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse	O	Negative
	Hydrocarbon spills from vehicles and other equipment if not managed could impact on the water quality of nearby watercourses	O, CI	Negative
	Chemical toilets will be used and needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the toilets.	O, CI	Negative
	Hazardous waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the waste.	O, CI	Negative
	General waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of windblown waste from storage areas e.g., plastics.	O, CI	Negative
	Biodegradable waste needs to be managed in such a manner that it does not impact on nearby watercourses quality.	O, CI	Negative
	Spills from dangerous good containers could impact on the health and water quality of nearby water resources	O, CI	Negative
	Loose soil could be easily moved to nearby resources resulting in siltation that could impact on the health of the system.	O	Negative
Groundwater	Degradation of aquifers	O	Negative
	Impacts of existing groundwater users	O	Negative
	Lowering of groundwater levels	C	Negative
Air	Impact on air quality as a result of operation dust and gaseous emissions	O	Negative
	Deterioration and damage to existing access roads and tracks	C, O, D	Negative
	Material handling operations will impact on Dust fallout (nuisance dust)	O	Negative
Noise	Noise nuisance	C, O	Negative
Heritage Resources	Impacts on potential burial grounds and graves	C, O	Negative
	Impacts on archaeological resources	C, O	Negative
Waste	Generation and disposal of waste	C	Negative
Socio-economic	Potential job creation	C, O, D	Positive
	Safety and security to existing landowners and lawful occupier	C, O, D	Negative
	Interference with existing land uses	C, O, D	Negative
	Possible loss of life and Covid-19 pandemic spread and new cases	C, O, D	Negative

11.1 METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS

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

11.1.1 Assessment Criteria

The criteria for the description and assessment of environmental impacts were drawn from the EIA Guidelines (DEAT, 1998) and as amended from time to time (DEAT, 2002).

The level of detail as depicted in the EIA Guidelines (DEAT, 2002) was fine-tuned by assigning specific values to each impact. In order to establish a coherent framework within which all impacts could be objectively assessed, it was necessary to establish a rating system, which was applied consistently to all the criteria. For such purposes each aspect was assigned a value, ranging from one (1) to five (5), depending on its definition. This assessment is a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

An explanation of the impact assessment criteria is defined below.

Table 11-2: Impact Assessment Criteria

EXTENT	
Classification of the physical and spatial scale of the impact	
Footprint	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.
Site	The impact could affect the whole, or a significant portion of the site.
Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
National	The impact could have an effect that expands throughout the country (South Africa).
International	Where the impact has international ramifications that extend beyond the boundaries of South Africa.
DURATION	
The lifetime of the impact that is measured in relation to the lifetime of the proposed development.	
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the Site Establishment phase.
Short to Medium term	The impact will be relevant through to the end of a Site Establishment phase (1.5 years).
Medium term	The impact will last up to the end of the development phases, where after it will be entirely negated.
Long term	The impact will continue or last for the entire operational lifetime i.e. exceed 30 years of the development, but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
INTENSITY	
The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment itself. The intensity is rated as	
Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
Medium	The affected environment is altered, but functions and processes continue, albeit in a modified way.
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
PROBABILITY	
This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:	
Improbable	The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0 %).
Possible	The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25 %.
Likely	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50 %.



Highly Likely	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75 %.
Definite	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100 %.

The status of the impacts and degree of confidence with respect to the assessment of the significance must be stated as follows:

- **Status of the impact:** A description as to whether the impact would be positive (a benefit), negative (a cost), or neutral.
- **Degree of confidence in predictions:** The degree of confidence in the predictions, based on the availability of information and specialist knowledge.

Other aspects to take into consideration in the specialist studies are:

- Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
- All impacts should be evaluated for the full-lifecycle of the proposed development, including Site Establishment, operation and decommissioning.
- The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region.
- The specialist studies must attempt to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

11.1.2 Mitigation

The impacts that are generated by the development can be minimised if measures are implemented in order to reduce the impacts. The mitigation measures ensure that the development considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development.

11.1.3 Determination of Significance-Without Mitigation

Significance is determined through a synthesis of impact characteristics as described in the above paragraphs. It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact “without mitigation” is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as “positive”. Significance is rated on the following scale:

Table 11-3: Significance-Without Mitigation

NO SIGNIFICANCE	The impact is not substantial and does not require any mitigation action.
LOW	The impact is of little importance, but may require limited mitigation.
MEDIUM	The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
HIGH	The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

11.1.4 Determination of Significance- With Mitigation

Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures. Significance with mitigation is rated on the following scale:

Table 11-4: Significance-With Mitigation

NO SIGNIFICANCE	The impact will be mitigated to the point where it is regarded as insubstantial.
LOW	The impact will be mitigated to the point where it is of limited importance.



LOW TO MEDIUM	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels.
MEDIUM	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
MEDIUM TO HIGH	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
HIGH	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

11.1.5 Assessment Weighting

Each aspect within an impact description was assigned a series of quantitative criteria. Such criteria are likely to differ during the different stages of the project's life cycle. In order to establish a defined base upon which it becomes feasible to make an informed decision, it was necessary to weigh and rank all the criteria.

11.1.6 Ranking, Weighting and Scaling

For each impact under scrutiny, a scaled weighting factor is attached to each respective impact (refer Table 11-5).

The purpose of assigning weights serves to highlight those aspects considered the most critical to the various stakeholders and ensure that each specialist's element of bias is taken into account. The weighting factor also provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspect criteria.

Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance.

Table 11-5: Description of assessment parameters with its respective weighting

EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR (WF)		SIGNIFICANCE RATING (SR)	
Footprint	1	Short term	1	Low	1	Improbable	1	Low	1	Low	0-19
Site	2	Short to Medium	2			Possible	2	Low to Medium	2	Low to Medium	20-39
Regional	3	Medium term	3	Medium	3	Likely	3	Medium	3	Medium	40-59
National	4	Long term	4			Highly Likely	4	Medium to High	4	Medium to High	60-79
International	5	Permanent	5	High	5	Definite	5	High	5	High	80-100
MITIGATION EFFICIENCY (ME)						SIGNIFICANCE FOLLOWING MITIGATION (SFM)					
High			0.2			Low			0 - 19		
Medium to High			0.4			Low to Medium			20 - 39		
Medium			0.6			Medium			40 - 59		
Low to Medium			0.8			Medium to High			60 - 79		
Low			1.0			High			80 - 100		



11.1.7 Identifying the Potential Impacts Without Mitigation Measures (WOM)

Following the assignment of the necessary weights to the respective aspects, criteria are summed and multiplied by their assigned weightings, resulting in a value for each impact (prior to the implementation of mitigation measures).

Equation 1:

$$\text{Significance Rating (WOM)} = (\text{Extent} + \text{Intensity} + \text{Duration} + \text{Probability}) \times \text{Weighting Factor}$$

11.1.8 Identifying the Potential Impacts with Mitigation Measures (WM)

In order to gain a comprehensive understanding of the overall significance of the impact, after implementation of the mitigation measures, it was necessary to re-evaluate the impact.

11.1.8.1 Mitigation Efficiency (ME)

The most effective means of deriving a quantitative value of mitigated impacts is to assign each significance rating value (WOM) a mitigation efficiency (ME) rating (refer to *Table 11-5*).

The allocation of such a rating is a measure of the efficiency and effectiveness, as identified through professional experience and Empirical evidence of how effectively the proposed mitigation measures will manage the impact.

Thus, the lower the assigned value the greater the effectiveness of the proposed mitigation measures and subsequently, the lower the impacts with mitigation.

Equation 2:

$$\text{Significance Rating (WM)} = \text{Significance Rating (WOM)} \times \text{Mitigation Efficiency}$$

$$\text{or WM} = \text{WOM} \times \text{ME}$$

11.1.9 Significance Following Mitigation (SFM)

The significance of the impact after the mitigation measures are taken into consideration. The efficiency of the mitigation measure determines the significance of the impact. The level of impact is therefore seen in its entirety with all considerations taken into account.

11.2 THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK.

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

The mitigation measures have been addressed in the Section 12 under Environmental Impact Assessment..

11.3 MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

Minerals are site specific. 10 boreholes were identified based on the original footprint area identified, after approval from the DMRE three of these fell outside the approved prospecting application area and three alternative locations (11, 12 and 13) were identified. Based on the information sourced during the assessment some boreholes were found to be located within 100 m from a watercourse and 500 m from a wetland area, these were relocated to outside the regulated buffer areas: 4, 5, 6, 9, 10 and 11. All sensitive features have been considered and will be excluded from the prospecting activities.

11.4 STATEMENT MOTIVATING THE ALTERNATIVE DEVELOPMENT LOCATION WITHIN THE OVERALL SITE

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

Since prospecting is temporary in nature no permanent structures will be constructed, negotiations and agreements will be made with the farm owners / surface right users to use any existing infrastructure like accommodation for the explorers, access roads, etc. In addition to the information provided, each of the phases is dependent on the results and success of the preceding phase. The location and extent of sampling will be determined based on information derived from the surveys. Sampling sites will be selected to avoid water courses where practicable.



The proposed application area has been selected due to the geology of the site and the anticipated favourable tectono-stratigraphic setting of the prospect area. There are no protected areas within the application area. No prospecting will occur in close proximity to watercourses. The land or properties affected are mostly mined out areas/dumps and therefore the potential discovery of viable minerals within the application area would be beneficial in terms of the potential resuscitation of the mining activities in the area.

The impacts of the development alternative are low-medium to low and would reduce to low should the proposed mitigation measures be implemented accordingly.

11.5 FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE.

(In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

In order to identify the potential impacts associated with the proposed prospecting activities the following steps were undertaken:

- The stakeholder consultation process is currently undertaken in a manner to be interactive, providing landowners and identified stakeholders with the opportunity to provide input into the project. This is a key focus, as the local residence has capabilities of providing site specific information, which may not be available in desktop research material. Stakeholders are requested to provide their views on the project and any potential concerns which they may have. All comments and concerns are captured and formulated into the impact assessment.
- A detailed desktop investigation was undertaken to determine the environmental setting in which the project is located. Based on the desktop investigations various resources were used to determine the significance and sensitivity of the various environmental considerations. The desktop investigation involved the use of:
 - Detailed mapping based on existing data sources applicable to the study area;
 - Geographic Information System base maps;
 - Literature and existing data/reports for the study area
- A site visit will be conducted to ensure that the information gathered as part of the desktop investigation reflects the current status of the land.
- Desktop specialist studies were undertaken in aspects that has been specifically identified within the Environmental Screening Report for the area.
- The ratings of the identified impacts were undertaken in a quantitative manner as provided in Impact Assessment Section. The ratings were undertaken in a manner to calculate the significance of each of the impacts. The EAP also assesses the outcomes of the calculation to determine whether the outcome reflects the perceived and the actual views.
- The identification of management measures are done based on the significance of the impacts and measures that have been considered appropriate and successful, specifically as Best Practical and Economical Options.



12 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).

No Environmental Impacts are foreseen on the following farms as NO invasive activities will take place on them only non-invasive assessments: Zelikatskop 16-JP, Knapdaar 26-JP, , Schoonlaagte 935-KP, Nooitgedacht 938-KP, Farm 6 939-KP, Leeuwkopje 952-KP, Driekop 14-JP, Magdalenas Kuil 37-JP, , Doornlaagte 51-JP, Medfordt Park 52-JP, Vriendschap 53-JP, Koedoespoort 64-JP and Koedoespoort 68-JP.

Invasive prospecting (Drilling) will take place on the following farms Roodekopjesfontein 15-JP Roodekopjes, Farm 10 902-JP, Kuilenburg 39-JP, Giglio 42-JP the following areas are applicable to each property:

Farm	Borehole number	Road length (m)	Borehole area (m ²)
39 JP	12	111,88	100
42 JP	11	5570,5	100
902 JP	4	754,5	100
	5	110,14	100
15 JP	6	288,7	100
	7	1080,7	100
	8	1274,1	100
	9	147,5	100
	10	704,16	100
	13	510,7	100
Total		10552,88	1000

Based on the above the following impacts were identified to occur on the four identified farms, the impacts quantification is per borehole.

Table 12-1: Impact Assessment Rating as a result of invasive prospecting activities (Drilling) on the following farms: Roodekopjesfontein 15-JP Roodekopjesfontein 15-JP, Farm 10 902-JP, Kuilenburg 39-JP, Giglio 42-JP

ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
Soil	Pollution of soil	Site	2	Short to Medium term	2	Low	1	Possible	2	Low	1	Low	7	High	0.2	Low	1.4
	Erosion due to improper rehabilitation	Footprint	1	Short term	1	Low	1	Possible	2	Low to medium	2	Low	10	High	0.2	Low	2



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	Loss of topsoil during stripping, handling and placement on rehabilitated areas	Site	2	Medium to long term	4	Medium	3	Likely	3	Medium to High	4	Medium	48	Medium	0.6	Low to medium	29
	Disturbances/losses of soil due to erosion as well as contamination of soils	Site	2	Medium term	3	Medium	3	Likely	3	Medium to High	4	Medium	44	Medium to high	0.4	Low	18
Flora	Invasive prospecting and associated activities will lead to destruction and damage of habitat and overall loss of floral and faunal species within the clearance and operational area. As a result of the activities degradation or compression may occur if heavy construction vehicles are not kept to the demarcated roads	Footprint	1	Short term	2	Low	3	Likely	5	Low to medium	2	Low to medium	22	Medium	0.6	Low	13
	Vegetation clearance will likely destroy habitats and lead to possible invasive and/or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. Bare areas may become vulnerable to Alien and Invasive Plant species and these may compete with indigenous species, likely leading to the migration of sensitive species from the site to a more favourable habitat.	Regional	3	Long term	4	Medium	3	Possible	3	Medium	3	Low to medium	39	Medium	0.6	Low to medium	23
	Invasive prospecting and associated activities may impact on areas designated as high sensitivity, including critical biodiversity areas, ecological support areas, koppies, ridges and watercourses situated in and around the Prospecting Right area. The activity may lead to the loss of floral species of conservation concern. However,	Regional	3	Long term	4	Medium	3	Possible	2	Medium	3	Low to medium	36	Medium to high	0.4	Low	14



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	based on the desktop study findings, no flora SCC are considered to be likely to occur on the project area.																
	Rehabilitation could be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance. Without the necessary mitigation measures, rehabilitation will be less successful and the ecology of the impacted areas may not recover to a pre-prospecting state. Without mitigation the alien invasive species may increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and agriculture.	Site	2	Medium term	3	Medium	3	Likely	3	Medium to High	4	Medium	44	Low to medium	0.6	Low to medium	26
	The onset of activities might result in impacts to the natural environment and fauna due to increased movement, traffic and large machinery to the area.	Regional	3	Long term	4	Medium	3	Definite	5	Medium to High	4	Medium to High	60	Medium to high	0.4	Low to medium	24
Fauna	River and streams occurring on the Prospecting Right area may be impacted due to the invasive prospecting and related activities and may result in the destruction of riparian habitat for sensitive species. Impacts within these areas could lead to destruction and degradation of habitats and food associated with these drainage / riverine areas.	Regional	3	Long term	4	Medium	3	Possible	2	Medium	3	Low to medium	36	High	0.2	Low	7



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	The operational activities might result in impacts to the natural environment and faunal species due to prolonged activity and movement to and from the area.	Regional	3	Medium term	3	Low	1	Possible	2	Medium	3	Low to medium	27	Low to medium	0.8	Low to medium	22
	Increased activity and traffic within a shorter timeframe (closure phase) may degrade the area. The possibility exists for rehabilitation to be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance.	Regional	3	Long term	4	Medium	3	Definite	5	Medium to High	4	Medium to High	60	Medium to high	0.4	Low to medium	24
Surface Water	Vegetation clearance could result in silt entering watercourses if the topsoil stockpiles are not managed correctly or as a result of erosion on the cleared area.	Regional	3	Short to Medium term	2	Medium	3	Very Likely	4	Medium	3	Medium	36	Medium to high	0.4	Low	14
	The construction and operation of a sump at the drill pad to capture slurry generated by the drilling activity will impact on the water quantity (run-off) from the area reaching the nearby watercourse.	Regional	3	Short to Medium term	2	Low	1	Very Likely	4	Medium	3	Medium	30	Medium to high	0.4	Low	12
	Should foreign material be brought in to construct required access roads these could result in siltation of nearby watercourses if the material is not adequately compacted. No additional impact foreseen as the proposed access roads needed does not cross a watercourse.	Regional	3	Short to Medium term	2	Medium	3	Very Likely	4	Medium	3	Medium	36	Medium to high	0.4	Low	14
	Dust generated could settle on nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse.	Regional	3	Short to Medium term	2	Medium	3	Very Likely	4	Medium	3	Medium	36	Medium to high	0.4	Low	14
	Slurry generated if not captured could flow to nearby riparian / aquatic vegetation and impact on the present ecological status /	Regional	3	Short to Medium term	2	Medium	3	Very Likely	4	Medium	3	Medium	36	Medium to high	0.4	Low	14



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	health of the associated watercourse																
	Hydrocarbon spills from vehicles and other equipment if not managed could impact on the water quality of nearby watercourses	Regional	3	Short to Medium term	2	Medium	3	Very Likely	4	Medium	3	Medium	36	Medium to high	0.4	Low	14
	Chemical toilets will be used and needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the toilets.	Regional	3	Short to Medium term	2	Medium	3	Possible	2	Medium	3	Medium	30	High	0.2	Low	6
	Hazardous waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the waste.	Regional	3	Short to Medium term	2	Medium	3	Possible	2	Medium	3	Medium	30	High	0.2	Low	6
	General waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of windblown waste from storage areas e.g., plastics.	Regional	3	Short to Medium term	2	Medium	3	Possible	2	Medium	3	Medium	30	High	0.2	Low	6
	Biodegradable waste needs to be managed in such a manner that it does not impact on nearby watercourses quality.	Regional	3	Short to Medium term	2	Medium	3	Possible	2	Medium	3	Medium	30	High	0.2	Low	6
	Spills from dangerous good containers could impact on the health and water quality of nearby water resources	Regional	3	Short to Medium term	2	Medium	3	Likely	3	Medium	3	Medium	33	High	0.2	Low	6.6
	Loose soil could be easily moved to nearby resources resulting in siltation that could impact on the health of the system.	Regional	3	Short to Medium term	2	Medium	3	Very Likely	4	Medium	3	Medium	36	Medium to high	0.4	Low	14
Ground-water	Degradation of aquifers	Regional	3	Medium term	3	Low	1	Possible	2	Low to medium	2	Low	18	Medium to high	0.4	Low	7.2
	Impacts of existing groundwater users	Regional	3	Medium term	3	Low	1	Possible	2	Low to medium	2	Low	18	Medium	0.6	Low	11



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	Lowering of groundwater levels	Site	2	Short to Medium term	2	Low	1	Possible	2	Low to medium	2	Low	14	High	0.2	Low	2.8
Air	Impact on air quality as a result of operation dust and gaseous emissions	Site	2	Short term	1	Medium	3	Very Likely	4	Low to medium	2	Low to medium	20	Medium to high	0.4	Low	8
	Deterioration and damage to existing access roads and tracks	Site	2	Medium term	3	Medium	3	Likely	3	Low to medium	2	Low to medium	22	Medium	0.6	Low	13
	Material handling operations will impact on Dust fallout (nuisance dust)	Site	2	Short term	1	Medium	3	Very Likely	4	Medium	3	Medium	30	Medium	0.6	Low	18
Noise	Noise nuisance	Site	2	Short to Medium term	2	Low	1	Likely	3	Low to medium	2	Low	16	Medium to high	0.4	Low	6.4
Heritage Resources	Impacts on potential burial grounds and graves	Site	2	Short to Medium term	2	Low	1	Possible	2	Low to medium	2	Low	14	High	0.2	Low	2.8
	Impacts on archaeological resources	Site	2	Short to Medium term	2	Low	1	Possible	2	Low	1	Low	7	High	0.2	Low	1.4
Waste	Generation and disposal of waste	Site	2	Short term	1	Low	1	Possible	2	Low to medium	2	Low	12	Medium to high	0.4	Low	4.8
Socio-economic	Potential job creation	Regional	3	Medium to long term	4	Medium	3	Likely	3	Medium	3	Medium	39	Medium	0.6	Low to medium	23
	Safety and security to existing landowners and lawful occupier	Regional	3	Medium term	3	Medium	3	Likely	3	High	5	Medium to High	60	High	0.2	Low	12
	Interference with existing land uses	Site	2	Short term	1	Low	1	Possible	2	Low	1	Low	6	High	0.2	Low	1.2
	Possible loss of life and Covid-19 pandemic spread and new cases	Site	2	Long term	5	High	5	Very Likely	4	Medium to high	4	Medium to High	64	Low to medium	0.8	Medium	51



Table 12-2: Cumulative impact of six boreholes on Roodekopjesfontein 15-JP

ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
Soil	Pollution of soil	Site	2	Medium term	3	Medium	3	Possible	2	Low	1	Low	10	High	0,2	Low	2
	Erosion due to improper rehabilitation	Site	2	Medium term	3	Medium	3	Possible	2	Low to medium	2	Low to medium	20	High	0,2	Low	4
	Loss of topsoil during stripping, handling and placement on rehabilitated areas	Site	2	Medium to long term	4	Medium	3	Likely	3	Medium to High	4	Medium	48	Medium	0,6	Low to medium	29
	Disturbances/losses of soil due to erosion as well as contamination of soils	Site	2	Medium term	3	Medium	3	Likely	3	Medium to High	4	Medium	44	Medium to high	0,4	Low	18
Flora	Invasive prospecting and associated activities will lead to destruction and damage of habitat and overall loss of floral and faunal species within the clearance and operational area. As a result of the activities degradation or compression may occur if heavy construction vehicles are not kept to the demarcated roads	Site	2	Medium term	3	Medium	3	Likely	5	Low to medium	2	Low to medium	26	Medium	0,6	Low	16
	Vegetation clearance will likely destroy habitats and lead to possible invasive and/or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. Bare areas may become vulnerable to Alien and Invasive Plant species and these may compete with indigenous species, likely leading to the migration of sensitive species from the site to a more favourable habitat.	Regional	3	Long term	4	Medium	3	Possible	3	Medium	3	Low to medium	39	Medium	0,6	Low to medium	23



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	Invasive prospecting and associated activities may impact on areas designated as high sensitivity, including critical biodiversity areas, ecological support areas, koppies, ridges and watercourses situated in and around the Prospecting Right area. The activity may lead to the loss of floral species of conservation concern. However, based on the desktop study findings, no flora SCC are considered to be likely to occur on the project area.	Regional	3	Long term	4	Medium	3	Possible	2	Medium	3	Low to medium	36	Medium to high	0,4	Low	14
	Rehabilitation could be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance. Without the necessary mitigation measures, rehabilitation will be less successful and the ecology of the impacted areas may not recover to a pre-prospecting state.	Site	2	Medium term	3	Medium	3	Likely	3	Medium to High	4	Medium	44	Low to medium	0,6	Low to medium	26
	Without mitigation the alien invasive species may increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and agriculture.												0				0
Fauna	The onset of activities might result in impacts to the natural environment and	Regional	3	Long term	4	Medium	3	Definite	5	Medium to High	4	Medium to High	60	Medium to high	0,4	Low to medium	24



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	fauna due to increased movement, traffic and large machinery to the area.																
	River and streams occurring on the Prospecting Right area may be impacted due to the invasive prospecting and related activities and may result in the destruction of riparian habitat for sensitive species. Impacts within these areas could lead to destruction and degradation of habitats and food associated with these drainage / riverine areas.	Regional	3	Long term	4	Medium	3	Possible	2	Medium	3	Low to medium	36	High	0,2	Low	7,2
	The operational activities might result in impacts to the natural environment and faunal species due to prolonged activity and movement to and from the area.	Regional	3	Medium term	3	Medium	3	Possible	2	Medium	3	Low to medium	33	Low to medium	0,8	Low to medium	26
	Increased activity and traffic within a shorter timeframe (closure phase) may degrade the area. The possibility exists for rehabilitation to be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance.	Regional	3	Long term	4	Medium	3	Definite	5	Medium to High	4	Medium to High	60	Medium to high	0,4	Low to medium	24
Surface Water	Vegetation clearance could result in silt entering watercourses if the topsoil stockpiles are not managed correctly or as a result of erosion on the cleared area.	Regional	3	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	39	Medium to high	0,4	Low	16



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	The construction and operation of a sump at the drill pad to capture slurry generated by the drilling activity will impact on the water quantity (run-off) from the area reaching the nearby watercourse.	Regional	3	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	39	Medium to high	0,4	Low	16
	Should foreign material be brought in to construct required access roads these could result in siltation of nearby watercourses if the material is not adequately compacted. No additional impact foreseen as the proposed access roads needed does not cross a watercourse.	Regional	3	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	39	Medium to high	0,4	Low	16
	Dust generated could settle on nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse.	Regional	3	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	39	Medium to high	0,4	Low	16
	Slurry generated if not captured could flow to nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse	Regional	3	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	39	Medium to high	0,4	Low	16
	Hydrocarbon spills from vehicles and other equipment if not managed could impact on the water quality of nearby watercourses	Regional	3	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	39	Medium to high	0,4	Low	16
	Chemical toilets will be used and needs to be managed in	Regional	3	Medium term	3	Medium	3	Possible	2	Medium	3	Medium	33	High	0,2	Low	6,6



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
	such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the toilets.																
	Hazardous waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the waste.	Regional	3	Medium term	3	Medium	3	Possible	2	Medium	3	Medium	33	High	0,2	Low	6,6
	General waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of windblown waste from storage areas e.g., plastics.	Regional	3	Medium term	3	Medium	3	Possible	2	Medium	3	Medium	33	High	0,2	Low	6,6
	Biodegradable waste needs to be managed in such a manner that it does not impact on nearby watercourses quality.	Regional	3	Medium term	3	Medium	3	Possible	2	Medium	3	Medium	33	High	0,2	Low	6,6
	Spills from dangerous good containers could impact on the health and water quality of nearby water resources	Regional	3	Medium term	3	Medium	3	Likely	3	Medium	3	Medium	36	High	0,2	Low	7,2
	Loose soil could be easily moved to nearby resources resulting in siltation that could impact on the health of the system.	Regional	3	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	39	Medium to high	0,4	Low	16
Ground-water	Degradation of aquifers	Regional	3	Medium term	3	Low	1	Possible	2	Low to medium	2	Low	18	Medium to high	0,4	Low	7,2
	Impacts of existing groundwater users	Regional	3	Medium term	3	Low	1	Possible	2	Low to medium	2	Low	18	Medium	0,6	Low	11
	Lowering of groundwater levels	Site	2	Medium term	3	Low	1	Possible	2	Low to medium	2	Low	16	High	0,2	Low	3,2



ASPECT	IMPACT	EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR		SIGNIFICANCE		MITIGATION EFFICIENCY		SIGNIFICANCE WITH MITIGATION	
Air	Impact on air quality as a result of operation dust and gaseous emissions	Site	2	Medium term	3	Medium	3	Very Likely	4	Low to medium	2	Low to medium	24	Medium to high	0,4	Low	9,6
	Deterioration and damage to existing access roads and tracks	Site	2	Medium term	3	Medium	3	Likely	3	Low to medium	2	Low to medium	22	Medium	0,6	Low	13
	Material handling operations will impact on Dust fallout (nuisance dust)	Site	2	Medium term	3	Medium	3	Very Likely	4	Medium	3	Medium	36	Medium	0,6	Low	22
Noise	Noise nuisance	Site	2	Medium term	3	Medium	3	Likely	3	Low to medium	2	Low to medium	22	Medium to high	0,4	Low	8,8
Heritage Resources	Impacts on potential burial grounds and graves	Site	2	Medium term	3	Low	1	Possible	2	Low to medium	2	Low	16	High	0,2	Low	3,2
	Impacts on archaeological resources	Site	2	Medium term	3	Low	1	Possible	2	Low	1	Low	8	High	0,2	Low	1,6
Waste	Generation and disposal of waste	Site	2	Medium term	3	Low	1	Possible	2	Low to medium	2	Low	16	Medium to high	0,4	Low	6,4
Socio-economic	Potential job creation	Regional	3	Medium to long term	4	Medium	3	Likely	3	Medium	3	Medium	39	Medium	0,6	Low to medium	23
	Safety and security to existing landowners and lawful occupier	Regional	3	Medium term	3	Medium	3	Likely	3	High	5	Medium to High	60	High	0,2	Low	12
	Interference with existing land uses	Site	2	Medium term	3	Medium	3	Possible	2	Low	1	Low	10	High	0,2	Low	1.2
	Possible loss of life and Covid-19 pandemic spread and new cases	Site	2	Long term	5	High	5	Very Likely	4	Medium to high	4	Medium to High	64	Low to medium	0,8	Medium	51



13 SUMMARY OF SPECIALIST REPORTS.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form): -

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Desktop Surface Water Assessment Report	Based on the proposed activities the impacts were deemed to be of low to medium impact before implementation of management measures and low after the implementation of management measures. As no watercourse / wetland will be impacted no monitoring is proposed relating to surface water resources. If the management measures and recommendation as outlined in this report is implemented it is recommended that the proposed mining right be approved.	X	Section 10.6
Desktop Heritage Impact Assessment Report.	Features or material of archaeological and/or historical origin or significance would be located in the study & Prospecting Rights Application areas. This could include open-air surface scatter of Stone Age tools as well as Late Iron Age stone-walled settlement sites and recent historical sites, structures and features related to farming in the area. Both formal and informal cemeteries, individual graves and previously unknown & unmarked graves could also be present. The proposed Salene Zeerust Prospecting Rights Application should be allowed to continue with the condition that once the detailed locations of Prospecting Boreholes and Trenches has been determined that detailed field-based assessments be carried out in these areas to determine the impacts of these activities on any possible cultural heritage (archaeological and/or historical) sites and remains. Any resultant proposed future mining activities and related developments and operations will have to then be assessed as well.	X	Section 10.9
Desktop Terrestrial Ecology Assessment	National SCC include mammalian and avifaunal species which are known to occur in the regional area where the project is proposed.	X	Section 0 and 10.5



LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	Provincially protected species could also be expected to occur in the region. It is the reasoned opinion of the specialist that the development may continue if all mitigation measures are implemented from the onset of the development		

14 ENVIRONMENTAL IMPACT STATEMENT

14.1 SUMMARY OF THE KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The findings are that the proposed prospecting activities will result in low to medium impact for all aspects of the physical and socio-economic environment. Low impacts in terms of disturbances such as dust, lighting and noise may arise from the sampling activities. All-natural areas including watercourses/wetlands and primary vegetation should be excluded from sampling sites; all historical features such as buildings and graves/graveyards should be excluded from sampling sites. There is a risk of hydrocarbon pollution due to leakage from vehicles and machinery, but this can be managed and mitigated to acceptable levels.

Monitoring of the required mitigation measures is to take place on site at a continuous basis by the project manager, contractors and Environmental Control Officer. Annual monitoring audits are to take place by an appointed independent environmental assessment practitioner.

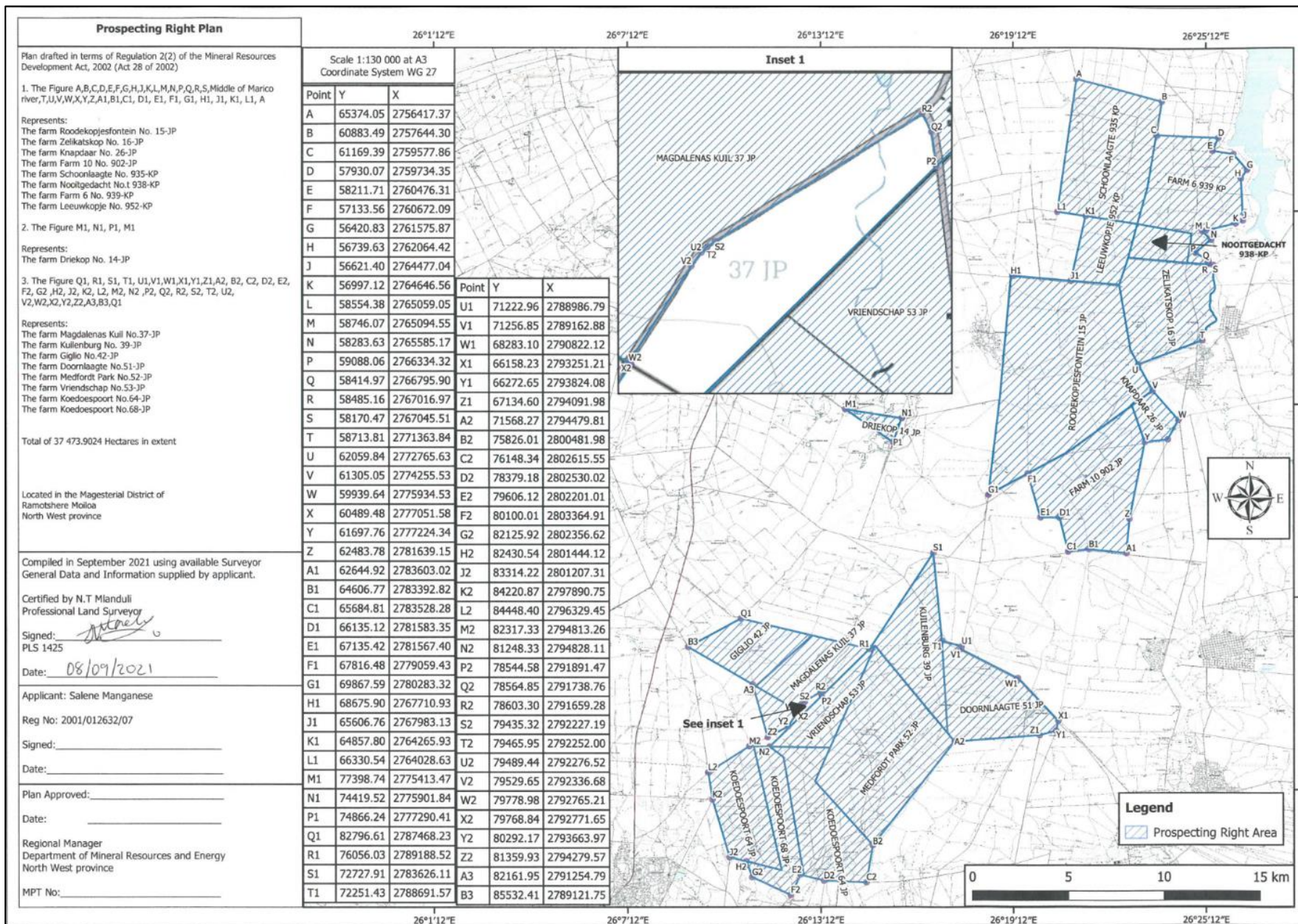
14.1.1 Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as Appendix 4

Drilling will only be considered after completion of all the sourced historic exploration results and an estimated 10 boreholes will be drilled in this phase as indicated in Figure 14-1. A detailed map can be produced after the sampling surveys has been undertaken, although the map will be subjected to changes depending on the results of the preliminary sampling.



Figure 14-1: Site Map showing the prospecting area



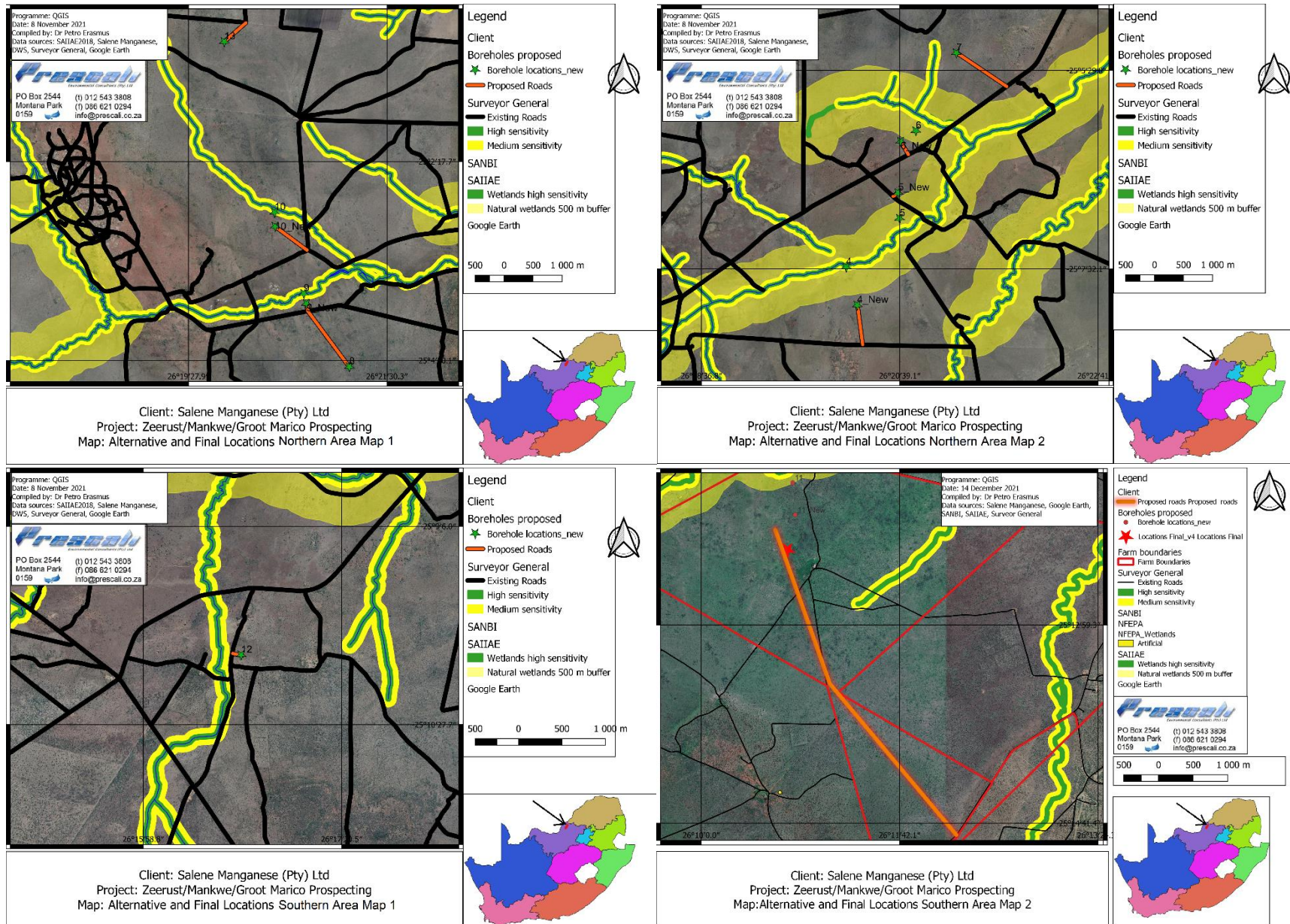


Figure 14-2:. Location of identified invasive prospecting activities: prospecting boreholes and access roads



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

Refer to Table 11-1 which highlights all the positive and negative impacts for the proposed prospecting activities. The proposed activities have low to medium significance impact. The probability of occurrence of an impact was determined and most of these activities can be controlled and impacts can be reduced or avoided. Generally prospecting activities have low impact on the environment. The planned activities negative impacts can be controlled and avoided or minimised therefore the layout does not require revision. Mitigation measures will be utilised to control, avoid and/or minimise all identified potential impacts.

15 PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR

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

Impact management objectives are described in terms of the Mitigation Hierarchy of Prescali Environmental Consultant Impact Assessment Standard. The mitigation hierarchy is as follows:

- **Avoid at Source:** Reduce at Source: avoiding or reducing at source through the design of the Project (e.g., avoiding by placing or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).
- **Abate on Site:** add something to the design to abate the impact (e.g., pollution control equipment, installation of noise silencers, operate in daylight hours).
- **Abate at Receptor:** if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site).
- **Repair or Remedy:** some impacts involve unavoidable damage to a resource (e.g. agricultural land due to creating access, work camps or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures.
- **Compensate in Kind; Compensate Through Other Means:** where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of resources, recreation and amenity space)

The EMPR will seek to achieve a required end state and describe how activities could have an adverse impact on the environment will be mitigated, controlled and monitored. The EMPR will address the environmental impacts during the Operational, and Decommissioning Phases of the proposed project. Due regard will be given to environmental protection during the entire project. A number of environmental recommendations will therefore be made to achieve environmental protection. The environmental and social objectives will be set to allow prospecting in an environmental and socially responsible manner while ensuring that sustainable closure can be achieved. To achieve closure, the correct decisions need to be taken during the planning phase of the project.

The overall goal for environmental management for the proposed is to manage and operate the project in a manner that:

- Minimises the ecological footprint of the project on the local environment;
- Facilitates harmonious co-existence between the project and other land uses in the area;
- Contributes to the environmental baseline and understanding of environmental impacts of Prospecting activities in a South African context.

The following environmental management objectives are recommended for the proposed mineral prospecting development and associated infrastructure:

- Monitor soils so as to avoid unnecessary erosion, and implement erosion control measures to preserve the quality of the soil for rehabilitation;
- Development planning must restrict the area of impact to minimum and designated areas only;



- Monitor and prevent contamination, and undertake appropriate remedial actions;
- Limit the visual and noise impact on receptors;
- Avoid impact on possible heritage and archaeological resources;
- Ensure that accurate information regarding the prospecting activities to be undertaken and the resultant lack of requirements for site access and labour is communicated to I&APs;
- Prevent the unnecessary destruction of, and fragmentation, of the vegetation community (including portions of a CBA1, CBA2 and ESA and a section classed as high and highest biodiversity importance);
- Adhere to an open and transparent communication procedure with stakeholders at all times;
- Enhance project benefits and minimise negative impacts through consultation with stakeholders;
- To limit interference with existing land uses as far as possible during prospecting;
- Limit the impact on the groundwater and surface water features through the implementation of the EMPr and the impact mitigation measures;
- Promote health and safety of workers; and
- Limit dust and other emissions to within allowable limits.

16 ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.

Any aspects which must be made conditions of the Environmental Authorisation

Refer to Section 18.2 for the main management measures that should be included in the authorisation.

17 DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.

(Which relate to the assessment and mitigation measures proposed)

- The EAP does not accept any responsibility in an event that additional information comes to light at a later stage of the process;
- All information provided by the EAP was correct at the time it was provided;
- The data from unpublished researches is valid and accurate;
- The scope of this investigation is limited to accessing the potential environmental impacts associated with the proposed project;
- The public participation process has sought to involve key stakeholders and individual landowners. It is assumed that where participation has been sought from the organisational representative/s, that these parties have the authority to comment on behalf of their organisation;
- Third party information provided by the applicant is correct at the time of writing this report;

18 REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

18.1 REASONS WHY THE ACTIVITY SHOULD BE AUTHORIZED OR NOT.

No fatal flaws were identified in terms of this project as long as the mitigation and recommendations proposed are adhered to. The impact assessment indicated no critical issues that cannot be lowered to an acceptable level through the suggested mitigation measures, resulting in a fatal flaw. All sensitive areas identified throughout the process will be excluded from the proposed development.

It is recommended by the EAP that the proposed prospecting could be authorised, on the assumption that the environmental and social management commitments included in this BA/EMPr are adhered to, the project description remains as per the description provided in this document and considering the positive social impacts associated with the project. It should also be ensured that proper rehabilitation is provided for and that risks are controlled by having emergency plans in place.

It is therefore the opinion of the EAP that the proposed activity should be authorised.



18.2 CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION

Salene Manganese (Pty) Ltd should comply with all environmental legislations. Specific environmental legislation to be adhered to include; National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended in 2017 and Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)

- Access agreements will be entered into with all holders of existing Mining Rights (if applicable) in order to comply with respective access and MHS standards.
- Notice must be given to landowners and surrounding landowners 1 month prior to any prospecting activities being conducted on their areas of responsibility;
- Landowners and land occupiers should be engaged at least 1 month prior to any site activities being undertaken;
- Formal agreement between applicant and land owner to be in place before activities commence;
- A map detailing the sampling locations should be provided to the landowners as well as the DMRE prior to commencement of prospecting activities;
- A record must be kept of the implementation of the EMPr measures and monitoring of the efficiency of the implemented measures;
- Measures and recommendations suggested by specialist should be followed;
- An Environmental Control Officer should be appointed to do regular monitoring as suggested in the EMPr;
- In the unlikely event that graves are identified, these should be protected *in situ* and a 30 m buffer area should be applied where no prospecting activities may take place;
- All wetlands and watercourses should be protected *in situ* and no prospecting to take place within 100m from a watercourse or 500m from a wetland; and
- Rehabilitation should take place immediately after work has ceased and should be done in a responsible manner.

19 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.

The Prospecting Right has been applied for a period of five (5) years. The Environmental Authorisation should therefore allow for the five years of prospecting and one year for decommissioning and rehabilitation.

Closure application listed activity should be for an additional 5 years after prospecting activities has been completed.

20 UNDERTAKING

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

The EAP undertakes that the information provided is correct, and that the comments and inputs from stakeholders and Interested and Affected parties have been correctly recorded in the report.

21 FINANCIAL PROVISION

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

The preliminary estimate of the rehabilitation cost is (inclusive of contingencies and VAT): **R 7 970.54**.



Table 21-1: Quantum calculations

CALCULATION OF THE QUANTUM							
Mine:		Salene Manganese (Pty) Ltd		Location:	Zeerust Prospecting		
Evaluators :		E van der Linde		Date:	Dec-21		
No	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity Year5	Master rate	Multiplication factor	Weighting factor 1	Amount (Rands) Yr5
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m³	0	16.79	1	1	R 0.00
2 (A)	Demolition of steel buildings and structures (including floor slabs)	m²	0	233.91	1	1	R 0.00
2 (B)	Demolition of reinforced concrete buildings and structures	m²	0	344.71	1	1	R 0.00
3	Rehabilitation of access roads	m²	100	41.86	1	1	R 4,185.78
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	406.27	1	1	R 0.00
4 (B)	Demolition and rehabilitation of non-electrified railway lines	m	0	221.60	1	1	R 0.00
5	Demolition of housing and facilities (including floor slabs)	m²	0	467.82	1	1	R 0.00
6	Opencast rehabilitation (including final voids and ramps)	ha	0	238097.02	1	1	R 0.00
7	Sealing of shafts, adits and inclines (including concrete cap)	m²	0	125.57	1	1	R 0.00
8 (A)	Rehabilitation of overburden and spoils	ha	0	163491.64	1	1	R 0.00
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-	ha	0	203625.89	1	1	R 0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic,	ha	0	591426.10	1	1	R 0.00
9	Rehabilitation of subsided areas	ha	0	136899.63	1	1	R 0.00
10	General surf ace rehabilitation, including grassing of all denuded areas	ha	0.01	129512.96	1	1	R 1,295.13
11	River diversions	ha	0	129512.96	1	1	R 0.00
12	Fencing	m	0	147.73	1	1	R 0.00
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater, including treatment, when required)	ha	0	49244.47	1	1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	0.01	17235.56	1	1	R 172.36
15 (A)	Specialist study (Groundwater)	Sum					R 0.00
15 (B)	Specialist study (Soil remediation)	Sum					R 0.00
Sub Total 1 (Sum of items 1 to 15)							R 5,653.27
1	Preliminary and General	6% of Subtotal 1		R 339.20	Weighting factor 2		
		12% of Subtotal 1		R 678.39	1.05		R 712.31
2	Contingency	10% of Subtotal 1					R 565.33
Sub Total 2 (Subtotal 1 plus s um of management and contingency)							R 6,930.90
VAT (15%)							R 1,039.64
GRAND TOTAL (Subtotal 3 plus V AT)							R 7,970.54



21.1 EXPLAIN HOW THE AFORESAID AMOUNT WAS DERIVED.

The Regulations Pertaining to the Financial Provision for Prospecting, Mining or Production Operations promulgated under section 44(aE), (aF), (aG), (aH) read with sections 24(5)(b)(ix), 24(5)(d), 24N, 24P and 24R of the National Environmental Management Act, 1998 (Act No.107 of 1998) (20 November 2015) have been considered and this is anticipated to result in an increase in the rehabilitation costs estimated using above mentioned quantum.

21.2 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).

The Applicant has direct access to sufficient financial resources required as per the budget to enable it to conduct the proposed prospecting operation optimally in accordance with the Prospecting Work Program. The applicant has provided proof of financial ability during the application phase on the DMR SAMRAD system.

22 SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

22.1 COMPLIANCE WITH THE PROVISIONS OF SECTIONS 24(4)(A) AND (B) READ WITH SECTION 24 (3) (A) AND (7) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998) THE EIA REPORT MUST INCLUDE THE: -

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

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

Current land uses inside the prospecting area, such as existing mining areas, mined out areas, grazing, may be temporarily impacted. These are however, small areas. These areas will be rehabilitated post sampling/drilling and activities and the areas will once again become available for grazing. The farmers may have issues like leaving the gates open which poses security concerns and opening of many access roads.

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

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

This BAR and EMPr has been compiled in accordance with the NEMA (1998), EIA Regulations (2014, amended April 2017) and MPRDA (2002). The EAP managing the application confirms that this BAR and EMPr is being submitted for Environmental Authorisation in terms of the National Environmental Management Act, 1998 in respect of listed activities that have been triggered by application in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (as amended). Should the DMRE require any additional information, this will be provided upon request. No reasonable or feasible alternatives exist for this Prospecting Right Application and as such, motivation for no alternatives has been provided in the relevant sections above.



PART B

ENVIRONMENTAL MANGEMENT PROGRAMME REPORT

1 DETAILS OF 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).

Name of the Practitioner: Prescali Environmental Consultants.

The report was compiled by Ms Obakeng Mokgatlé.

Tel No.: 012 543 3808

Fax No. :086 621 0294

e-mail address: info@prescali.co.za

2 DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

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

The requirement to describe the aspects of the activity that are covered by the final environmental management programme is already included in PART A.

3 COMPOSITE MAP

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

Refer to Figure 14-1, Figure 14-2 and Appendix 4.

4 DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

4.1 DETERMINATION OF CLOSURE OBJECTIVES.

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

Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.

- Rehabilitation of areas disturbed as a consequence of prospecting to a land capability that will support and sustain a predetermined post-closure land use;
- Removal of all infrastructure/equipment that cannot be beneficially re-used, as per agreements established, and returning the associated disturbed land to the planned final land use;
- Removal of existing contaminated material from affected areas;
- Establishment of final landforms that are stable and safe in the long run;
Establishment and implementation of measures that meet specific closure related performance objectives.

4.2 VOLUMES AND RATE OF WATER USE REQUIRED FOR THE OPERATION.

Water use will be required for the prospecting work programme.

4.3 HAS A WATER USE LICENCE HAS BEEN APPLIED FOR?

It is not anticipated that a water use licence will be needed at this point in time based on the location of the proposed prospecting boreholes

5 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

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

Table 5-1: Mitigation measures

ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Prospecting	Pre-Construction	Non-compliance with EMPr and other statutory requirements	<ul style="list-style-type: none"> The Prospecting Right Holder must ensure that the manager on the site and the employees are capable of complying with all the statutory requirements which must be met in order for the prospecting activities to continue and this includes the implementation of the approved EMPr. 	Legislation and EMPr	Before construction phase
Prospecting	Operation	Invasive prospecting and associated activities will lead to destruction and damage of habitat and overall loss of floral and faunal species within the clearance and operational area. As a result of the activities degradation or compression may occur if heavy construction vehicles are not kept to the demarcated roads.	<ul style="list-style-type: none"> All footprint areas should remain as small as possible therefore all operational footprint areas should be clearly demarcated e.g., along constructed access roads and corner points of drill pads. A control of access should be implemented for all remaining natural areas to prevent unnecessary destruction of habitats or disturbance of species. It is also vital that no additional fragmentation occurs and that all roads are clearly demarcated and kept to without any exceptions. No vehicles or personnel are permitted outside of these demarcated roads The vegetation removal should be controlled and very specific Continuous rehabilitation of the area should occur, where re-vegetation practices should be prioritised. 	NEMBA, NEMA	Throughout operation
		Vegetation clearance will likely destroy habitats and lead to possible invasive and/or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. Bare areas may become vulnerable to Alien and Invasive Plant species and these may compete	<ul style="list-style-type: none"> Alien Invasive Plant (AIP) control measures should be implemented for the control of invasive and exotic plant species 	NEMBA, NEMA	Throughout operation



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
		with indigenous species, likely leading to the migration of sensitive species from the site to a more favourable habitat.			
		Invasive prospecting and associated activities may impact on areas designated as high sensitivity, including critical biodiversity areas, ecological support areas, koppies, ridges and watercourses situated in and around the Prospecting Right area. The activity may lead to the loss of floral species of conservation concern. However, based on the desktop study findings, no flora SCC are considered to be likely to occur on the project area.	<ul style="list-style-type: none"> • All footprint areas should remain as small as possible. • If any SCC are encountered within the subject property in the future, the following should be ensured: • If any threatened species will be disturbed, ensure effective relocation of individuals to suitable offset areas or within designated open space on the subject property. • All rescue and relocation plans should be overseen by a suitably qualified specialist. • Obtain relevant permits/consent, if applicable, for each protected or endangered floral species identified within the proposed development area that will be destroyed • Placement of the infrastructure and activities should be planned to avoid sensitive areas such as koppies, ridges, rivers and streams. 	NEMBA, NEMA	Throughout operation
	Closure/ Post closure	Rehabilitation could be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance. Without the necessary mitigation measures, rehabilitation will be less successful and the ecology of the impacted areas may not recover to a pre-prospecting state.	<ul style="list-style-type: none"> • Alien Invasive Plant (AIP) control measures should be implemented for the control of invasive and exotic plant species • Prior to finalisation of the activities and closure, an AIP survey must be undertaken to determine that AIP are present in and around the project footprint • Rehabilitation plans should be planned long before the closure phase is due. Continuous rehabilitation should also take place during the operational phase. • Rehabilitation plan should be implemented. This includes the process of replanting the vegetation. Rehabilitation plans should be compiled with the use of a specialist and the correct seeding techniques and mixtures should be applied. 	NEMBA, NEMA	Throughout operation



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
		Without mitigation the alien invasive species may increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and agriculture.			
Prospecting	Operation	The onset of activities might result in impacts to the natural environment and fauna due to increased movement, traffic and large machinery to the area.	<ul style="list-style-type: none"> • Demarcate specific areas to be developed and remain clear of other areas where activities are not necessary • To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees • Continuous rehabilitation of the area should occur, with concurrent rehabilitation of drilling areas as the project continues. This will entail the spreading of topsoil, revegetation and management of invasive species • Any nests encountered should be avoided 	NEMBA, NEMA	Throughout operation
		River and streams occurring on the Prospecting Right area may be impacted due to the invasive prospecting and related activities and may result in the destruction of riparian habitat for sensitive species. Impacts within these areas could lead to destruction and degradation of habitats and food associated with these drainage / riverine areas.	<ul style="list-style-type: none"> • To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees • Placement of the infrastructure and activities should be planned to avoid sensitive areas such as koppies, rivers and streams. 	NEMBA, NEMA	Throughout operation



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
		The operational activities might result in impacts to the natural environment and faunal species due to prolonged activity and movement to and from the area	<ul style="list-style-type: none"> • All footprint areas should remain as small as possible • Demarcate specific areas to be developed and remain clear of other areas where activities are not necessary • Continuous rehabilitation of the area should occur to ensure all impacts identified during operational phase is speedily managed and restored. This includes erosion and the management of invasive plant species that may decrease the integrity of the vegetation types as a specialised habitat for animals 	NEMBA, NEMA	Throughout operation
	Closure & Rehabilitation	Increased activity and traffic within a shorter timeframe (closure phase) may degrade the area. The possibility exists for rehabilitation to be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance	<ul style="list-style-type: none"> • Active rehabilitation of degraded landscapes should commence as soon as practically possible • Rehabilitation plans should be planned long before the closure phase is due • To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees • Ensure that an acceptable aesthetic scenario is created post closure. This will be reached through adequate rehabilitation practices by restoring damaged and degraded habitat areas. 	NEMBA, NEMA	Rehabilitation
Vegetation clearance for access roads, drill pad and sump (if needed). If a contractor camp / maintenance yard / secure storage area is established, vegetation clearance may also be needed.	Construction	Vegetation clearance could result in silt entering watercourses if the topsoil stockpiles are not managed correctly or as a result of erosion on the cleared area	<ul style="list-style-type: none"> • Topsoil will only be removed from areas where physical disturbance of the surface will occur • The topsoil removed, shall be stored in a bund wall on the high ground side of the prospecting area outside the high and medium sensitivity areas relating to surface water resources within the demarcated boundaries of the prospecting area. • Topsoil shall not be used for building or maintenance of access roads • Topsoil stored in the bund wall shall be adequately protected from being blown away or being eroded. 	MPRDA, NEMA, MHS	<p>During construction and site preparation</p> <p>During operational phase and before rehabilitation</p> <p>During operational phase and during rehabilitation</p>



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Drill rig on site and actively drilling	Operation	Hydrocarbon spills from vehicles and other equipment if not managed could impact on the water quality of nearby watercourses	<ul style="list-style-type: none"> Due to the large area applicable to the prospecting application it would not be feasible to demarcate the whole of the area. It is thus proposed that the following be demarcated and NO activities should take place outside of the demarcated zone: <ul style="list-style-type: none"> Corner points for each of the drill pads to demarcate the affected zone. Along specially constructed access roads to the drill pad. 		Before construction and operational activities begin
			<ul style="list-style-type: none"> The area impacted as a result of the prospecting operations shall be rehabilitated by the holder of the prospecting right, as far as is practicable, to its natural state or to a predetermined and agreed to standard or land use which conforms with the concept of sustainable development. The affected area shall be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. 	NWA, NEMWA, NEMA, DWAF Best Practice Guideline	After completion of drilling activities and once drill rig is moved from the site. For other areas as soon as the site / road is no longer needed
			<ul style="list-style-type: none"> The Prospecting Right Holder must ensure that the manager on the site and the employees are capable of complying with all the statutory requirements which must be met in order for the prospecting activities to continue and this includes the implementation of the approved EMPr. Spills should be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility 		Before commencement of any activities Operational
General construction, operational and closure activities	Construction, Operation, Closure	Dust generated could settle on nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse	<ul style="list-style-type: none"> Dust generated as a result vehicle movement will be controlled by water spraying and/or other dust-allaying agents A speed limit will be implemented to reduce dangerous conditions, excessive dust or excessive deterioration of the road being used Newly constructed access roads shall be adequately maintained so as to minimise dust, erosion or undue surface damage. 	NWA, NEMWA, NEMA, DWAF Best Practice Guideline	Construction, operational, closure and rehabilitation and post closure phase
Contractor's camp / Maintenance Yard / Secured Storage areas / Drill pads	Construction, Operation	The construction and operation of a sump at the drill pad to capture slurry generated by the drilling activity will impact on the water quantity (run-off) from the area	<ul style="list-style-type: none"> Should a contractor's camp / maintenance yard / secure storage area be needed it will be located outside the high and medium sensitivity areas as it relates to surface water resources. The storage area shall be securely fenced and all hazardous substances and stocks such as diesel, oils, detergents, etc., shall be stored therein. Drip pans, a thin concrete slab or a 	NEMA, MPRDA, NEMBA, NEMAQA, Dust regulations, NWA, DWAF Best Practice Guideline	Construction phase



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
		reaching the nearby watercourse	<p>facility with PVC lining, shall be installed in such storage areas with a view to prevent soil and water pollution</p> <ul style="list-style-type: none"> The location of both the vehicle maintenance yard and the storage areas are to be indicated on the layout plan. No vehicle may be extensively repaired in any place other than in the maintenance yard. 		
Maintenance of vehicles and equipment	Construction, Operation, Rehabilitation	Hydrocarbon spills from vehicles and other equipment if not managed could impact on the water quality of nearby watercourses.	<ul style="list-style-type: none"> The maintenance of vehicles and equipment used for any purpose during the prospecting operation will take place only in the maintenance yard area. Equipment used in the mining/prospecting process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid. Machinery or equipment used on the mining/prospecting area must not constitute a pollution hazard in respect of the above substances. The Regional Manager shall order such equipment to be repaired or withdrawn from use if he or she considers the equipment or machinery to be polluting and irreparable. 	NEMA, NWA, DWAF Best Practice Guideline	Construction, Operational, Closure / Rehabilitation phases
Access Roads	Construction, Operation, Rehabilitation	Should foreign material be brought in to construct required access roads these could result in siltation of nearby watercourses if the material is not adequately compacted. No additional impact foreseen as the proposed access roads needed does not cross a watercourse.	<ul style="list-style-type: none"> Water courses and steep gradients shall be avoided as far as is practicable Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be provided where necessary Any access road or portions thereof, constructed by the holder of the prospecting right and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the Regional Manager. Any gate or fence erected by the holder of the prospecting right which is not required by the landowner/tenant, shall be removed and the situation restored to the pre mining/prospecting situation. Roads shall be ripped or ploughed, and if necessary, appropriately fertilised (based on a soil analysis) to ensure the regrowth of vegetation. Imported road construction materials which may hamper regrowth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects 	NEMA, NWA, DWAF Best Practice Guideline	Construction and Rehabilitation phases



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			on the soil arising from the prospecting operation, be corrected and the area be seeded with a seed mix to the Regional Manager's specification.		
Toilet facilities, waste water and refuse disposal	Construction, Operation, Rehabilitation	Chemical toilets will be used and needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the toilets	<ul style="list-style-type: none"> • As a minimum requirement, chemical toilets will be provided to employees and proper hygiene measures shall be established. • The chemical toilet facilities will be used in such a way that they do not cause water or other pollution. • The use of existing facilities must take place in consultation with the landowner/tenant. • All effluent water from the camp washing facility shall be disposed of in a properly constructed septic tank, situated as far as possible, but not less than 200 metres, from any stream, river, pan, dam or borehole. Septic tanks will be emptied by a suitable contractor to an approved site. • Only domestic type wash water shall be allowed to enter this drain and any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility. • Spills should be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be stored in a container at a collecting point and collected on a regular basis and disposed of at a recognised disposal facility. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the camp site. • Biodegradable refuse generated from the contractor's camp or any other area related to the prospecting activities shall either be handled as indicated above or be buried in a pit excavated for that purpose and covered with layers of soil, incorporating a final 0,5 metre thick layer of topsoil (where practicable). Provision should be made for future subsidence of the covering. 	NEMA, MPRDA, NWA, DWAF Best Practice Guideline	Construction, Operational, Closure / Rehabilitation phases



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Waste disposal	Construction, Operation, Rehabilitation	Hazardous waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the waste. General waste needs to be managed in such a manner that it does not impact on nearby watercourses as a result of windblown waste from storage areas e.g., plastics.	<ul style="list-style-type: none"> Suitable covered receptacles shall be available at all times and conveniently placed for the disposal of waste. All used oils, grease or hydraulic fluids shall be placed in suitable receptacles and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility. All spills should be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. 	NEMA, NEMWA, NWA, DWAF Best Practice Guideline	Construction, Operational, Closure / Rehabilitation phases
Drilling Activities	Operation	Hydrocarbon spills from vehicles and other equipment if not managed could impact on the water quality of nearby watercourses.	<ul style="list-style-type: none"> In all instances drilling would be: <ul style="list-style-type: none"> An independent and experienced drilling contractor will be used to complete the drilling in compliance with the Mine Health and Safety Act, 1996 (Act No. 29 of 1996). Under close supervision of an experienced geologist; Conducted along best practice guidelines; and Minimize environmental disturbance Plastic lining will be employed to prevent oil spillage under the drill rigs and hydrocarbon containers Borehole sites are GPS located and pegged with PVC flags attached to the stakes The site is inspected and photographed prior to any disturbance Minimal clearing of drill pads will be done, keeping disturbance to the native vegetation to an absolute minimum. No topsoil will be removed 	NEMA, MPRDA, NWA, DWAF Best Practice Guideline	Operational Phase
Rehabilitation of the contractor's camp / maintenance yard/ secures storage areas and	Closure / Rehabilitation phases	Dust generated could settle on nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse.	<ul style="list-style-type: none"> On completion of the prospecting activities, all buildings, structures or objects on the contractors' camp or any area directly related to the prospecting activities site shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), which states: (1) When a prospecting right, mining right, retention permit or mining permit lapses, is cancelled or is abandoned or when any prospecting or mining operation 	NEMA, MPRDA, NEMBA, NEMAQA, Dust regulations, NWA, DWAF Best Practice Guideline	Closure / Rehabilitation phases



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
prospecting activities areas including drill pads			<p>comes to an end, the holder of any such right or permit may not demolish or remove any building, structure, object - (a) which may not be demolished in terms of any other law; (b) which has been identified in writing by the Minister for purposes of this section; or (c) which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing. (2) The provision of subsection (1) does not apply to bona fide mining equipment which may be removed.</p> <ul style="list-style-type: none">• Areas containing septic tanks as applicable to the prospecting activities and contractors camp shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.• If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining/prospecting operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.• Photographs of the contractor's camp and prospecting activity sites (i.e. exploration boreholes and access roads), before and during the prospecting operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.• On completion of the prospecting operations, the maintenance yard/ secured storage area shall be cleared of any contaminated soil, which must be disposed at a registered or licensed disposal facility. The surface shall then be ripped or ploughed to a depth of at least 300mm and the topsoil previously stored adjacent the site, shall be spread evenly to its original depth over the whole area. The area shall then be fertilised if necessary (based on a soil analysis).• The impacted sites shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.• If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining/prospecting operation be		



ACTIVITIES	PHASE	POTENTIAL IMPACT	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>corrected and the area be seeded with a vegetation seed mix to his or her specification.</p> <ul style="list-style-type: none">• After completion of a borehole, the collar position will be marked with a numbered concrete block, of approximately 0.5 x 0.5 x 0.5 meters, fitted with a steel rod of approximately 1m high (or similar). After each drill hole is complete, logged and sampled the collar will be surveyed by an independent surveyor using a high-accuracy differential Global Positioning System. Thereafter the drill area will be rehabilitated according to the procedures as stipulated in the Environmental Management Plan and photographed. The rehabilitation process will be closely monitored to ensure that standards are not compromised. The drill sites are only considered rehabilitated when the project geologist has signed a standard drill pad rehabilitation checklist. The boreholes will be logged and mineralized horizons sampled by qualified geologists.		
Consultation	Planning, operation and decommissioning phase.	Landowners and surrounding landowners/ lawful occupiers	<ul style="list-style-type: none">• Stakeholder engagement will continue throughout the prospecting activities to ensure the community and landowners are kept informed and allowed to raise issues. The Applicant shall attend applicable community meetings with the affected communities. Any issues raised will then be addressed through a grievance mechanism.	NEMA, OHS and MHSA	Planning Phase Throughout the planning, operational and decommissioning phase.

6 IMPACT MANAGEMENT ACTIONS AND OUTCOMES

Table 6-1: Summary of Impact Management Actions and Outcomes

ACTIVITIES	PHASE	POTENTIAL IMPACT	ASPECTS AFFECTED	MITIGATION TYPE	STANDARD TO BE ACHIEVED
Prospecting	Operation	<ul style="list-style-type: none"> • Destruction and damage of habitat and overall loss of floral and faunal species within the clearance and operational area. • Degradation or compression may occur if heavy construction vehicles are not kept to the demarcated roads. • Destroy habitats and lead to possible invasive and/or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. • Bare areas may become vulnerable to Alien and Invasive Plant species • Impact on areas designated as high sensitivity, including critical biodiversity areas, ecological support areas, koppies, ridges and watercourses situated in and around the Prospecting Right area • Impacts to the natural environment and fauna due to increased movement, traffic and large machinery to the area. • Destruction of riparian habitat for sensitive species. Impacts within these areas could lead to destruction and degradation of habitats and food associated with these drainage / riverine areas. • Hydrocarbon spills from vehicles and other equipment 	<ul style="list-style-type: none"> • Topography; • Soil disturbance; • Fauna and Flora; • Air Quality; • Surface Water; • Groundwater. 	Avoidance and control through preventative measures (e.g. communication with landowners, site access control) Remedy through application of mitigation measures in EMP	NEMBA, NEMA
	Closure/ Post closure	<ul style="list-style-type: none"> • Bare areas may become vulnerable to Alien and Invasive Plant species • Increased activity and traffic within a shorter timeframe (closure phase) may degrade the area. • The possibility exists for rehabilitation to be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance 	<ul style="list-style-type: none"> • Topography; • Fauna and Flora; • Surface Water; • Groundwater; 	Avoidance and control through preventative measures	NEMBA, NEMA
Vegetation clearance for access roads, drill pad and	Construction, Operation, Closure	<ul style="list-style-type: none"> • Silt entering watercourses • Erosion on the cleared area • Dust generation • Increase in water run-off 	<ul style="list-style-type: none"> • Topography; • Soil disturbance; • Fauna and Flora; • Air Quality; • Surface Water. 	Avoid and control through implementation of EMP mitigation measures (e.g. speed	MPRDA, NEMA, MHS



ACTIVITIES	PHASE	POTENTIAL IMPACT	ASPECTS AFFECTED	MITIGATION TYPE	STANDARD TO BE ACHIEVED
sump (if needed).				limit enforcement, vehicle maintenance)	
Maintenance of vehicles and equipment	Construction, Operation, Rehabilitation	<ul style="list-style-type: none"> Hydrocarbon spills from vehicles and other equipment could impact on the water quality of nearby watercourses. 	<ul style="list-style-type: none"> Soil pollution; Fauna and Flora; Surface Water; Groundwater; 	Avoid and control through implementation of EMP mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	NEMA, NWA, DWAF Best Practice Guideline
Toilet facilities, waste water and refuse disposal	Construction, Operation, Rehabilitation	<ul style="list-style-type: none"> Chemical toilets will be used and needs to be managed in such a manner that it does not impact on nearby watercourses as a result of spills / leaks from the toilets 	<ul style="list-style-type: none"> Soil pollution; Fauna and Flora; Surface Water; Groundwater; 	Avoid and control through implementation of EMP mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	NEMA, MPRDA, NWA, DWAF Best Practice Guideline
Waste disposal	Construction, Operation, Rehabilitation	<ul style="list-style-type: none"> Spills / leaks from the waste. Windblown waste from storage areas e.g., plastics. 	<ul style="list-style-type: none"> Topography; Soil disturbance; Fauna and Flora; Air Quality; Visual; Surface Water. 	Avoid and control through implementation of EMP mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	NEMA, NEMWA, NWA, DWAF Best Practice Guideline
Rehabilitation of the contractor's camp / maintenance yard/ secures storage areas and prospecting activities areas including drill pads	Closure / Rehabilitation phases	<ul style="list-style-type: none"> Dust generated could settle on nearby riparian / aquatic vegetation and impact on the present ecological status / health of the associated watercourse. 	<ul style="list-style-type: none"> Topography; Soil disturbance; Fauna and Flora; Air Quality; Visual; Surface Water. 	Control through implementation of EMP mitigation measures	NEMA, MPRDA, NEMBA, NEMAQA, Dust regulations, NWA, DWAF Best Practice Guideline
Consultation	Planning, operation and decommissioning phase.	<ul style="list-style-type: none"> Safety and security of the landowners and surrounding community, and Potential for job creation. 	<ul style="list-style-type: none"> Socio-Economic 	Avoid through implementation of EMP mitigation measures (e.g.	NEMA, OHS and MHSA



ACTIVITIES	PHASE	POTENTIAL IMPACT	ASPECTS AFFECTED	MITIGATION TYPE	STANDARD TO BE ACHIEVED
				communication with landowners) Control through implementation of ESMS	



7 FINANCIAL PROVISION

7.1 DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION.

On the 20th of November 2015 the Minister promulgated the Financial Provisioning Regulations under the NEMA, which will come into effect in 2022. The regulations aim to regulate the determine and making of financial provision as contemplated in the NEMA for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, prospecting, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future. These regulations provide for, *inter alia*:

- Determination of financial provision: An applicant or holder of a right or permit must determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of prospecting, prospecting, mining or production operations, as contemplated in the Act and to the satisfaction of the Minister responsible for mineral resources.
- Scope of the financial provision: Rehabilitation and remediation; decommissioning and closure activities at the end of operations; and remediation and management of latent or residual impacts.
- Regulation 6: Method for determining financial provision – An applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for:
 - Annual rehabilitation – annual rehabilitation plan
 - Final rehabilitation, decommission and closure at end of life of operations – rehabilitation, decommissioning and closure plan; and
 - Remediation of latent defects.
- Regulation 10: An applicant must:
 - Ensure that a determination is made of the financial provision and the plans contemplated in regulation 6 are submitted as part of the information submitted for consideration by the Minister responsible for mineral resources of an application for environmental authorisation, the associated environmental management programme and the associated right or permit in terms of the MPRDA; and
 - Provide proof of payment or arrangements to provide the financial provision prior to commencing with any prospecting, prospecting, mining or production operations.
- Regulation 11: Requires annual review, assessment and adjustment of the financial provision. The review of the adequacy of the financial provision including the proof of payment must be independently audited (annually) and included in the audit of the EMPR as required by the EIA regulations.

Please refer to Section 21 in Part A.

7.2 DESCRIBE THE CLOSURE OBJECTIVES AND THE EXTENT TO WHICH THEY HAVE BEEN ALIGNED TO THE BASELINE ENVIRONMENT DESCRIBED UNDER THE REGULATION.

Considering the relatively limited impact of the proposed prospecting activities, the closure objectives are aimed at re-instating the landform, land use and vegetation units to the same as before prospecting operations take place unless a specific, reasonable alternate land use is requested by the landowner. As such, the intended end use for the disturbed prospecting areas and the closure objectives will be defined in consultation with the relevant landowner. Proof of such consultation will be submitted together with the Application for Closure Certificate. The overall aim of the rehabilitation plan is to rehabilitate the environment to a condition as close as possible to that which existed prior to prospecting. This shall be achieved with a number of specific objectives.



- i. **Making the area safe.** i.e., Decommission prospecting activities so as to ensure that the environment is safe for people and animals. This entails refilling excavations, sealing boreholes, etc.
- ii. **Recreating a free draining landform.** This entails earthworks infilling, reshaping, levelling, etc. to recreate as close as possible the original topography and to ensure a free draining landscape.
- iii. **Re-vegetation.** This involves either reseeding or allowing natural succession depending on the area, climate etc.
- iv. **Storm water management and erosion control.** Management of stormwater and prevention of erosion during rehabilitation. E.g., cut off drains, berms etc. and erosion control where required.
- v. **Verification of rehabilitation success.** Entails monitoring of rehabilitation.
- vi. **Successful closure.** Obtain closure certificate.

8 CONFIRM SPECIFICALLY THAT THE ENVIRONMENTAL OBJECTIVES IN RELATION TO CLOSURE HAVE BEEN CONSULTED WITH LANDOWNER AND INTERESTED AND AFFECTED PARTIES.

The environmental objectives in relation to closure will be consulted with the farmers and affected parties. It will be explained that should the prospecting yield negative results, then the end use for area will revert to its pre-prospecting land use (minutes to be incorporated on the final report). The end-use of the area will therefore not be changed by the prospecting operations.

As such, the purpose of the PPP and stakeholder engagement process is to:

- Introduce the proposed project;
- Explain the environmental authorisations required;
- Explain the environmental studies already completed and yet to be undertaken (where applicable);
- Determine and record issues, concerns, suggestions, and objections to the project;
- Provide opportunity for input and gathering of local knowledge;
- Establish and formalise lines of communication between the I&AP's and the project team;
- Identify all significant issues for the project; and
- Identify possible mitigation measures or environmental management plans to minimise and/or prevent negative environmental impacts and maximize and/or promote positive environmental impacts associated with the project.

9 PROVIDE A REHABILITATION PLAN THAT DESCRIBES AND SHOWS THE SCALE AND AERIAL EXTENT OF THE MAIN PROSPECTING ACTIVITIES, INCLUDING THE ANTICIPATED PROSPECTING AREA AT THE TIME OF CLOSURE.

The following main strategies will be implemented:

- Rehabilitation of areas disturbed as a consequence of prospecting to a land capability that will support and sustain a predetermined post-closure land use;
- Removal of all infrastructure/equipment that cannot be beneficially re-used, as per agreements established, and returning the associated disturbed land to the planned final land use;
- Removal of existing contaminated material from affected areas;
- Establishment of final landforms that are stable and safe in the long run;
- Establishment and implementation of measures that meet specific closure related performance objectives.



9.1 INTEGRATED REHABILITATION AND CLOSURE PLAN

The main aim in developing this rehabilitation plan is to mitigate the impacts caused by the prospecting activities and to restore land back to a satisfactory standard. It is best practice to develop the rehabilitation plan as early as possible so as to ensure the optimal management of rehabilitation issues that may arise. It is important that the project's closure plan is defined and understood from before starting the process and is complementary to the rehabilitation goals. Rehabilitation and closure objectives need to be tailored to the project at hand and be aligned with the EMPR. The overall rehabilitation objectives for this project are as follows:

- Maintain and minimise impacts to the ecosystem within the prospecting area;
- Re-establishment of the pre-developed land capability to allow for a suitable post-prospecting land use;
- Prevent soil, surface water and groundwater contamination;
- Comply with the relevant local and national regulatory requirements; and
- Maintain and monitor the rehabilitated areas.

Successful rehabilitation must be sustainable, and requires an understanding of the basic baseline environment, as well as project management to ensure that the rehabilitation program is a success.

It is noted that a separate application for environmental authorisation must be submitted for closure in accordance with EIA Regulations, 2014 Listing Notice 1 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 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.

9.2 PHASE 1: MAKING SAFE

In line with the DWAF (2008) Best Practice Guideline A6: Water Management for Underground Mines: all prospecting boreholes that will not be required for later monitoring or other useful purposes should be plugged and sealed with cement to prevent possible cross flow and contamination between aquifers. Cement and liquid concrete are hazardous to the natural environment on account of the very high pH of the material, and the chemicals contained therein.

As a result, the contractor shall ensure that:

- Concrete shall not be mixed directly on the ground;
- The visible remains of concrete, either solid, or from washings, shall be physically removed immediately and disposed of as waste, (Washing of visible signs into the ground is not acceptable); and
- All excess aggregate shall also be removed.

9.3 PHASE 2: LANDFORM DESIGN, EROSION CONTROL AND REVEGETATION

Landform, erosion control and re-vegetation is an important part of the rehabilitation process. Landform and land use are closely interrelated, and the landform should be returned as closely as possible to the original landform. Community expectations, compatibility with local land use practices and regional infrastructure, or the need to replace natural ecosystems and faunal habitats all support returning the land as closely as possible to its original appearance and productive capacity. This requires the following:

- Shape, level and de-compact the final landscape after removing all the project infrastructure, dress with topsoil and, where necessary, vegetate with indigenous species. Commission specialists to assist in planning re-vegetation and the management of environmental impact, as required.



- Remove access roads with no beneficial re-use potential by deep ripping, shaping and levelling after the removal and disposal of any culverts, drains, ditches and/or other infrastructure. Natural drainage patterns are to be reinstated as closely as possible.
- Shape all channels and drains to smooth slopes and integrate into the natural drainage pattern.
- Construct contour banks and energy dissipating structures as necessary to protect disturbed areas from erosion prior to stabilisation.
- Promote re-vegetation through the encouragement of the natural process of secondary succession.
- Natural re-vegetation is dependent on de-compaction of subsoils and adequate replacement of the accumulated reserves of topsoil (for example, over the sampling sites), so as to encourage the establishment of pioneer vegetation.
- Remove alien and/or exotic vegetation.
- Undertake a seeding programme only where necessary, and as agreed with the re-vegetation specialist

9.4 PHASE 3: MONITORING AND MAINTENANCE

The post-operational monitoring and management period following decommissioning of prospecting activities must be implemented by a suitable qualified independent party for a minimum of one (1) year unless otherwise specified by the competent authority. The monitoring activities during this period will include but not be limited to:

- Biodiversity monitoring; and
- Re-vegetation of disturbed areas where required.

Provision must be made to monitor any unforeseen impact that may arise as a result of the proposed prospecting activities and incorporated into post closure monitoring and management.

9.5 POST-CLOSURE MONITORING AND MAINTENANCE

Prior to decommissioning and rehabilitation activities, a monitoring programme shall be developed and submitted to the relevant authority for approval, as a part of the Final Rehabilitation Plan. It is recommended that the post-closure monitoring include the following:

- Confirmation that any waste, wastewater or other pollutants that is generated as a result of decommissioning will be managed appropriately, as per the detailed requirements set out in the Final Rehabilitation Plan,
- Confirmation that all de-contaminated sites are free of residual pollution after decommissioning.
- Confirmation that acceptable cover has been achieved in areas where natural vegetation is being re-established. 'Acceptable cover' means re-establishment of pioneer grass communities over the disturbed areas at a density similar to surrounding undisturbed areas, non-eroding and free of invasive alien plants.

Annual environmental reports will be submitted to the Competent Authority and other relevant Departments for at least one-year post-decommissioning. The frequency and duration of this reporting period may be increased to include longer term monitoring, at intervals to be agreed with the Designated Authority. The monitoring reports shall include a list of any remedial action necessary to ensure that infrastructure that has not been removed remains safe and pollution free and that rehabilitation of project sites are in a stable, weed and free condition.

9.6 EXPLAIN WHY IT CAN BE CONFIRMED THAT THE REHABILITATION PLAN IS COMPATIBLE WITH THE CLOSURE OBJECTIVES.

The rehabilitation plan is compatible with the closure objectives in that it seeks to ensure that negative impacts on the receiving environment that could not be prevented or mitigated during prospecting are rehabilitated. The appropriate disposal of waste will ensure that land is usable, in



alignment with surrounding land uses and that no hazardous materials are left on site post-prospecting.

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

Operational rehabilitation has been catered for in the Budget lodged with the application in the Prospecting Work Programme. In terms of decommissioning rehabilitation (or the so-called Rehabilitation Quantum the preliminary estimate of the rehabilitation cost is (inclusive of contingencies and VAT): **R 7 970.54.**

9.7 CONFIRM THAT THE FINANCIAL PROVISION WILL BE PROVIDED AS DETERMINED.

Salene Manganese (Pty) Ltd can fund the prospecting activities internally. Additionally, Salene Investments have agreed to provide funding on a loan basis to Salene Manganese in respect to its prospecting activities. Salene Manganese thus have access to funding via own internal cash flow ability or alternatively through Salene Investments, if required.

10 MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON, INCLUDING

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

Table 10-1: Mechanisms for monitoring compliance

SOURCE MONITORING REPORTING	ACTIVITY AND	IMPACTS MONITORING PROGRAMMES	REQUIRING	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Drilling/Prospecting		<ul style="list-style-type: none"> Dust Noise Disruption of animal life Habitat destruction Loss of geology Change in topography 		<ul style="list-style-type: none"> Daily dust suppression Monthly dust bucket monitoring Observe and Report on disturbance of fauna or degradation. 	ECO, Geologist and Project Manager	Daily and monthly
Existing/Access Routes		<ul style="list-style-type: none"> Dust Animal life disruption Monitor dust. 		<ul style="list-style-type: none"> Monitor dust fall out levels Monitor speed on the road 	Geologist and Project Manager	Monthly and when necessary
Waste		<ul style="list-style-type: none"> Volume of hazardous waste removed from site 		<ul style="list-style-type: none"> Monthly hazardous waste removal and treatment (including sewerage) 	ECO, Project Manager	Monthly and when necessary
Rehabilitation		<ul style="list-style-type: none"> Fauna and Flora 		<ul style="list-style-type: none"> AIP survey 	ECO, Project manager, Specialist	Decommissioning phase

As the areas of direct influence is located more than 100 m from a watercourse and more than 500 m from a delineated wetland no monitoring is proposed relating to natural watercourses.



11 INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT/ ENVIRONMENTAL AUDIT REPORT.

Regular monitoring of all the environmental management procedures and mitigation measures shall be carried out by Salene in order to ensure that the provisions of this EMP are adhered to. Formal monitoring and performance assessment of the EMP will be undertaken on an annual basis.

12 ENVIRONMENTAL AWARENESS PLAN

12.1 MANNER IN WHICH THE APPLICANT INTENDS TO INFORM HIS OR HER EMPLOYEES OF ANY ENVIRONMENTAL RISK WHICH MAY RESULT FROM THEIR WORK.

The following Environmental Awareness Training will be implemented by Salene Manganese in order to inform employees and contractors of the environmental risk that may result from their work, or the risk of their interaction with the sensitive environment. The training will be conducted as part of the induction process for all new employees (including contractors) that will perform work in terms of the proposed activities. Proof of all training provided must be kept on-site. The Environmental Awareness Training will, as a minimum cover the following topics within Table 12-1

Table 12-1: Environmental Awareness Plan

Air Quality	Activities that may result or mitigate impact on air quality; speeding on roads, the requirements for dust suppression, etc. Negative impacts on the receiving environment if mitigation measures are not implemented.
Surface and groundwater	Risks to surface and groundwater, e.g., fuel and chemical handling and further risks of erosion or damage to riparian vegetation. How incidents should be reported, and emergency requirements. The importance to re-use water and to prevent spillages.
Cultural Heritage	To respect all cultures and beliefs. How to report any sightings of heritage importance as identified during operation activities (e.g., fossils).
Fauna	Overview of the fauna found on/around site and the uniqueness thereof. Mitigation measures that all contractors and employees need to abide by. No contractor or personnel allowed to catch or kill any species, and how any sightings should be reported if further actions are required (e.g., to catch and release).
Flora	Overview of the flora diversity on site, and the rare and endangered nature thereof. Measures taken by the company to protect species. No contractor or personnel allowed to remove, harvest or destroy any flora species unless clearly instructed based on the operational plans.
Waste management	Measures to avoid waste generation and to participate in waste minimisation/reduction.
Traffic strategies.	To stay on designated roads and not create new roads on areas that will not be used for prospecting purposes. To be aware of the fauna species and to be on the lookout and avoid collisions.
Emergency Preparedness and Response	How to report any emergency or incident. Incident and emergency reporting requirements.
General rules and conduct	Respect for the sensitive environment. Do not litter. Respect for each other and for different cultures. Safety and health requirements



12.2 MANNER IN WHICH RISKS WILL BE DEALT WITH IN ORDER TO AVOID POLLUTION OR THE DEGRADATION OF THE ENVIRONMENT.

All employees must be provided with environmental awareness training to inform them of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. Employees should be provided with environmental awareness training before prospecting operations start. All new employees should be provided with environmental awareness training. Induction courses will be provided to all employees by a reputable trainer.

13 SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

(Among others, confirm that the financial provision will be reviewed annually).

All potential risks have been identified within this document and are to be communicated to all contractors and all contractors and is indicated in the EMPr which will be available to all staff. Environmental training needs for each section should be identified and addressed to ensure environmental management is part of day-to-day operations. The environmental risk responsibilities guide the training requirements of each individual. Environmental training recommended for the different levels of management guide the training needs identification process. This is a minimum guideline and any additional training can be added where section specific issues or high-risk items require training and awareness. It is the responsibility of the line manager to ensure environmental training needs for individual staff members are identified, agreed to, facilitated and tracked.

An environmental audit report will be submitted annually as per DMRE requirements.

The financial provision will be updated on an annual basis and submitted to the DMRE.

14 UNDERTAKING

The EAP herewith confirms

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

Signature of the environmental assessment practitioner: _____

Name of company: _____

Date: _____

-END-



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16 APPENDICES

Appendix 1: Qualifications of the EAP

Appendix 2: Experience of the EAP

Appendix 3: Locality Map

- Locality map at a scale not smaller than 1:250 000
- Proposed location of prospecting areas with 500 m radius

Appendix 4: Final Site map

Appendix 5: Public Participation Process

- Issues and Response Report
- Site Notices
- Background Information Documents
- Newspaper Advert
- Proof of consultation

Appendix 6: Specialist Reports

- Desktop Surface Water Assessment
- Desktop Terrestrial Ecology Assessment
- Desktop Heritage Impact Assessment