



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: GEJ RESOURCES (PTY) LTD

(hereinafter referred to as 'GEJ')

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FILE REFERENCE NUMBER SAMRAD: (NC) 30/5/1/1/2/13159 PR

IMPORANT 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 permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

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

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

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

- a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternative focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- d) determine the:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to inform identified preferred alternatives; 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) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- g) identify suitable measure to manage, avoid or mitigate identified impacts; and
- h) identify residual risks that need to be managed and monitored.

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PART A
SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Contact Person and correspondence address:

a) Details of:

i) The EAP who prepared the report:

Name of the Company: M and S Consulting (Pty) Ltd
Name of the Practitioner: Ms. T. Jooste
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Fax No: 086 636 0731
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Postal Address: P.O. Box 2473, Kimberley, 8300

(hereinafter referred to as M&S)

(i) Expertise of the EAP:

(1) The qualifications of the EAP:

(With evidence attached as Appendix 1)

- **Professional registration of EAP:**

Ms. Jooste is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (Reg. No. 2019/1983).

- **The qualifications of the EAP:**

- Fourteen years professional experience, in terms of Section 15(1) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), Section 24H Registration Authority Regulations as published on 22 July 2016 under Government Gazette No. 40154 (849);
- Environmental Management Certificate; and
- BA in Environmental Management (UNISA).

(2) Summary of the EAP's past experience:

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

Relevant past experiences in carrying out the Environmental Impact Assessment Procedures include Environmental Impact Assessments, Environmental Management Plans / Programmes / Reports, Performance Assessments, Rehabilitation Progress Assessments, Environmental Liability Assessments, Environmental Compliance Monitoring, Scoping Reports, etc.

b) Description of the property:

Farm Name:	<p>→ Remaining Extent of the Farm Bulls Run 164 → Remaining Extent of Portion 1 of the Farm Bulls Run 164 → Portion 2 of the Farm Bulls Run 164 → Remaining Extent of the Farm Hartfell 172</p> <p>The properties will be referred to as the 'PR Area' in this document.</p>
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Application area (Ha)	5 504.7223 Ha
Magisterial district:	Hay
Distance and direction from nearest town	The PR Area is situated approximately 30km north-west of Niekerkshoop and approximately 55km south-east of Groblershoop in the Northern Cape Province. Access to the site is via a secondary road turning from the R64 between Griekwastad and Groblershoop.
21 digit Surveyor General Code for each farm portion	C0310000000016400000 C0310000000016400001 C0310000000016400002 C0310000000017200000

c) Locality Map:

(show nearest town, scale not smaller than 1:250 000 attached as Appendix 3)

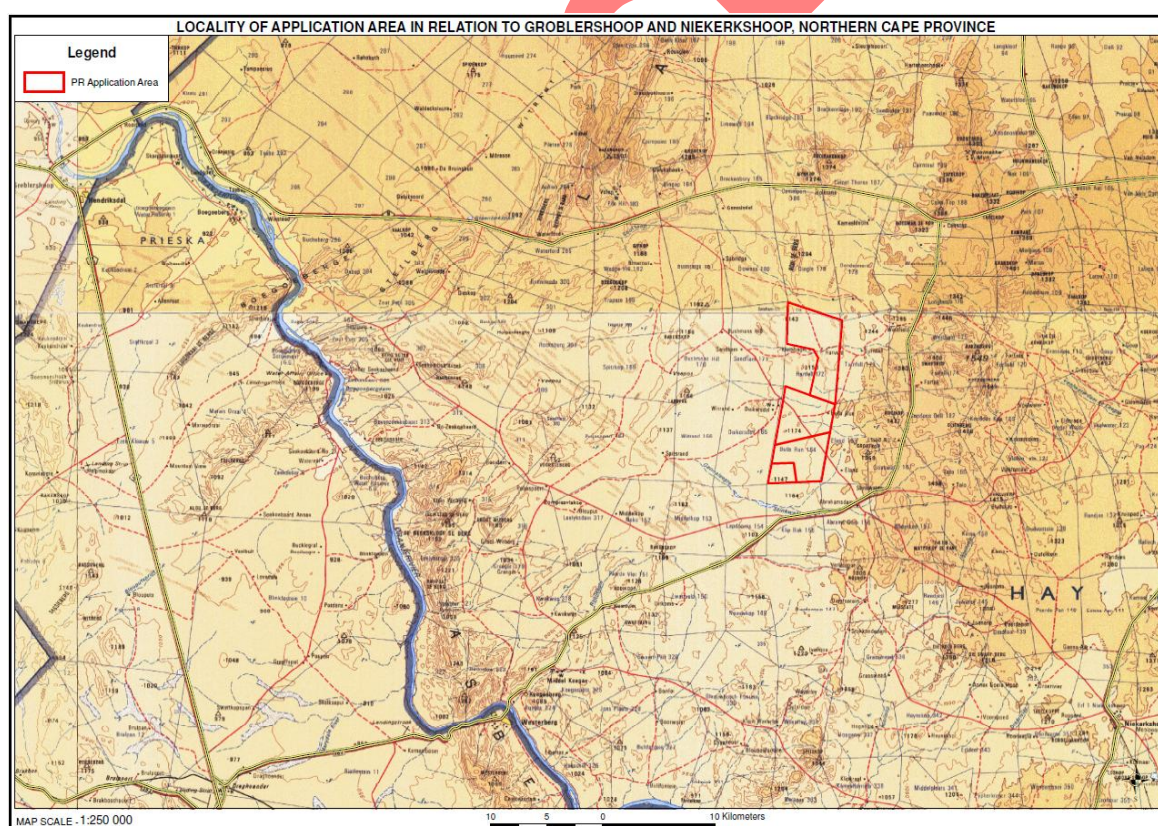


Figure 1 – Locality Map

d) 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)

A final Site Plan cannot be provided as the locality of the proposed boreholes and trenches is dependent on the results of the following:

- Reconnaissance visit;
- Desktop study; and
- Geological mapping

We do; however; insert below a Conceptual Site Plan indicating proposed localities of boreholes and trenches as well as all existing infrastructures and sensitive environmental

features (including relevant buffer zones around these) to assist with planning when the results of the abovementioned phases have been obtained.

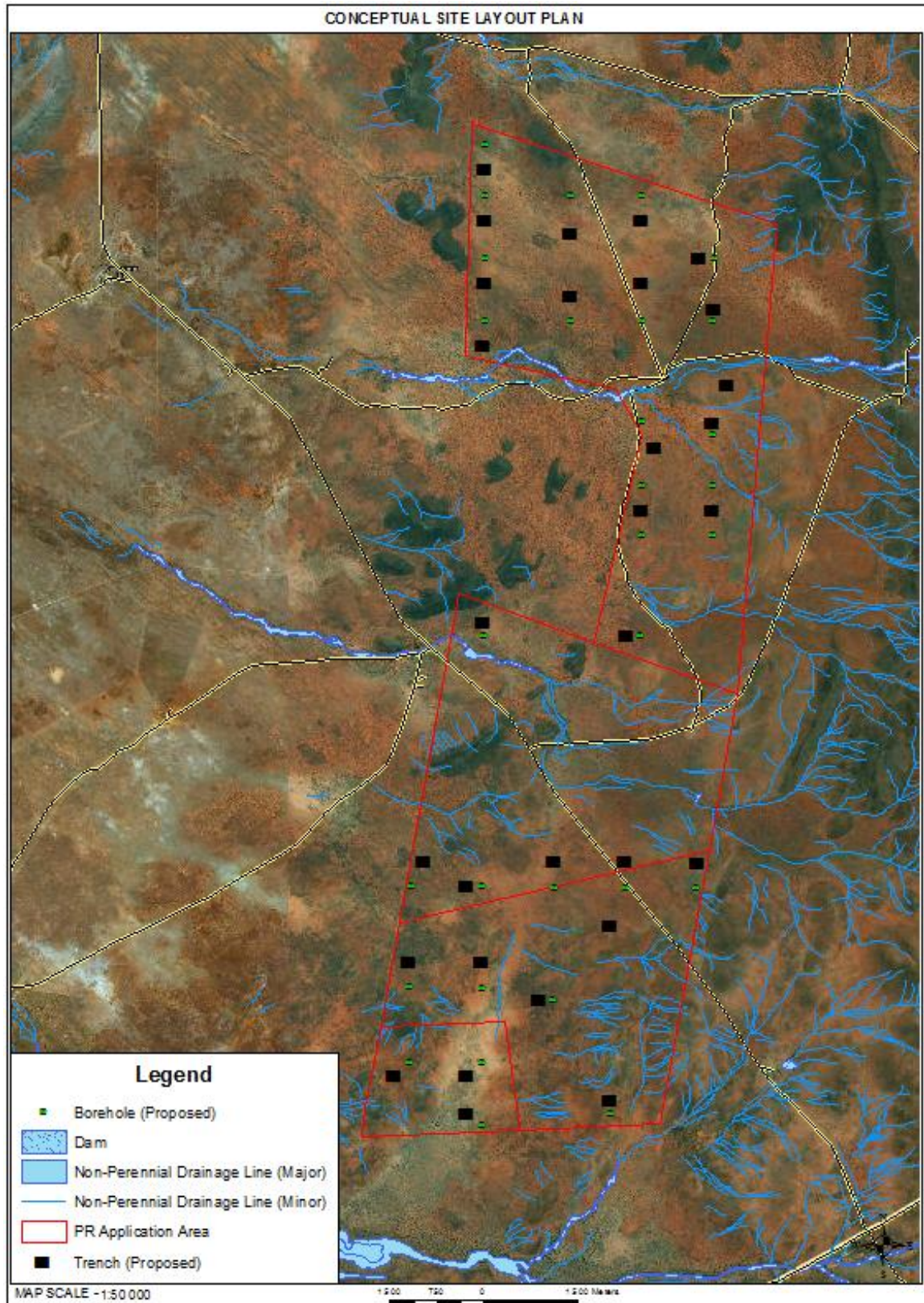


Figure 2 – Conceptual site layout plan

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i) Listed and specified activities:

Name of activity (e.g. Excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)		Aerial extent of the activity (Ha or m ²)	Listed Activity (mark with an X where applicable or affected)	Applicable Listing Notice (GNR544, GNR545 or GNR546 / Not listed)
1	<p>Blasting: The tons of explosives consumed per month depend completely on the number of blasts that GEJ will conduct.</p> <p>The size of the blasts will be directly affected by the geology of the deposit.</p>	Various	X	MPRDA: Section 16 MPRDA: Section 20 NEMA: GNR327: Activity 20 NEMA: GNR327: Activity 27 NEMA: GNR327: Activity 30 NEMA: GNR325: Activity 15 NEMA: GNR325: Activity 19 NEMWA: GNR633: Activity 15 NWA: Section 21 NWA: GNR704
2	<p>Boreholes 30 boreholes with a 10m x 10m surface disturbance each.</p>	30 x 10 x 10 = 0.3 Ha	X	MPRDA: Section 16 NEMA: GNR327: Activity 19 NEMA: GNR327: Activity 20 NEMA: GNR327: Activity 27 NEMA: GNR327: Activity 30
3	<p>Chemical toilets: Mobile chemical toilets shall be utilized.</p>	2m x 3m =6m ² each		MPRDA: Section 16
4	<p>Diesel tanks: It is anticipated that the operation will utilize 1 x 24 000 litre (24m³) diesel tank.</p>	10m x 20m = 200m ²	X	MPRDA: Section 16 MPRDA: Section 20 NEMA: GNR327: Activity 14 NEMA: GNR327: Activity 20 NEMA: GNR327: Activity 30 NEMA: GNR325: Activity 19 NWA: Section 21
5	<p>Excavations: Provision is made for 30 trenches during phase 4 (28 months) of the prospecting operation: 30 x 40m x 21m = 2.52Ha.</p>	2 x 40m x 21m = 0.16 Ha	X	MPRDA: Section 16 MPRDA: Section 20 NEMA: GNR327: Activity 19 NEMA: GNR327: Activity 20

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	Only two excavations will be allowed to be open at any one time.			NEMA: GNR327: Activity 24 NEMA: GNR327: Activity 27 NEMA: GNR327: Activity 30 NEMA: GNR325: Activity 15 NEMA: GNR325: Activity 19 NEMA: GNR325: Activity 27 NEMA: GNR633: Activity 15 NWA: Section 21 NWA: GNR704
6	Generator: It is anticipated that the operation will utilize generators for its operation.	5m x 5m = 25m ² each		MPRDA: Section 16 MPRDA: Section 20
7	Offices: Mobile containers will be utilized as offices.	3m x 6m = 18m ² each		MPRDA: Section 16 MPRDA: Section 20
8	Processing plant: Relevant processing plants, including recycling / settling dam, for the testing of the minerals applied for.	100m x 50m = 0.5Ha	X	MPRDA: Section 16 MPRDA: Section 20 NEMA: GNR327: Activity 9 NEMA: GNR327: Activity 10 NEMA: GNR327: Activity 20 NEMA: GNR327: Activity 24 NEMA: GNR327: Activity 27 NEMA: GNR327: Activity 30 NEMA: GNR325: Activity 19 NEMA: GNR325: Activity 27 NEMWA: GNR633: Activity 15 NWA: Section 21 NWA: GNR704
9	Roads (both access and haulage road on the site): Although it is recommended that the operation utilize existing roads as far as possible, it is anticipated that the operation will create roads. The locality of these roads will be determined by the geology of the area (excavation areas) and the locality of the infrastructure.	500m x 10m wide = 0.5Ha	X	MPRDA: Section 16 MPRDA: Section 20 NEMA: GNR327: Activity 20 NEMA: GNR327: Activity 24 NEMA: GNR327: Activity 27 NEMA: GNR327: Activity 30 NEMA: GNR325: Activity 19 NEMA: GNR325: Activity 27

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10	Salvage yard (fenced)	20m x 50m = 0.1 Ha		MPRDA: Section 16
11	Stockpile area Provision is made for a maximum footprint of 0.2 hectares for the stockpile area at any one time.	20m x 100m = 0.2 Ha	X	MPRDA: Section 16 MPRDA: Section 20 NEMA: GNR327: Activity 20 NEMA: GNR327: Activity 24 NEMA: GNR327: Activity 27 NEMA: GNR327: Activity 30 NEMA: GNR325: Activity 19 NEMA: GNR325: Activity 27 NEMWA: GNR633: Activity 15 NWA: Section 21 NWA: GNR704
12	Wash bay	20m x 30m = 600m ²		MPRDA: Section 16 MPRDA: Section 20
13	Waste rock dumps: Provision is made for a maximum footprint of 0.1 hectares for waste rock dumps at any one time.	20m x 50m = 0.1 Ha	X	MPRDA: Section 16 MPRDA: Section 20 NEMA: GNR327: Activity 19 NEMA: GNR327: Activity 20 NEMA: GNR327: Activity 24 NEMA: GNR327: Activity 27 NEMA: GNR327: Activity 30 NEMA: GNR325: Activity 19 NEMA: GNR325: Activity 27 NEMWA: GNR633: Activity 15 NWA: Section 21 NWA: GNR704
14	Water tank: It is anticipated that the operation will establish 2 x 10 000 litre water tanks with purifiers for potable water.	3m x 3m = 9m ² each		MPRDA: Section 16 MPRDA: Section 20
15	Weighbridge and weighbridge control room	3m x 20m = 60m ²		MPRDA: Section 16 MPRDA: Section 20
16	Workshop: It is anticipated that the operation will make use of mobile containers for their workshop facilities. This area will also include a compressor area and tyre bay.	3m x 6m = 18m ² each		MPRDA: Section 16 MPRDA: Section 20

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Full description of listed activities applied for:		
MPRDA	Section 16	Application for a Prospecting Right.
MPRDA	Section 20	Permission to remove and dispose of minerals.
NEMA	GNR327 Activity 9	The development of infrastructure exceeding 1 000 meters in length for the bulk transportation of water or storm water:- i) with an internal diameter of 0.36 meters or more; or ii) with a peak throughput of 120 litres per second or more.
NEMA	GNR327 Activity 10	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes i) with an internal diameter of 0,36 meters or more; or ii) with a peak throughput of 120 litres per second or more.
NEMA	GNR327 Activity 14	The development and related operation of facilities or infrastructure, for the storage, or the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.
NEMA	GNR327 Activity 20	Any activity including the operation of that activity which requires a prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including- (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.
NEMA	GNR327 Activity 24 (ii)	The development of a road:- (ii) with a reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 meters.
NEMA	GNR327 Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for:- i) the undertaking of a linear activity; or ii) maintenance purposes undertaken in accordance with a maintenance management plan.
NEMA	GNR327 Activity 30	Any process or activity identified in terms of Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
NEMA	GNR325 Activity 19	The removal and disposal of minerals contemplated in terms of Section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including- (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or

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		(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.
NEMA	GNR325 Activity 27	The development of a road:- i) with a reserve wider than 30 meters; or ii) catering for more than one lane of traffic in both directions.
NEMA Waste Act	GNR633 Activity 15	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008); Category A: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
NWA	Section 21	Water use: - Section 21(a): Taking water from a water resource; - Section 21(b): Storing water; and - Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource.
NWA	GNR704	Regulations published on 4 June 1999 in terms of the National Water Act, 1998 (Act No. 36 of 1998).

(ii) Description of the activities to be undertaken:

(Describe methodology or technology to be employed, including the type of commodity to be mined and for a linear activity, a description of the route of the activity.)

GEJ shall conduct the prospecting for Iron Ore and Manganese Ore in five phases over a period of three years.

Phase	Activity <small>(what are the activities that are planned to achieve optimal prospecting)</small>	Skill(s) required <small>(refers to the competent personnel that will be employed to achieve the required results)</small>	Timeframe <small>(in months) for the activity)</small>	Outcome <small>(What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)</small>	Timeframe for outcome <small>(deadline for the expected outcome to be delivered)</small>	What technical expert will sign off on the outcome? <small>(e.g. geologist, mining engineer, surveyor, economist, etc)</small>
1	Reconnaissance visit Desktop study Geological mapping	Geologist	Month 1	Memorandum to address any problems Geological maps	Month 2	Geologist
2	Drilling (Percussion)	Drilling contractor	Months 2 - 6	Drill logs	Month 7	Geologist
3	Analysis of drill samples	Laboratory	Months 2 - 6	Analyses sheets Laboratory Report	Month 7	Laboratory
4	Bulk sampling	Geologist	Month 7 – 34	Bulk sampling results	Month 34	Geologist
5	Consolidation and interpretation of all results/data	Geologist	Months 35 - 36	Detailed results and pre-feasibility reports including resource statements and geological maps/plans	Month 36	Geologist

- Description of planned non-invasive activities:
 (These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

Phase 1:

In order to direct the exploration programme in an efficient manner, there will be a review of all available information and data gathered by previous exploration on the farm. A desktop study will be undertaken of the mineral potential of the area.

A site investigation of the target areas will be undertaken to identify infrastructure and determine any potential problems that may need to be addressed.

Any anomalous features identified will be mapped in detail. The various rock types and their contacts will also be mapped.

Phase 3:

Drill samples will be collected in one-meter intervals and logging will be done by a qualified geologist who will record the lithology, mineralogy, degree of mineralization and structural features. Mineralized samples will be analyzed at an internationally recognized (ISO certified) laboratory.

Phase 5

All the drill- and bulk sampling data will then be modeled to obtain a final interpretation of the potential of the deposit. A detailed feasibility report, containing resource calculations, will be compiled to evaluate the economic viability of the project.

- Description of planned invasive activities:
 (These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

Phase 2: Percussion drilling

Percussion drilling will be used initially to identify the position of a suspected base metal deposit. The position of the boreholes is

dependent on the results of the review of historical activities, geological mapping, desktop study and geophysical survey.

Thirty boreholes, each 50m deep (can be more or less depending on results), are planned. The collar position of all boreholes will be surveyed. All drilling will be short term and undertaken by a contractor using truck-mounted equipment.

Angled percussion holes are planned to locate and intersect the mineralization. A traverse line or grid drilling is used to identify and define the extent of any mineralization. The sizes of the boreholes drilled will be determined by such factors as cost, proposed sampling, availability of drilling machines and the volume of sample required, among others.

Phase 4: Bulk sampling

Bulk sampling will be conducted during phase 4 of the prospecting period for a period of 28 months.

GEJ plans to bulk sample a total volume of 118 125m³ (420 000 tonnes) of minerals.

Provision of 210 000 tonnes bulk sample is made per mineral applied for. This; however; depends solely on the drilling results.

Commodity	Tonnes / Month	Months	Total Tonnes	S.G.	Total m ³
Iron Ore	7 500.00	28	210 000.00	4	52 500.00
Manganese Ore	7 500.00	28	210 000.00	3.2	65 625.00
Total			<u>420 000.00</u>		<u>118 125.00</u>
Waste					
1:1 Stripping Ratio	Tonnes / Month	Months	Total Tonnes	S.G.	Total m ³
Waste Rock Material	15 000.00	28	420 000.00	2.5	168 000.00

With the 1:1 stripping ratio the total m³ excavated for the prospecting period calculates to ~286 125m³ (~840 000 tonnes).

e) Policy and Legislative Context:

Applicable Legislation and Guidelines used to compile the report <small>(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.)</small>	Reference where applied
Atmospheric Pollution Prevention Act (Act 45 of 1964) and Regulations	<ul style="list-style-type: none"> - Sections 27 – 35: Dust control - Sections 36 – 40: Air pollution by fumes emitted by vehicles.
Conservation of Agricultural Resources Act (Act 43 of 1983) and Regulations	<ul style="list-style-type: none"> - Section 6: Implementation of control measures for alien and invasive plant species.
Constitution of South Africa (Act 108 of 1996)	<ul style="list-style-type: none"> - Chapter 2: Bill of Rights - Section 24: Environmental rights - Section 25: Rights in Property
Environment Conservation Act (Act 73 of 1989) and Regulations	<ul style="list-style-type: none"> - Section 19 and 19A: Prevention of littering by employees and sub-contractors during construction and maintenance phases of the proposed project. - Sections 21, 22, 25, 26 and 28: EIA Regulations, including listed activities. - Section 28A: Exemptions.
Fencing Act (Act 31 of 1963)	<ul style="list-style-type: none"> - Section 17: States that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.
Hazardous Substances Act (Act 15 of 1973) and Regulations	<ul style="list-style-type: none"> - Definition, classification, use, operation, modification, disposal or dumping of hazardous substances.
Intergovernmental Relations Act (Act 13 of 2005)	<ul style="list-style-type: none"> - This Act establishes a framework for the National, Provincial and Local Governments to promote and facilitate intergovernmental relations.
Mine, Health and Safety Act (Act 29 of 1996) and Regulations	<ul style="list-style-type: none"> - The Act
Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations	<ul style="list-style-type: none"> - The Act
Mineral and Petroleum Resources Development Act (Act 49 of 2008)	<ul style="list-style-type: none"> - The Act

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National Environmental Management Act (Act 107 of 1998) as amended and Environmental Impact Assessment Regulations, 2014	<ul style="list-style-type: none"> - Section 2: Strategic environmental management goals and objectives. - Section 24: Foundation for Environmental Management frameworks. - Section 28: The developer has a general duty to care for the environment and to institute such measures to demonstrate such care.
National Environmental Management: Air Quality Act (Act 39 of 2004)	<ul style="list-style-type: none"> - Section 32: Control of dust - Section 34: Control of noise - Section 35: Control of offensive odours
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> - Sections 65 – 69: These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species. - Sections 71 and 73: These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species.
National Environmental Management: Protected Areas Act (Act 57 of 2003)	<ul style="list-style-type: none"> - The Act
National Environmental Management: Waste Management Act (Act 59 of 2008)	<ul style="list-style-type: none"> - Chapter 4: Waste management activities
National Forest Act (Act 84 of 1998) and Regulations	<ul style="list-style-type: none"> - Section 7: No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under Section 7(4) or Section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette. - Sections 12 – 16: Deals with protected trees, with the Minister having the power to declare a particular tree, a group of trees, a particular woodland, or trees belonging to a certain species, to be a protected tree, group of trees, woodland or species. - Section 15: No person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.
National Heritage Resources Act (Act 25 of 1999) and Regulations	<ul style="list-style-type: none"> - Section 34: No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority. - Section 35: 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.

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	<ul style="list-style-type: none"> - Section 36: No person may, without a permit issued by SAHRA or a provincial heritage resources authority 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 forma cemetery administered by a local authority. - Section 38: This section provides for HIA which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during HIA process.
National Water Act (Act 36 of 1998) and Government Notice No. 704 of 1991	<ul style="list-style-type: none"> - Section 4: Use of water and licensing. - Section 19: Prevention and remedying the effects of pollution. - Section 20: Control of emergency incidents.
Nature Conservation Ordinance (Ord 19 of 1974)	<ul style="list-style-type: none"> - Chapters 2, 3, 4 and 6: Nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of Flora.
Northern Cape Nature Conservation Act (Act 9 of 2009)	<ul style="list-style-type: none"> - Addresses protected species in the Northern Cape and the permit application process related thereto.
Occupational Health and Safety Act (Act 85 of 1993) and Regulations	<ul style="list-style-type: none"> - Section 8: General duties of employers to their employees. - Section 9: General duties of employers and self-employed persons to persons other than their employees.
Road Traffic Act (Act 93 of 1997) and Regulations	<ul style="list-style-type: none"> - The Act
Water Services Amendment Act (Act 30 of 2007)	<ul style="list-style-type: none"> - It serves to provide the right to basic water and sanitation to the citizens of South Africa.
Basic Conditions of Employment Act (Act 3 of 1997)	<ul style="list-style-type: none"> - To control employment aspects
Basic Conditions of Employment Amendment Act (Act 11 of 2002)	<ul style="list-style-type: none"> - Amendments to BCEA
Community Development (Act 3 of 1966)	<ul style="list-style-type: none"> - To promote community development
Development Facilitation (Act 67 of 1995)	<ul style="list-style-type: none"> - To provide for planning and development
Development Facilitation (GN24, PG329, 24/07/1998)	<ul style="list-style-type: none"> - Regulations re Northern Cape LDO's
Development Facilitation (GNR1, GG20775, 07/01/2000)	<ul style="list-style-type: none"> - Regulations re application rules S26, S46, S59
Development Facilitation (GN732, GG14765, 30/04/2004)	<ul style="list-style-type: none"> - Determines amount, see S7(b)(ii)
Land Survey Act (Act 8 of 1997)	<ul style="list-style-type: none"> - To control land surveying, beacons etc.
Land Survey Act (GNR1130, GG18229, 29/08/1997)	<ul style="list-style-type: none"> - Agriculture, land survey S10
National Veld and Forest Fire Act (Act 101 of 1998)	<ul style="list-style-type: none"> - To regulate law on veld and forest fires

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National Veld and Forest Fire Act (GN1775, GG22527, 01/08/2001))	- Draft Regulations S21
Municipal Ordinance, 20/1974	- To control pollution, sewers etc.
Municipal Ordinance, PN955, 29/08/1975	- Nature conservation Regulations
Cape Land Use Planning Ordinance, 15/85	- To control land use planning
Cape Land Use Planning Ordinance, PN1050, 05/12/1988	- Land use planning Regulations
Planning and Development Act (Act 7 of 1998)	- To control planning and development

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f) 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.)

Need and desirability is based on the principle of sustainability, set out in the Constitution and in NEMA. Addressing the need and desirability of a development is a way of ensuring sustainable development – in other words, that a development is ecologically sustainable and socially and economically justifiable – and ensuring the simultaneous achievement of the triple bottom-line.

Assessment of the geological information available has determined that the area in question may have various mineral targets. In order to ascertain the above and determine the nature, locality and extent of the mineral targets within the prospecting area, it will be necessary that prospecting be undertaken. The prospecting will also determine if there are any features that may have an impact on the economic extraction of the minerals.

The information that will be obtained from the prospecting to be done will be necessary to determine, should the minerals be found, how and where the minerals will be extracted and how much economically viable mineral reserves are available within the proposed prospecting area.

Should the minerals applied for be found in the application area, GEJ will be able to ensure employment opportunities and support to the local business sector for a certain period.

GEJ expects that substantial benefits from the project (should the minerals applied for be found) will accrue to the immediate project area, the sub-region and the Northern Cape Province. These benefits must be offset against the costs of the project, including the impact to the surface owners.

Question	Response
<p>How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?</p>	<p>No-prospecting buffer zones will be placed around sensitive environmental features, i.e. non-perennial drainage lines.</p> <p>The PR Area comprises three broad vegetation types: Northern Upper Karoo; Olifantshoek Plains Thornveld; and Gordonia Duneveld. All of these vegetation types are listed as 'Least Threatened'.</p> <p>It is anticipated that GEJ's prospecting activities will disturb less than 5 hectares overall in relation to the extent of the PR Area: 5 504.7223 hectares, resulting in a 0.09% surface disturbance of natural vegetation cover.</p>
<p>What will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?</p>	<p>Siyathemba Local Municipality has an unemployment rate of 24.3%. The operation will create a number of new employment opportunities and uplift the local community. The magnitude of this</p>

	<p>impact will depend on the number of people that will be employed and the number of contractors sourced. An influx of people into the area could possibly impact on safety and security of local farm residents. During the decommissioning and at closure of the site, staff will most likely be retrenched, resulting in people being unable to find new employment for a long period of time.</p> <p>Economic slump of the local towns after site closure is not considered to be an associated potential impact. However, income streams from wage bills as well as goods and services contracts (at all geographical levels) will come to an end, reducing the monetary income of individuals and operation-related businesses.</p>
<p>Does the proposed land use / development fit the surrounding area?</p>	<p>Yes, the whole of the Siyathemba area is rich in semiprecious stones. The famed 'tiger's eye' is one of many gems mined in the region. An opportunity exists for adding value to the raw material and shipping out processed products of high quality.</p>
<p>Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?</p>	<p>Yes</p>
<p>Will the benefits of the proposed land use / development outweigh the negative impacts of it?</p>	<p>Yes</p>
<p>Will the proposed land use / development impact on the sense of place?</p>	<p>Yes, during invasive prospecting phases.</p>
<p>Will the proposed land use / development set a precedent?</p>	<p>No, there are various other prospecting and/or mining activities in the region.</p>
<p>Will any person's rights be affected by the proposed land use / development?</p>	<p>Yes, there will be a negative impact on the surface owner due to loss of grazing land. The surface owner will be compensated accordingly.</p>
<p>Will the proposed land use / development compromise the "urban edge"?</p>	<p>No</p>

g) Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved site:

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

(i) Details of the development footprint alternatives considered:

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

(a) The property on which or location where it is proposed to undertake the activity:

The registered description of the land to which the prospecting right application relates:

Farm Name	Title Deed	In Extent (Ha)
Remaining Extent of the Farm Bulls Run 164	T2046/2005	1 651.1110
Remaining Extent of Portion 1 of the Farm Bulls Run 164	T1716/2014	1 272.4980
Portion 2 of the Farm Bulls Run 164	T1716/2014	342.6130
Remaining Extent of the Farm Hartfell 172	T4501/2006	2 238.5003

Alternatives considered:-

GEJ has considered the following:

- The Geological formation that supports the possibility that the minerals applied for could be found within the PR Area.
- The availability of farms within the area that is not already occupied by existing prospecting or mining rights.
- The availability of infrastructure, such as a road network, in the immediate surrounding area, which could be utilized to allow easy access to the site.

(b) The type of activity to be undertaken:

GEJ plans to conduct prospecting activities: Percussion drilling and bulk sampling.

Alternatives considered:-

Alternative land uses include: Livestock / Game farming and/or other agricultural farming activities.

GEJ's main economic activity is prospecting/mining and for this reason does not favour these alternative land uses.

(c) The design or layout of the activity:

GEJ plans to establish the following, amongst other, infrastructure on their site during the initial construction (bulk sampling) phase:

- Ablution facilities (chemical toilets)
- Diesel tank
- Generator
- Offices (mobile containers)

- Processing Plant and recycling/settling dam
- Roads (access & haul)
- Salvage Yard
- Security access point
- Stockpile area
- Storage facilities (mobile containers)
- Washbay
- Water tanks (drinking water)
- Weighbridge and weighbridge control room
- Workshops (mobile containers)

Alternatives considered:-

The final locality of the above infrastructure can only be determined after the first stages of the prospecting period (reconnaissance visit; desktop study; geological mapping and drilling) have been finalized.

The following features will be taken into account during the planning phase:

- Locality of any infrastructure (i.e. residential and associated buildings);
- Locality of the ore bodies;
- Topography of the area;
- Sensitive environmental features; and
- Discussions with the surface owners of the land.

(d) The technology to be used in the activity:

Both the iron ore and manganese ore processing plant will be modular. Both of these plants will consist of a JAW crusher, double-deck screen and cone crusher. The process will be as follows:

The Run of Mine (ROM) is hauled to the dry crushing and screening plant. An excavator with a hydraulic hammer attachment is used to break down the +500mm ore.

The ore (-500mm) is fed into the VGF which then feeds the JAW crusher. The JAW crushes the ore down to -180mm. The crushed ore is then fed to a double deck screen which screens the ore into two sizes:

- +20mm -100mm (lumpy); and
- -20mm +1mm (fines)

The resultant product is accumulated into a product stockpile and waste is loaded, hauled and dumped at waste dumps/backfilling/road making. The final product is transported by road to the market.

Alternatives considered:-

The only alternative considered was the processing of ore only using a wet processing method (JIG / DMS). The Fe grade at the PR Area is expected to be 62%; whilst the Mn grade is expected at 28% and for this reason beneficiation of the ore to ensure grade is not anticipated.

(e) The operational aspects of the activity:

Bulk sampling will be done by the conventional opencast method. It is designed based on the nature of the ore-bodies on the site, which proposes that each

resource area be treated as a separate pit. Bulk sampling can be done on two ore bodies at any one time.

Where present vegetated soil overlying the planned excavation area is to be stripped prior to bulk sampling and stockpiled on a dedicated (temporary) dump to be used for rehabilitation purposes at a later stage.

A haul road network will provide access to the opencast excavation areas and to the dry (modular) crushing & screening plants (Fe & Mn).

Alternatives considered:-

The conventional opencast drill-blast-load-haul-mining method has been proven to be the most cost effective mining method in the Northern Cape Province and for this reason no viable alternatives were identified.

(f) The option of not implementing the activity:

If the activity is not implemented the current land uses will continue.

Five measures of economic impacts can be used to demonstrate the potential effect of the proposed prospecting operation on the local economy:

- Employment - The extent of employment can be measured as number of jobs or in terms of full time equivalents.
- Payroll income - The gross remuneration of employees in terms of salaries and wages.
- Capital Expenditure (CAPEX) - The total amount spent on the purchasing of fixed assets and total spent on construction.
- Operating expenditure and maintenance (OPEX) - The total amount spent locally by businesses on goods and services, excluding salaries and wages as well as rents or interest.
- Revenue - The total value of sales arising from business activity at the prospecting operation.

The abovementioned positive impacts will be lost if the proposed prospecting project is not developed.

(ii) 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.)

The following interested and / or affected parties were identified:

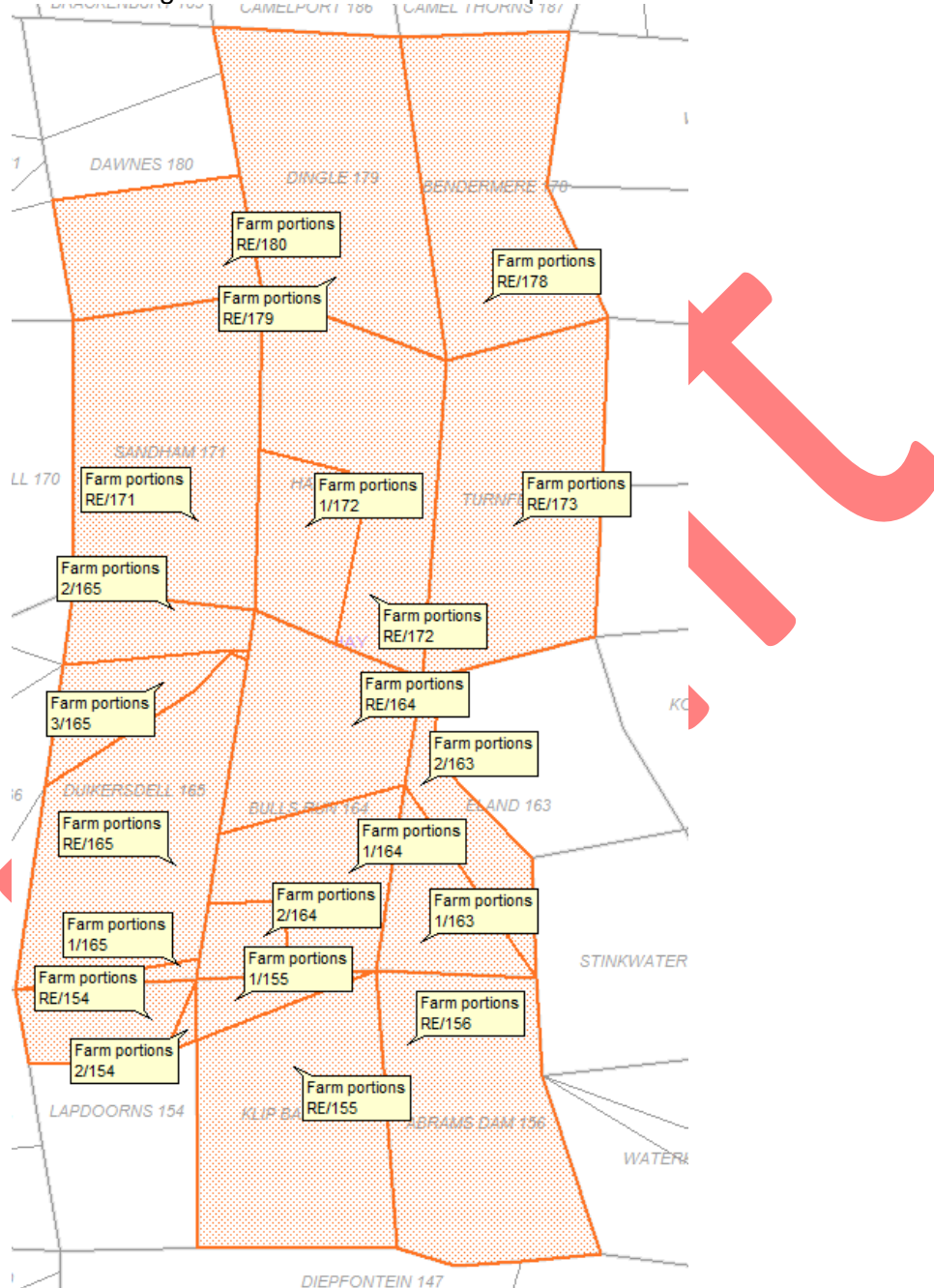


Figure 3 - Interested and/or Affected Parties: Surface owners and immediately adjacent surface owners

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Property	Landowner
Remaining Extent of the Farm Bulls Run 164	Mr. J.L. Jordaan
Remaining Extent of Portion 1 of the Farm Bulls Run 164	Temdale Boerdery (Pty) Ltd
Portion 2 of the Farm Bulls Run 164	Temdale Boerdery (Pty) Ltd
Remaining Extent of the Farm Hartfell 172	Hartveld Trust
Property	Adjacent Landowner
Remaining Extent of the Farm Lapdoorns 154	Temdale Boerdery (Pty) Ltd
Portion 2 (a portion of Portion 1) of the Farm Lapdoorns 154	Temdale Boerdery (Pty) Ltd
Remaining Extent of the Farm Klip Bak 155	Mr. D.B. Lubbe
Portion 1 of the Farm Klip Bak 155	Temdale Boerdery (Pty) Ltd
Farm Abrams Dam 156	Ms. H.M.J. Mostert
Portion 1 of the Farm Eland 163	Temdale Boerdery (Pty) Ltd
Portion 2 of the Farm Eland 163	Mr. J.L. Jordaan
Remaining Extent of the Farm Duikersdell 165	Mr. G.J. Coffee Ms. E.L. Coffee
Portion 1 (Annex Lapdoorns) of the Farm Duikersdell 165	Temdale Boerdery (Pty) Ltd
Remaining Extent of Portion 2 (Duikersdell) of the Farm Duikersdell 165	Pietman Kotze Familie Trust
Portion 3 (Duikersdell) of the Farm Duikersdell 165	Pietman Kotze Familie Trust
Farm Sandham 171	Hartveld Trust
Portion 1 of the Farm Hartfell 172	Hartveld Trust
Farm Turnfell 173	Hartveld Trust
Farm Bendermere 178	Ms. A. Burger
Farm Dingle 179	Mr. A.J. Coetzee
Remaining Extent of the Farm Downes 180	Summerville Trust

Interested / Affected Party	Description
Siyathemba Local Municipality	Local Municipality
Pixley Ka Seme District Municipality	District Municipality
SANRAL	National Agency
Department: Agriculture, Environmental Affairs, Land Reform and Rural Development	Government Department
Department: Water Affairs	Government Department
SAHRA	Administrative Body

Notification:

Identified interested and/or affected parties were notified of the proposed activity as follows:

- Notification letters were sent to all identified interested and / or affected parties (either by registered mail or by e-mail) on the 1st of August 2022. Attached to each of these letters was a draft Scoping Report, containing information relating to the proposed project.
- A newspaper advert was placed in the 'Gemsbok' local newspaper on 5 August 2022.
- A notice was placed at the DMRE.
- A notice board has been placed at the entrance of the site.

Proof of notification is attached as Appendix '5'.

Responses have been received from the following IAPs. The responses are summarized in the table below. (Refer to Appendix '6'):

- SAHRA;
- Mr. M. Caplan of Agricultural Extension Services;
- Mr. J.L. Jordaan;
- Mr. J. Gous of Temdale Boerdery (Pty) Ltd; and
- Mr. G. Coffee

Meetings:

A meeting was held on the 24th of October 2022 with the surface owners.

The following was discussed in this meeting:

- Surface owners have initiated the process to declare a large area in the region as 'conservation area'.
- An objection against the PR Application shall be submitted.
- Prospecting will have a negative impact on farming activities.
- EAP is not independent as GEJ pays for M&S' services.
- No specialists shall be allowed onto the PR Area.
- Historical prospecting activities have taken place on the PR Area, with no positive results.
- Requires that GEJ be personally involved during invasive prospecting and that the contents of documentation be implemented.
- WUL must be applied for.
- Surface use agreement must be entered into.

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(iii) Summary of issues raised by I&AP's

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

Interested and Affected Parties <small>List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.</small>	Date comments received	Issues raised	EAPs response to the issue of the I&AP	
AFFECTED PARTIES				
Landowner/s	X			
Mr. J.L. Jordaan	X	04/09/2022	<p>Mr. Jordaan provided a completed Registration- and Comment Form, per e-mail, on the 4th of September 2022. The following comments / concerns are listed in the form:</p> <ul style="list-style-type: none"> • The farm is the Head Office of Mr. Jordaan's bigger business. • Project is not supported: Any interference of Mr. Jordaan's business has an influence on his revenue. • Concerns: <ul style="list-style-type: none"> ○ Ground Water ○ Air Quality ○ Fauna ○ Flora ○ Noise ○ Soil ○ Roads ○ Income (including loss of income of workers) ○ Fires ○ Safety ○ Rehabilitation ○ Graves and Burial • Infrastructure: <ul style="list-style-type: none"> ○ Roads ○ Windmills and Solar Pumps 	<p>M&S responded, per e-mail, on the 5th of September 2022, stating the following:</p> <ul style="list-style-type: none"> • Mr. Jordaan's comments and concerns have been noted. • These comments and concerns will be assessed and addressed in the EIA/EMPr document. • The EIA/EMPr document shall be provided to Mr. Jordaan for comment.

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		24/10/2022	<ul style="list-style-type: none"> ○ Fences and Gates ○ Water Pipelines <p>A meeting was held on the 24th of October 2022 with the surface owners.</p>	Refer to the Minutes of the Meeting and Attendance Register appended as Appendix '7'.
Temdale Boerdery (Pty) Ltd	X	02/09/2022	Mr. Gous confirmed, per e-mail, that the registered letter sent on the 1 st of August 2022 was not received and enquired to which postal address was utilized.	M&S responded on the 2 nd of September 2022 providing the postal address as obtained from CIPC. M&S further confirmed that all future correspondence will take place via e-mail.
		07/09/2022	<p>Mr. Gous provided the completed Registration- and Comment Form per e-mail. Concerns raised:</p> <ul style="list-style-type: none"> • Prospecting will have a detrimental effect on farming activities. • Livestock farming activities are conducted on the farm. • Road infrastructure is not made for industrial traffic. • Water supply is already under stress. • Dust generation will negatively impact on grazing. 	M&S responded on the 14 th of September 2022 confirming that the issues raised shall be addressed in the EIA/EMPr.
		24/10/2022	A meeting was held on the 24 th of October 2022 with the surface owners.	Refer to the Minutes of the Meeting and Attendance Register appended as Appendix '7'.
		26/10/2022	Mr. Gous sent an e-mail opposing the Prospecting Right Application.	M&S confirmed receipt of Mr. Gous' e-mail and confirmed that specific mention will be made in the EIA/EMPr that Mr. Gous opposes the application.

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Hartveld Trust	X	24/10/2022	A meeting was held on the 24 th of October 2022 with the surface owners.	Refer to the Minutes of the Meeting and Attendance Register appended as Appendix '7'.
Lawful occupier/s of the land				
N/A				
Landowners or lawful occupiers on adjacent properties	X			
Mr. D.B. Lubbe	X	N/A	No response has been received to date.	N/A
Ms. H.M.J. Mostert		N/A	ID not in full on Title Deed. No contact details could be obtained.	N/A
Mr. & Mrs. G.J. Coffee	X	15/08/2022	Mr. Coffee provided a completed Registration- and Comment Form, per e-mail, on the 15 th of August 2022. The following comments / concerns are listed in the form: <ul style="list-style-type: none"> • The underground water resource is very low and that will make big problems for farming. • Noise and dust pollution. • Project is not supported: Prospecting will be negative in the area. • Concerns: <ul style="list-style-type: none"> ○ The surrounding farms. ○ People that work on farms. ○ Roads. 	M&S responded on the 18 th of August 2022 stating that Mr. Coffee's comments and concerns have been noted. These will be assessed and addressed in the EIA/EMPR document.
Pietman Kotze Familie Trust		N/A	No contact details could be obtained through SearchWorks or the Master of the High Court.	N/A
Ms. A. Burger	X	N/A	No response has been received to date.	N/A
Mr. A.J. Coetzee		N/A	No contact details could be obtained through SearchWorks or the Master of the High Court.	N/A
Summerville Trust	X	N/A	No response has been received to date.	N/A

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Municipal Councillor	X			
Mr. J.A. Phillips (Mayor)	X	N/A	No response has been received to date.	N/A
Municipality	X			
Siyathemba Local Municipality	X	N/A	No response has been received to date.	N/A
Pixley Ka Seme District Municipality	X	N/A	No response has been received to date.	N/A
Organs of State (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA, etc.)				
SANRAL	X	N/A	No response has been received to date.	N/A
Communities				
Not applicable: There are no known communities in the immediate vicinity of the prospecting right application area.				
Department of Land Affairs				
Department: Agriculture, Environmental Affairs, Rural Development and Land Reform	X	N/A	No response has been received to date.	N/A
Traditional Leaders				
Not applicable: There are known no communities, with Traditional Leaders, in the immediate vicinity of the prospecting right application area.				
Department of Environmental Affairs				
Department: Agriculture, Environmental Affairs, Rural Development and Land Reform	X	N/A	No response has been received to date.	N/A
Other Competent Authorities				
Department: Water Affairs	X	N/A	No response has been received to date.	N/A
OTHER INTERESTED / AFFECTED PARTIES				
SAHRA	X	22/08/2022	Ms. Natasha Higgitt of SAHRA provided an 'Interim Comment' on SAHRIS. In terms of this comment: <ul style="list-style-type: none"> An assessment of the impact to heritage resources be conducted as part of the EA process. The assessment must include an archaeological and palaeontological component. A desktop Palaeontological Impact 	Desktop studies have been conducted and are attached as Appendix '8a' and '8b' respectively.

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			<p>Assessment must be undertaken by a qualified palaeontologist.</p> <ul style="list-style-type: none"> Any other heritage resources defined in Section 3 of the NHRA that may be impacted, such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewsapes must also be assessed. 	
<p>Agricultural Extension Services Mr. Marc Caplan</p>	X	08/08/2022	<p>Mr. Caplan provided the following comments / enquiries per e-mail:</p> <ul style="list-style-type: none"> Request a map of the prospecting drill sites and pits, overlain with the vegetation communities along with description of the local movements of mammals and birds. Description of the migration movements of birds and mammals in the larger Hay District. Including what troops of Chacma baboons and vervet 	<p>A response was sent, per e-mail, on the 18th of August 2022.</p> <ul style="list-style-type: none"> A conceptual site plan was provided. Prospecting is the 'Search for Mineral Deposits' through methods such as drilling and excavation. The mineral resource is unknown, thus the need for a Prospecting Right to ascertain whether or not the minerals applied for are found in the application area. Relevant specialists will be appointed to conduct a field-based assessment of the fauna and flora. A map with the vegetation communities and description of the local movements can only be provided upon receipt of the Specialist Reports. Relevant specialists will be appointed to conduct a field-based assessment of the fauna and flora. The findings of these

		<p>monkeys are currently forage on the affected farms in the proximity of Gariiep River.</p> <ul style="list-style-type: none"> • What concentrations have GEJ assumed iron and manganese are in, the parent rock material on the above farms? • When do you plan to conduct the flora and fauna surveys? As the river does rise above the present level during the summer months? Note, indigenous birds, game and animals of conservation importance reside along the Gariiep River. • What number of planned boreholes (at the surface) is within 150m of the 200 year flood level of the Gariiep River? 	<p>Specialist Reports shall be made available as part of the EIA/EMPR.</p> <ul style="list-style-type: none"> • The application area encompasses rocks of the Griqualand West Sequence consisting of quartzite and subgraywacke of the Matsap Formation and banded ironstone and quartzite of the Koegas Formation. The target iron and manganese enrichment zones are found within the general banded ironstone assemblage. These rocks consist of alternating thin layers, of average width of the order of 5mm, of chert, magnetite, the iron silicates stilpnomelane and minnesotaite, the more complex sodium silicate riebeckite, and carbonate. Seams of crocidolite asbestos occur in certain zone of the banded ironstone. • It should be noted that there are no perennial rivers within the application area. There are; however; a number of non-perennial drainage lines. The fauna and flora assessments will be conducted as part of the EIA/EMPr phase. • As stated in number 4 above, there are no perennial rivers within the application area. The
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			<ul style="list-style-type: none"> • Would you indicate where those boreholes are planned? • How much does GEJ budget for preventing and cleaning up oil and hydraulic leaks from drilling and other combustion machinery on site? • What is the highest decibel noise emitted from your drilling and site engines? • How long do the machines need to drill 10m into the parent rock. • How much money and human resource budget is set aside to fill in the pits properly and close the boreholes, for risk free successful farming post mining? 	<p>Orange River is situated approximately 30km west of the application area. A 100m no-prospecting buffer zone has been placed around all non-perennial drainage lines.</p> <ul style="list-style-type: none"> • There are no perennial rivers within the application area. The Orange River is situated approximately 30km west of the application area. A 100m no-prospecting buffer zone has been placed around all non-perennial drainage lines. • GEJ does not have a specific budget for preventing and cleaning up of oil and hydraulic leaks as this will form part of the day-to-day activities. Appropriate management / mitigation measures shall be included in the EIA/EMPr document. • The anticipated noise levels at the drilling rig are between 95 – 105dBA. These levels reduce to approximately 60 – 65dBA at 150m from the drill rig. • Drilling times are solely dependent on the geology. • A detailed financial quantum calculation will be included in the EIA/EMPr document. Should the DMRE accept the calculation GEJ will provide a financial
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			<ul style="list-style-type: none"> • Given the critical seasons that birds and animals are mating and nesting are too be quiet times. How flexible is the mining company in working out a proper sampling time scheduling? • What sort of compensation is offered to farmers for prospecting activities that hinder farming operations; current and future water quality and wild animal and bird breeding successes? • When will the IAP public meeting be held? 	<p>guarantee for environmental rehabilitation before granting of the Prospecting Right.</p> <ul style="list-style-type: none"> • GEJ is willing to negotiate with the surface owners during the invasive prospecting phases to ensure a minimal impact on the receiving environment. • Compensation to surface owners will be negotiated by GEJ upon granting and execution of the Prospecting Right in terms of a Surface Use Agreement. • A public meeting will be held in due course and invitations will be sent out timeously.
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The consultation process has been captured until ...

DRAFT

(iv) The Environmental attributes associated with the alternatives:
(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects.)

(1) Baseline Environment:

(a) Type of environment affected by the proposed activity:
(its current geographical, physical, biological, socio-economic and cultural character.)

- Air quality:**

While many factors affect the precipitation rate, the main factors are related to wind velocity, air humidity, particulate size and dynamic shape, and prevailing ground cover.

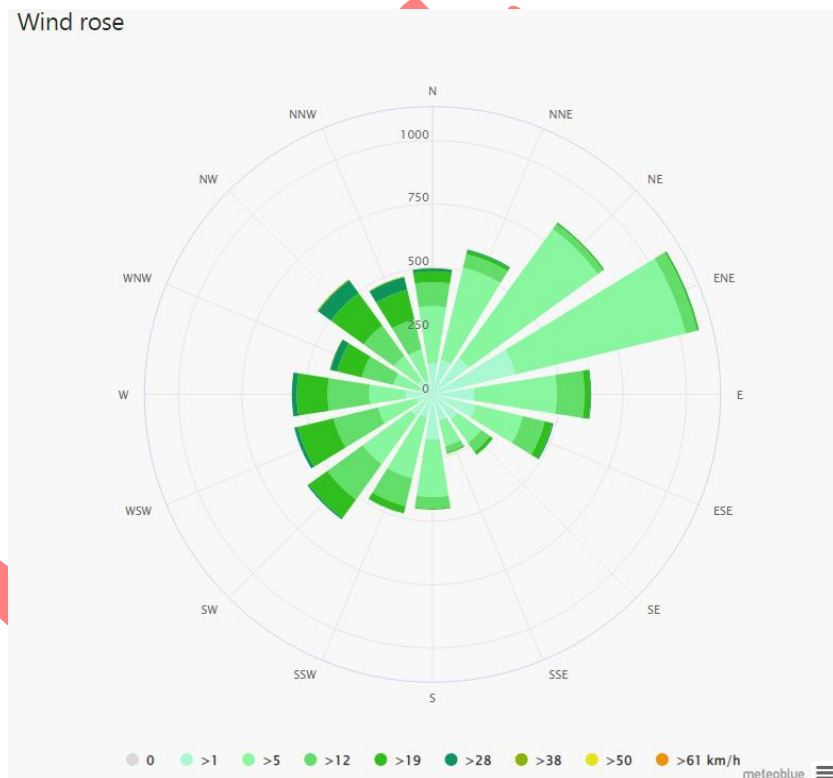


Figure 4 – Wind rose for the Groblershoop area

The wind rose for Groblershoop shows how many hours per year the wind blows from the indicated direction. Example SW: Wind is blowing from South-West (SW) to North-East (NE).

The diagram for Groblershoop shows how many days within one month can be expected to reach certain wind speeds. Monsoons create steady strong winds from December to April, but calm winds from June to October.

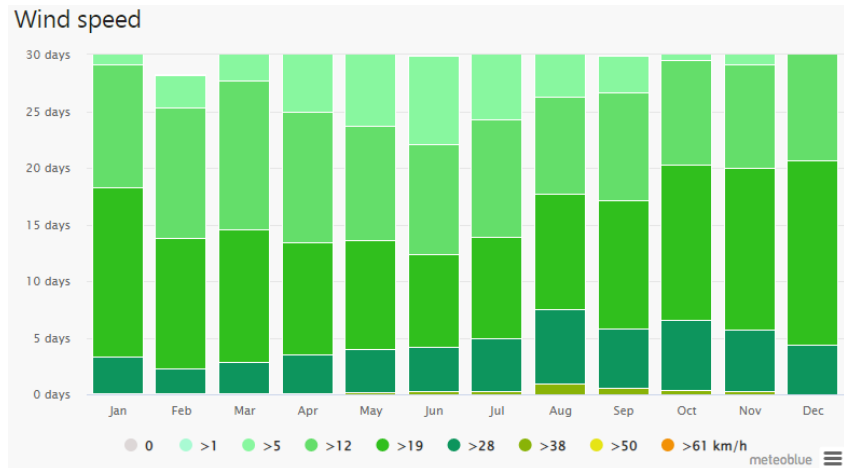


Figure 5 – Wind speed in the Groblershoop area

Current sources of air pollution in the area stems mainly from:

- Dust from the secondary (public) and gravel (farm) roads transecting the properties.
- Dust induced by wind and wind gusts.

• **Archaeological, cultural & heritage environment:**

The Screening Reports, as obtained from the national web-based environmental screening tool, lists the archaeological and palaeontological sensitivities of the PR Area as follows:

Property	Archaeological and Cultural Heritage	Palaeontology
Remaining Extent, Remaining Extent of Portion 1 and Portion 2 of the Farm Bulls Run 164	Low	Medium
Remaining Extent of the Farm Hartfell 172	Low	Medium

Ms. N. Higgitt of SAHRA provided an ‘Interim Comment’:

“An assessment of the impact to heritage resources be conducted as part of the EA process. The assessment must include an archaeological and palaeontological component.”

“A desktop Palaeontological Impact Assessment must be undertaken by a qualified palaeontologist.”

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

Professor Jesmael Mataga and Dr. Joseph Chikumbirike conducted a Desktop Heritage Impact Assessment. The Recommendations of this report is as follows:

“The scatter of heavily weathered stone tools found on outcrops in the study area require no further action (Ubique Heritage Consultants, 2020). They are of Low significance, therefore, based on the desktop study presented in the assessment, the proposed prospecting right, including bulk sampling, for iron ore and manganese ore over Remaining Extent, Remaining Extent of Portion 1 and Portion 2 of the Farm Bulls Run 164 and the

Remaining Extent of the Farm Hartfell 172, Hay District, Northern Cape Province, is supported.

The full report is annexed as Appendix '8a'.

Dr. Joseph Chikumbirike and Dr. Sifelani Jirah conducted a Desktop Palaeontological Impact Assessment. The Impact Statement and Recommendation of this report is as follows:

"It is expected that the proposed prospecting activities could impact on early Proterozoic sedimentary strata (c. 2.2 Ga) that are represented by siliciclastic rocks, volcanic lavas and ironstones which are not considered to be palaeontologically sensitive. Given the scope of the proposed activities, the likelihood of palaeontological impact on early Proterozoic carbonate rocks (e.g. Rooinekke Formation) is considered low, especially if prospecting by way of core drilling is considered. However, because of the thick sandy overburden (which is not considered to be palaeontologically significant in this case) and the lack of details regarding the position of the proposed prospecting and campsite localities, it is recommended that in the event of impact on fresh carbonate rocks that may result from trenching and pitting, new exposures should require brief monitoring by a palaeontologist. The superficial Aeolian (Kalahari Group) overburden within the vicinity of the study area is not considered to be palaeontologically significant."

The full report is annexed as Appendix '8b'.

- **Climate:**

The area is located in a semi-arid region, receiving on average about 250mm of rain per annum. The rainfall is largely due to showers and thunderstorms falling in the summer months October to March. The peak of the rainy season is normally March or February. The summers are very hot with cool winters.

The meteorological climate diagrams are based on 30 years of hourly weather model simulations and available for every place on Earth. They give good indications of typical climate patterns and expected conditions (temperature, precipitation, sunshine and wind). The simulated weather data have a spatial resolution of approximately 30 km and may not reproduce all local weather effects, such as thunderstorms, local winds, or tornadoes.

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Groblershoop. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years.

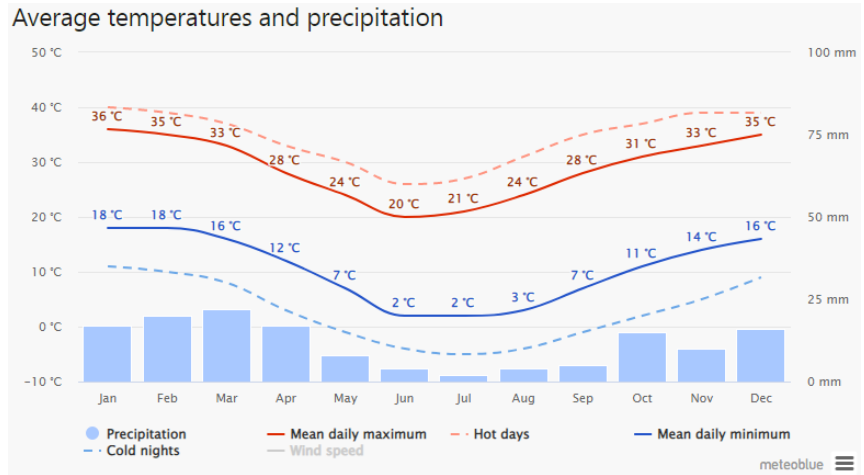


Figure 6 – Average temperatures and precipitation

The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast.

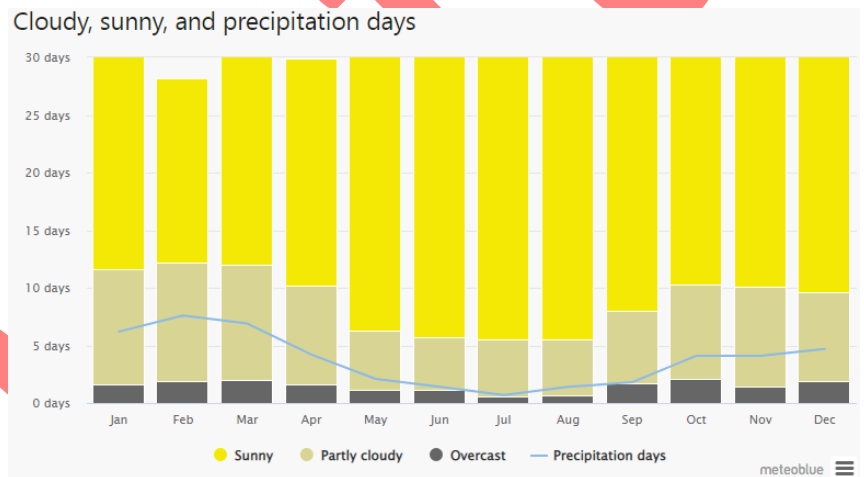


Figure 7 - Cloudy, sunny and precipitation days

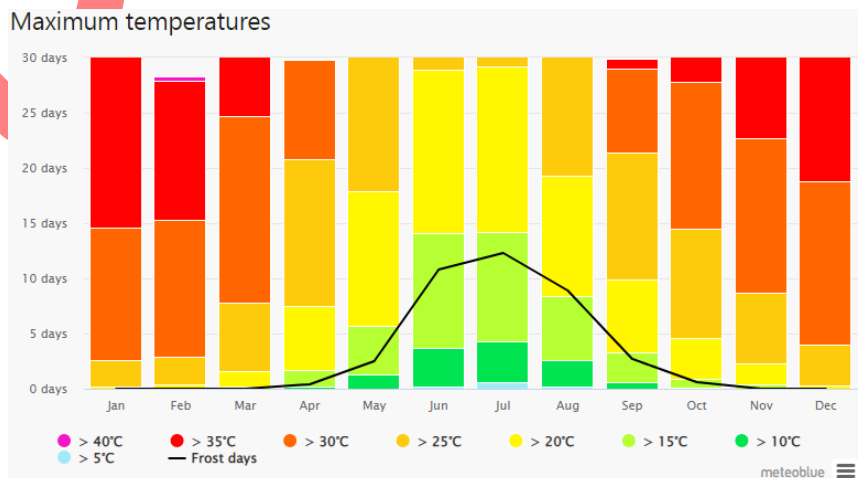


Figure 8 - Maximum temperatures of the Groblershoop area

The maximum temperature diagram for Groblershoop displays how many days per month reach certain temperatures.

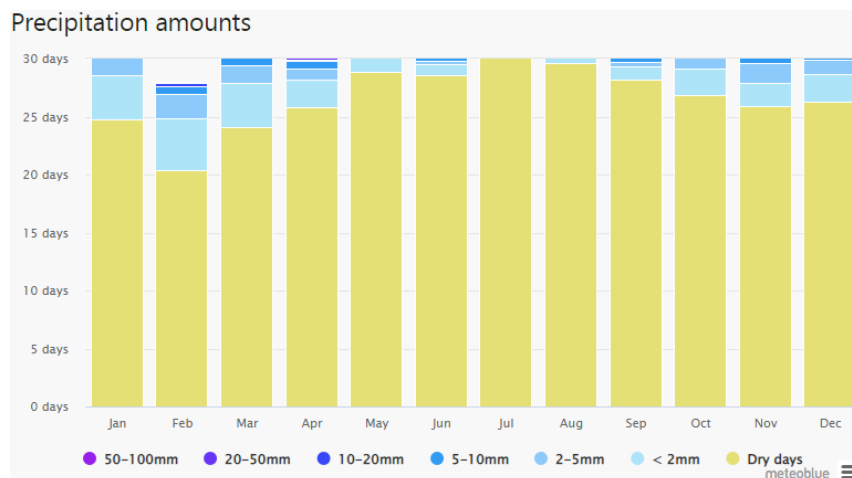


Figure 9 - Precipitation amounts for the Groblershoop area

The precipitation diagram for Groblershoop shows on how many days per month, certain precipitation amounts are reached.

- **Fauna:**

Most large antelope species are absent from the area, although nomad game like Blesbok, Gemsbok, Duiker, Kudu, Steenbok and Springbok occasionally traverse the properties.

The normal array of small mammals and birds that are associated with the Northern Upper Karoo, Olifantshoek Plains Thornveld and Gordonia Duneveld Vegetation Types might be expected.

- **Flora:**

The Screening Reports, as obtained from the national web-based environmental screening tool, lists the sensitivities of the PR Area as follows:

Property	Agriculture	Animal Species	Aquatic Biodiversity	Plant Species	Terrestrial Biodiversity
Remaining Extent, Remaining Extent of Portion 1 and Portion 2 of the Farm Bulls Run 164	Medium	Medium	Very High	Low	Very High
Remaining Extent of the Farm Hartfell 172	Medium	Medium	Very High	Low	Very High

There are three broad vegetation types found on the PR Area:

- Northern Upper Karoo (NKu 3):
 Shrubland dominated by dwarf karoo shrubs, grasses and *Acacia mellifera* subsp. *detinens* and some other low trees (especially on sandy soils in the northern parts). Flat to gently sloping, with isolated hills of Upper Karoo Hardeveld in the south and Vaalbos Rocky Shrubland in the northeast and with many interspersed pans.

Conservation:

- Least threatened.
- Target 21%.
- None conserved in statutory conservation areas.

- About 4% has been cleared for cultivation or irreversibly transformed by building of dams.
- Erosion is moderate (46.2%), very low (32%) and low (20%).
- *Prosopis glandulosa*, regarded as one of the 12 agriculturally most important invasive alien plants in South Africa, is widely distributed in this vegetation type.

○ Olifantshoek Plains Thornveld (SVk 13):

A very wide and diverse unit on plains with usually open tree and shrub layers with, for example, *Acacia luederitzii*, *Boscia albitrunca* and *Rhus tenuinervis* and with a usually sparse grass layer.

Conservation:

- Least threatened.
- Target 16%.
- Only 0.3% statutorily conserved in the Witsand Nature Reserve.
- Only about 1% of the area has been transformed.
- Erosion is very low.

○ Gordonia Duneveld (SVkd 1):

Parallel dunes about 3 – 8m above the plains. Open shrubland with ridges of grassland dominated by *Stipagrostis amabilis* on the dune crests and *Acacia haematoxylon* on the dune slopes, also with *A. mellifera* on the lower slopes and *Rhigozum trichotomum* in the interdune straaften.

Conservation:

- Least threatened.
- Target 16%.
- Some 14% statutorily conserved in the Kglagadi Transfrontier Park.
- Very little transformed.
- Generally low erosion, but some areas with spectacular destabilization of normally vegetated dunes. Erosion is normally very low.

Further north from the application area geological and geochemical evidence suggest that the manganese ores represent weakly metamorphosed wad deposits that accumulated in karst depressions during a period of lateritic weathering and karstification in a supergene, terrestrial environment during the Late Paleoproterozoic period. The dolomites of the Campellrand Group of the Transvaal Supergroup are host and source for the wad accumulations. The ore on the application area originated as pods and lenses of wad in chert breccia that accumulated in a karst cave system capped by the hematitized Manganore iron-formation of the Transvaal Supergroup. The cave system finally collapsed and the hematitized iron-formation slumped into the sinkhole structures. The manganese ore were affected by diagenesis and lower greenschist facies metamorphism. Evidence for renewed subaerial exposure of the ore and their host rocks can be seen in the secondary karstification and supergene weathering.

Recrystallization of the dusty hematite pigment into clusters of microplaty hematite or specularite on the application area has been interpreted as a low-temperature hydro-thermal product. This area has been substantially disrupted by late Namaqua faults. A hydrothermal origin has been demonstrated for the manganese ore found in the area.

The geology as described per vegetation type:

- Northern Upper Karoo (NKu 3):
Shales of the Volksrust Formation and to a lesser extent the Prince Albert Formation (both of the Ecca Group) as well as Dwyka Group diamictites form the underlying geology. Jurassic Karoo Dolerite sills and sheets support this vegetation complex in places. Wide stretches of land are covered by superficial deposits including calcretes of the Kalahari Group.
- Olifantshoek Plains Thornveld (SVk 13):
Red Aeolian sand of Tertiary to Recent age (Kalahari Group) with silcrete and calcrete and some andesitic and basaltic lava of the Griqualand West Supergroup.
- Gordonia Duneveld (SVkd 1):
Aeolian sand underlain by superficial silcretes and calcretes of the Cenozoic Kalahari Group.

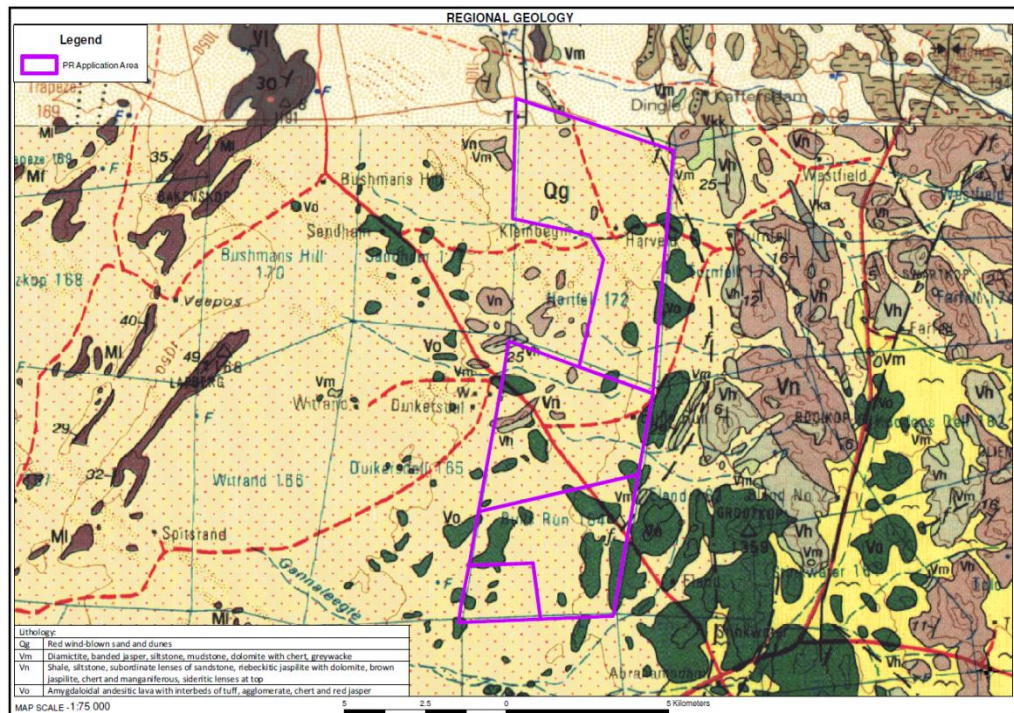


Figure 11 – Regional Geology

- **Groundwater:**

The PR Area falls over the D72C and D73B quaternary drainage regions. Drainage Region D72C forms part of the Lower Orange Management Area (nr. 14 in terms of the National Water Act, 1998 (Act no. 36 of 1998) as published in the Government Gazette 20491, 1 October 1999). Drainage Region D73B forms part of the Lower Vaal Management Area (nr. 10 in terms of the National Water Act, 1998 (Act no. 36 of 1998) as published in the Government Gazette 20491, 1 October 1999).

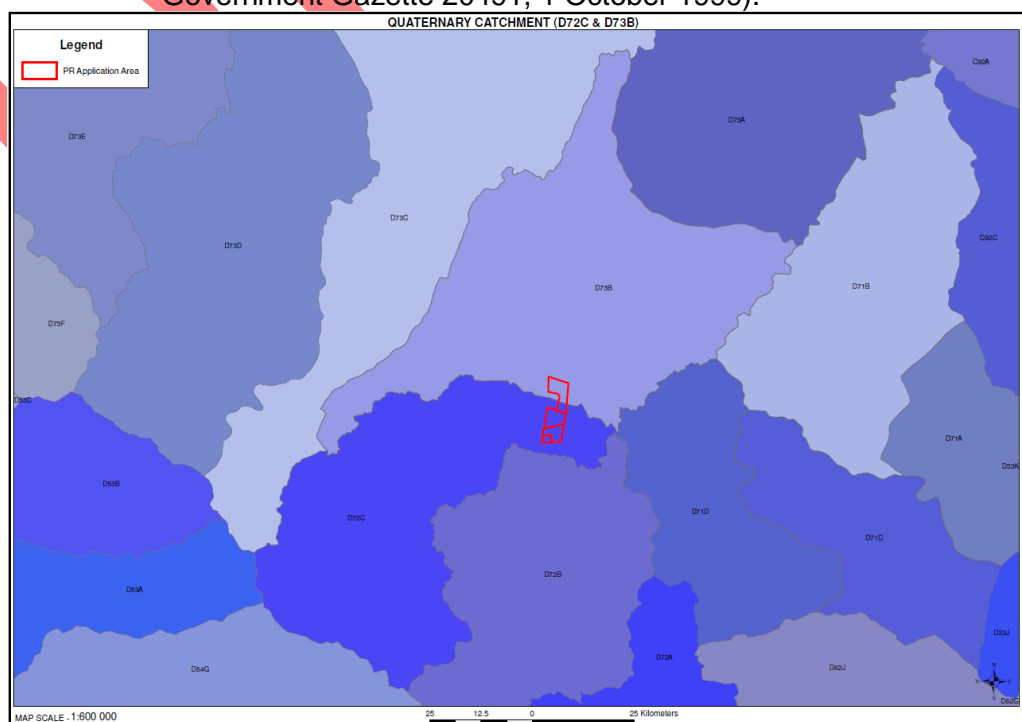


Figure 12 – Quaternary Catchment

- **Noise:**

The main current noise sources in the area include:

- Traffic noise from the surrounding road network.

- **Sensitive landscapes:**

"Sensitive environments" that have statutory protection are the following:

- Limited development areas (section 23 of the Environment Conservation Act, 1989 (Act 73 of 1989).
- Protected natural environments and national heritage sites.
- National, provincial, municipal and private nature reserves.
- Conservation areas and sites of conservation significance.
- National monuments and gardens of remembrance.
- Archaeological and palaeontological sites.
- Graves and burial sites
- Lake areas, offshore islands and the admiralty reserve.
- Estuaries, lagoons, wetlands and lakes.
- Streams and river channels, and their banks.
- Dunes and beaches.
- Caves and sites of geological significance.
- Battle and burial sites.
- Habitat and /or breeding sites of Red Data Book species.
- Areas or sites of outstanding natural beauty.
- Areas or sites of special scientific interest.
- Areas or sites of special social, cultural or historical interest.
- Declared national heritage sites
- Mountain catchment areas.
- Areas with eco-tourism potential

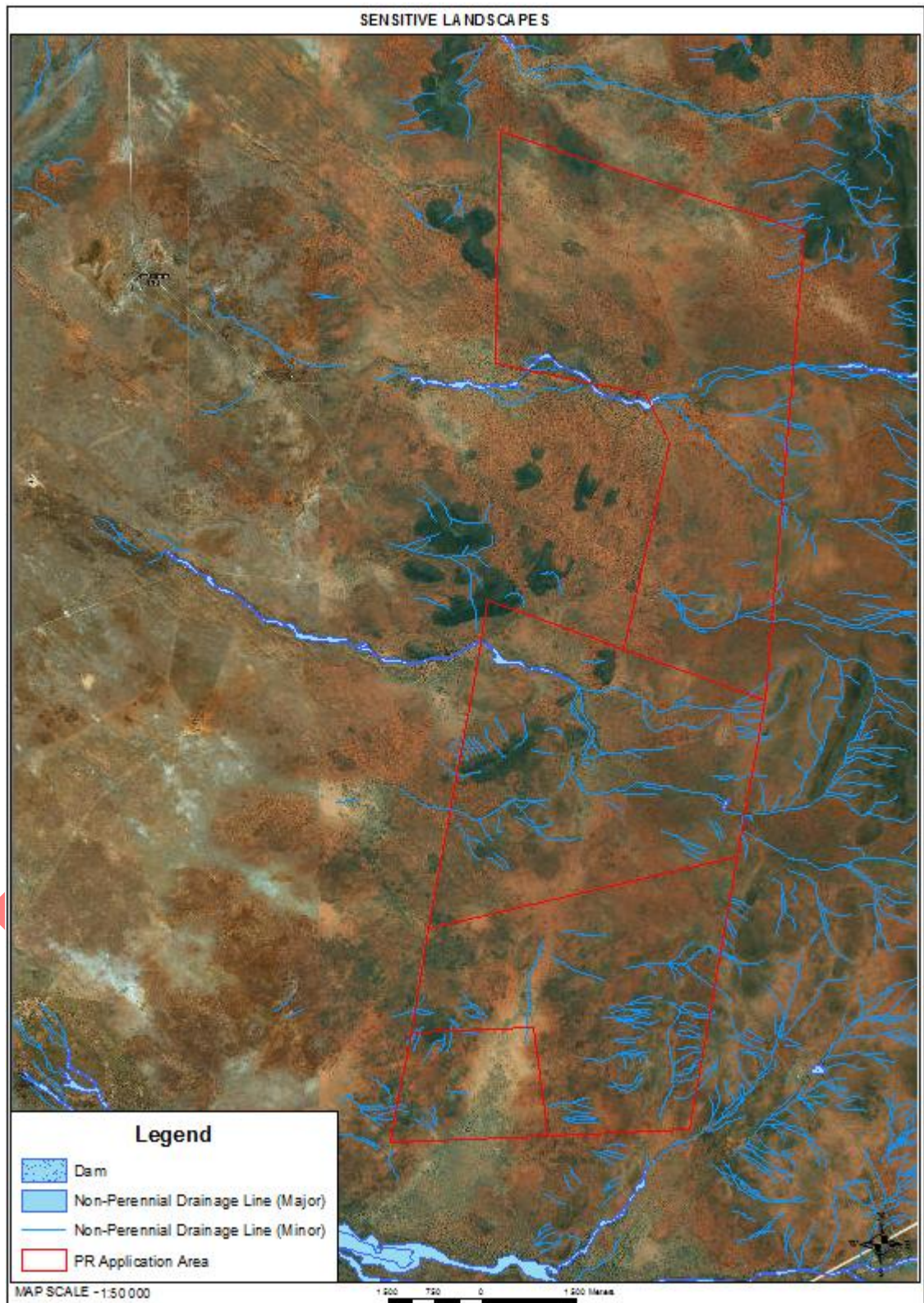


Figure 13 - Sensitive landscapes

The following sensitive environments have been identified within the PR Area:

→ Streams and river channels, and their banks:
There are a number of non-perennial drainage lines within the PR Area.

→ Archaeological and palaeontological sites:
A desktop study revealed isolated scatters of Stone Age materials in outcrops. The significance rating for these Stone Age materials is low.

→ Graves and burial sites:
Two burial sites were located by previous studies. One is reported to be located on the Hartfell Farm 172 and the second burial ground is located on Bulls Run Farm (Ubique Heritage Consultants, 2020). Some graves may be subsurface sites and it is probable that they are not identifiable above the ground. Therefore, should they be encountered during the construction process, or any other activity related to mining (sic), the developer is advised that according to the NHR Act 25 of 1999, destruction or alteration of historical graves is prohibited by law. Any alteration or destruction of graves can only be undertaken through a permit issued by SAHRA or the Northern Cape Heritage Authority. The area with graves and burial grounds should be avoided at all cost. Should prospecting extend into the burial grounds localities, then there will be a need for mitigation.

There are no other identified sensitive landscapes within the application area.

- **Socio-Economic:**

Censuses were held in 2001, 2011 and 2022, whilst Community Surveys were held in 2007 and 2016 respectively.

The last census was held in 2022; however these results are not yet available. The following section was compiled using data from Census 2001 and 2011.

Siyathemba Local Municipality is a local municipality in the Pixley Ka Seme District Municipality in the Northern Cape Province of South Africa. Siyathemba Municipality is a Category B Municipality (NC077), established in 2001, in accordance with the demarcation process. The municipality is located within the central eastern parts of the Northern Cape Province on the banks of the Orange River, and falls within the boundaries of the Pixley Ka Seme District. The nearest business centre is Kimberley, which is about 220km away.

Siyathemba Municipality was initially made up of three entities, namely, Prieska, Marydale and Niekerkshoop. After demarcation the area was extended to include not only the towns and surrounding suburbs of Marydale, Niekerkshoop and Prieska but also Copperton. The municipal area encompasses a geographic

area of approximately 8,200km², which implies that Siyathemba Municipality accounts for 8% of the total district surface area and approximately 3% of the provincial area.

There has been a 1.57% population growth rate between 2001 and 2011.

Key statistics:

Description	Census 2001	Census 2011
Total population	18 455	21 591
Young (0 – 14)	33.7%	30.8%
Working age (15 – 64)	63.2%	63.2%
Elderly (65+)	5.9%	6%
Dependency ratio	65.5%	58.2%
Population density	-	1 person/km ²
Unemployment rate	36%	24.3%
Youth unemployment rate	43.1%	30.2%
No schooling aged 20+	21.8%	11.5%
Higher education aged 20+	4.7%	5.3%
Matric aged 20+	12.1%	18%
Number of households	4 455	5 831
Average household size	4	3.6
Female headed household	33.6%	36.1%
Formal dwellings	88.9%	88.6%
Housing owned/paying off	54.8%	54.3%
Flush toilet connected to sewerage	65.9%	64.9%
Weekly refuse removal	75.8%	73.9%
Piped water inside dwelling	22.5%	43.1%
Electricity for lighting	80.9%	86.2%

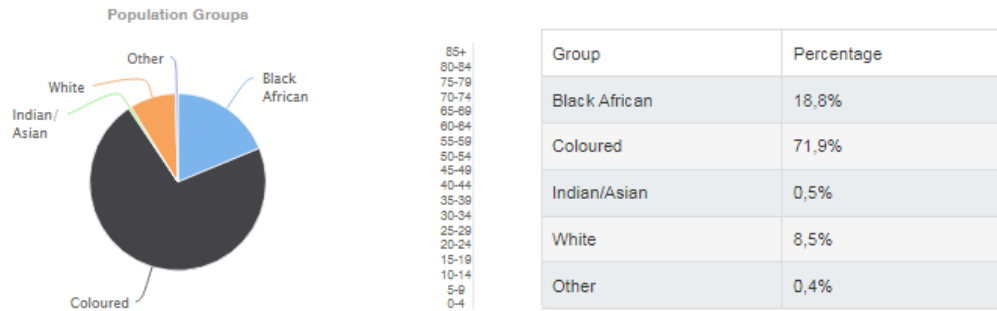
o People

▪ Population groups:

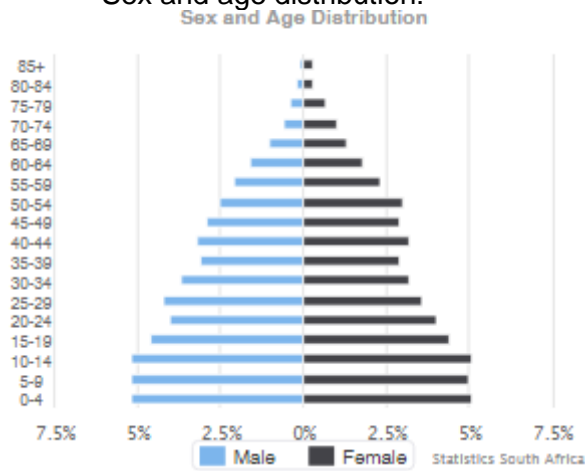
The total population in the municipality is 21 591 people with Xhosa and Afrikaans being the dominant languages. The most dominant population group is coloured people; they represent 80% of the total population in the municipal area. The other groups are black African (12%) and white people (8%).

Afrikaans is the most widely spoken language (78%). There are an insignificant number of people who speak other languages. A total of 824 people indicated that IsiNdebele is their first language and 91 people speak Setswana.

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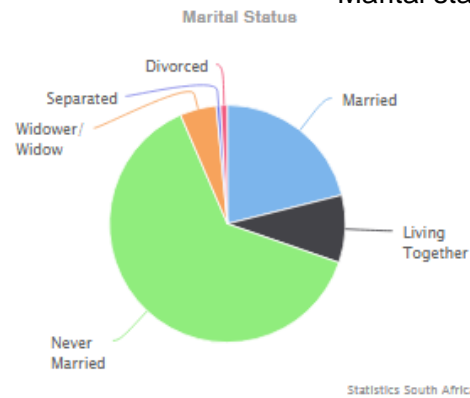
Sex and age distribution:



Languages:

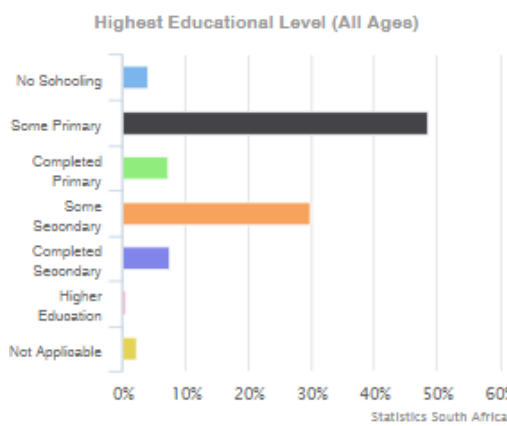
Language	Percentage
Afrikaans	92,1%
English	0,9%
IsiNdebele	0,1%
IsiXhosa	3,1%
IsiZulu	0,2%
Sepedi	0,1%
Sesotho	0,4%
Setswana	0,9%
Sign Language	0,2%
SiSwati	0,1%
Tshivenda	0,1%
Xitsonga	0%
Other	0,3%
Not Applicable	1,7%

▪ Marital status:



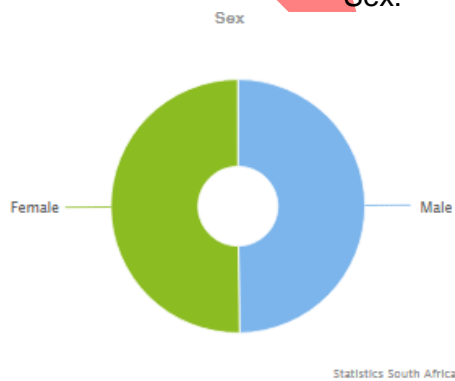
Group	Percentage
Married	21,1%
Living together like married partners	9,2%
Never married	63,2%
Widower/Widow	5%
Separated	0,6%
Divorced	0,9%

▪ Highest education levels:



Group	Percentage
No Schooling	4,2%
Some Primary	48,5%
Completed Primary	7,4%
Some Secondary	29,8%
Completed Secondary	7,5%
Higher Education	0,5%
Not Applicable	2,2%

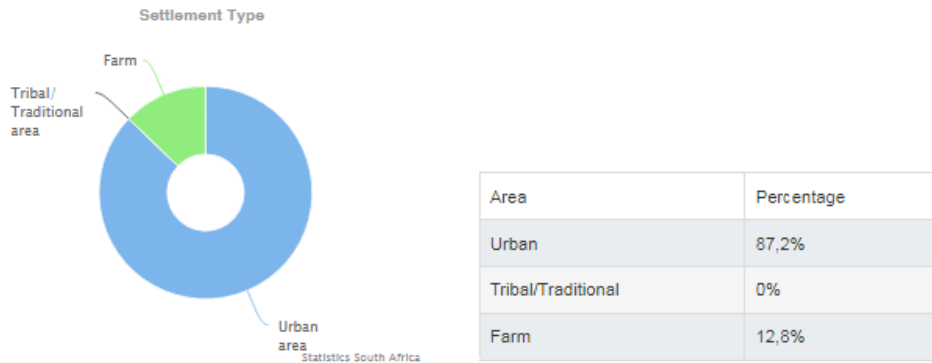
▪ Sex:



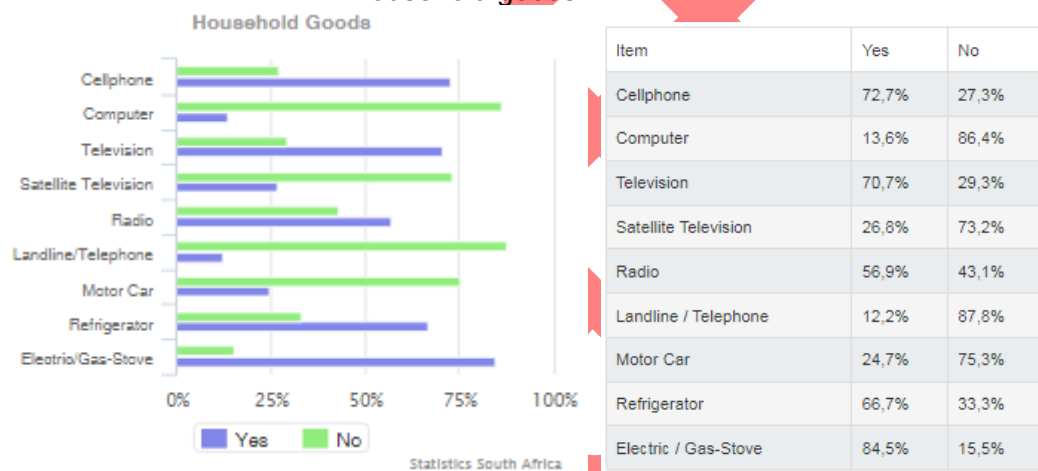
Sex	Percentage
Female	50,2%
Male	49,8%

○ Living conditions

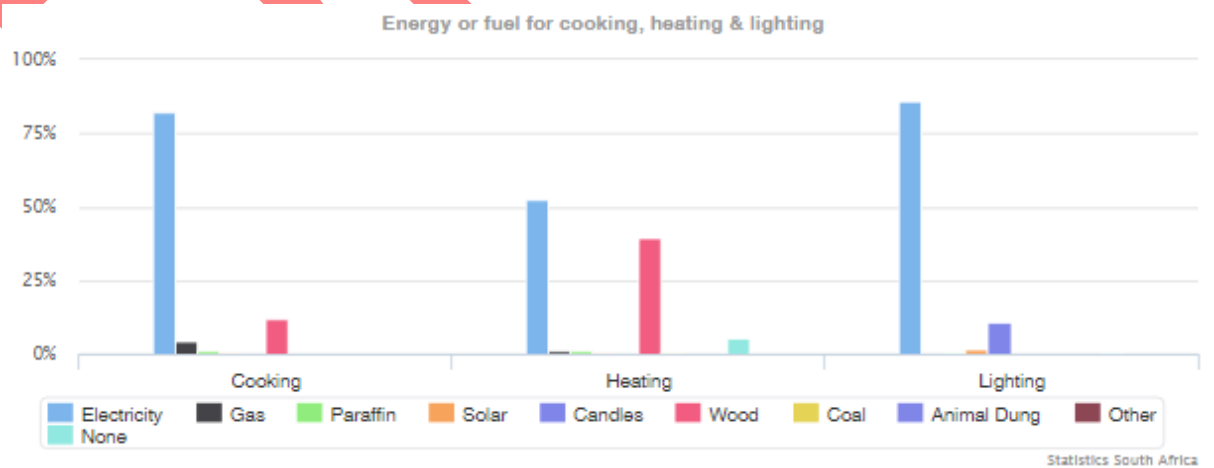
▪ Settlement type



▪ Household goods



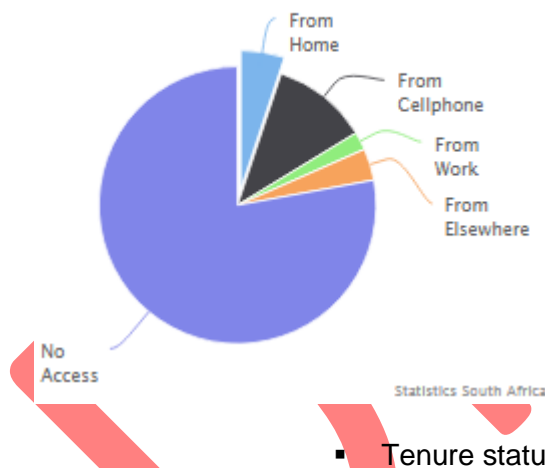
▪ Energy or fuel for cooking, heating & lighting



Energy Source	Cooking	Heating	Lighting
Electricity	82,2%	52,4%	86,2%
Gas	4,4%	1,1%	0,2%
Paraffin	0,9%	0,9%	0,7%
Solar	0,3%	0,3%	1,8%
Candles	0%	0%	10,9%
Wood	12%	39,4%	0%
Coal	0,1%	0,3%	0%
Animal Dung	0%	0%	0%
Other	0%	0%	0%
None	0,2%	5,5%	0,3%

▪ Access to internet

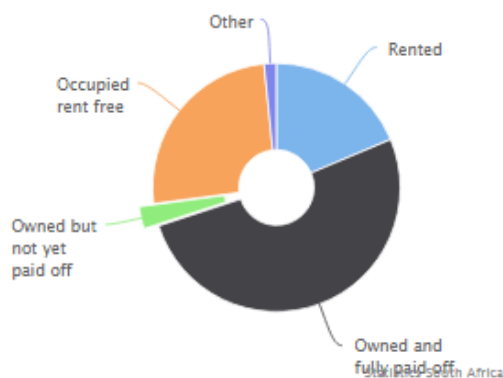
Access to Internet



Access	Percentage
From Home	5,1%
From Cellphone	11,2%
From Work	2,1%
From Elsewhere	3,7%
No Access	77,9%

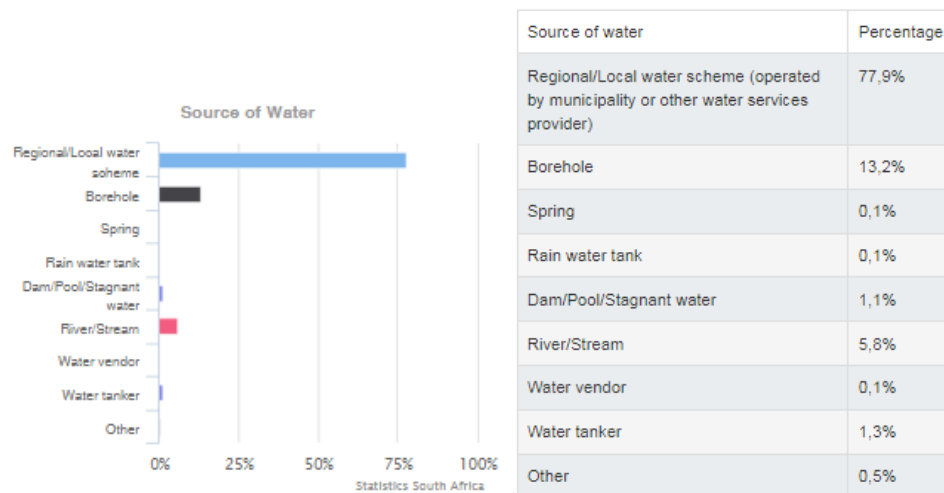
▪ Tenure status

Tenure Status

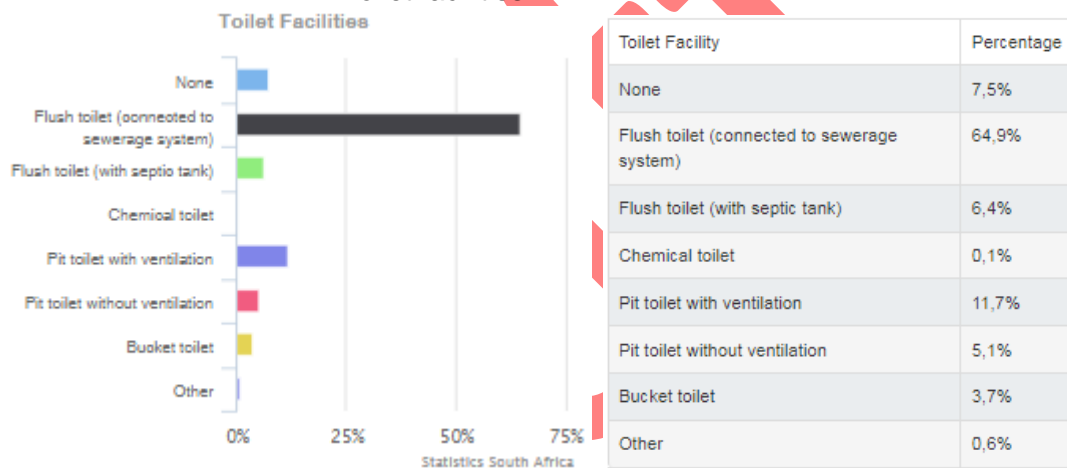


Tenure Status	Percentage
Rented	18,7%
Owned and fully paid off	51,4%
Owned but not yet paid off	2,9%
Occupied rent free	25,5%
Other	1,6%

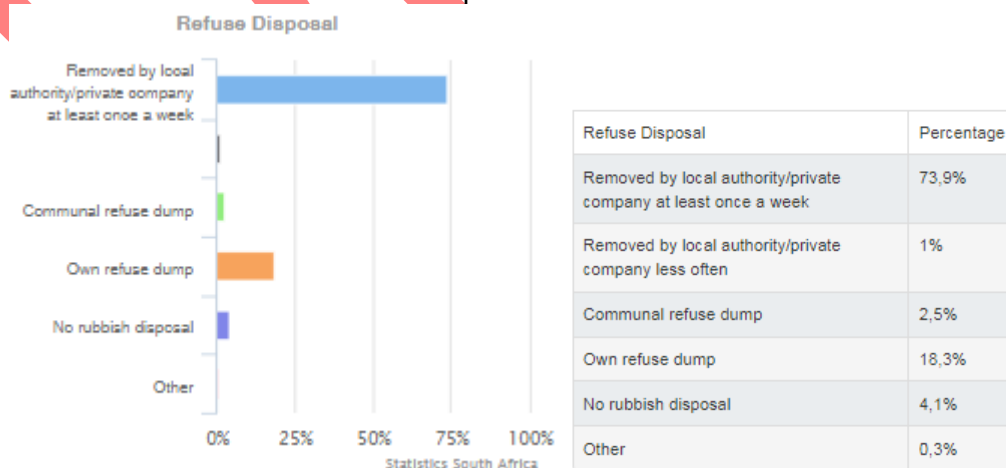
▪ Source of water



▪ Toilet facilities



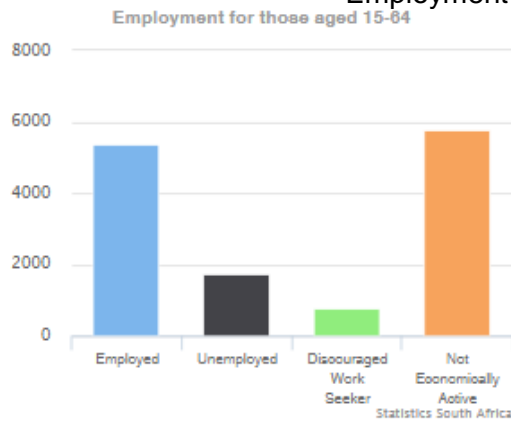
▪ Refuse disposal



○ Economy

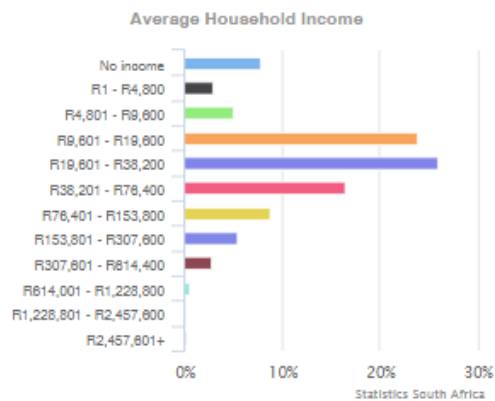
The whole of the Siyathemba area is rich in semiprecious stones. The famed 'tiger's eye' is one of many gems mined in the region. An opportunity exists for adding value to the raw material and shipping out processed products of high quality.

▪ **Employment**



Employment Status	Number
Employed	5371
Unemployed	1728
Discouraged Work Seeker	767
Not Economically Active	5787

▪ **Average household income**



Income	Percentage
None income	7,8%
R1 - R4,800	2,9%
R4,801 - R9,600	5%
R9,601 - R19,600	23,9%
R19,601 - R38,200	26%
R38,201 - R76,400	16,4%
R76,401 - R153,800	8,8%
R153,801 - R307,600	5,5%
R307,601 - R614,400	2,8%
R614,001 - R1,228,800	0,5%
R1,228,801 - R2,457,600	0,2%
R2,457,601+	0,2%

• **Soil:**

The soil as described per vegetation type:

- Northern Upper Karoo (NKu 3):
Soils are variable from shallow to deep, red-yellow, apedal, freely drained soils to very shallow Glenrosa and Mispah forms. Mainly Ae, Ag, and Fc land types.
- Olifantshoek Plains Thornveld (SVk 13):
Hutton soil forms, deeper than 1.2m, on the overwhelmingly dominant Ae and to a far lesser extent Ah land types.
- Gordonia Duneveld (SVkd 1):
Fixed parallel sand dunes, with Af land type almost exclusively.

- **Surface water:**



Figure 14 - Surface water

There are a number of non-perennial drainage lines within the PR Area.

- **Topography:**

The property varies in altitude from about 1 182 meters above sea level in the higher lying areas to about 1 112 meters above sea level in the lower lying areas. The surface topography is relatively flat in the lower lying areas.

(b) Description of the current land uses.

The properties are currently utilized by the surface owners for livestock / game farming and/or other agricultural farming activities.

(c) Description of specific environmental features and infrastructure on the site.

- Environmental:
 - A number of non-perennial drainage lines.

- Heritage:
 - Archaeological and palaeontological sites:
A desktop study revealed isolated scatters of Stone Age materials in outcrops. The significance rating for these Stone Age materials is low.
 - Graves and burial sites:
Two burial sites were located by previous studies. One is reported to be located on the Hartfell Farm 172 and the second burial ground is located on Bulls Run Farm (Ubique Heritage Consultants, 2020). Some graves maybe subsurface sites and it is probable that they are not identifiable above the ground. Therefore, should they be encountered during the construction process, or any other activity related to mining (sic), the developer is advised that according to the NHR Act 25 of 1999, destruction or alteration of historical graves is prohibited by law. Any alteration or destruction of graves can only be undertaken through a permit issued by SAHRA or the Northern Cape Heritage Authority. The area with graves and burial grounds should be avoided at all cost. Should prospecting extend into the burial grounds localities, then there will be a need for mitigation.
- Infrastructure:
 - Agricultural features such as windmills and livestock troughs;
 - Border fences;
 - Farm roads; and
 - Residence and associated infrastructure.

(d) Environmental and current land use map:
(Show all environmental and current land use features.)

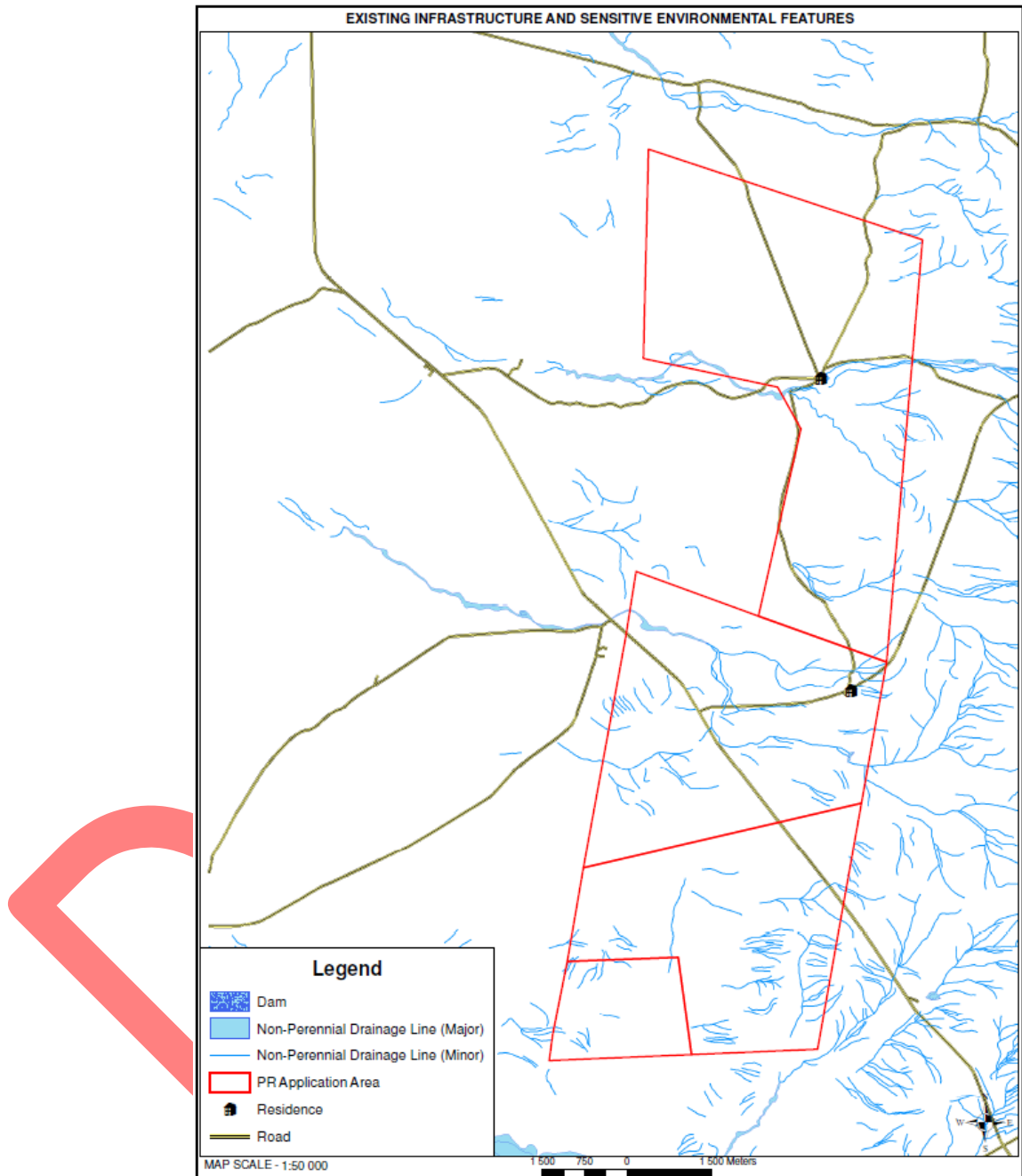


Figure 15 – Current land use and environmental map

(v) Impacts and risks identified including the nature significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be managed:

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated.)

Cumulative environmental impacts can be defined as changes to the environment caused by the combined impact of past, present and future human activities and/or natural processes.

Livestock Farming:

The properties under application for a Prospecting Right are currently used for grazing of livestock/game. The properties are divided into a number of 'camps' and the livestock are rotated between the camps. This provides rest periods for plants while others are being grazed. Impacts associated with farming activities include overgrazing, destruction of the natural vegetation cover and soil compaction through 'trampling' if the rotational grazing method is not implemented correctly by the surface owner/s and loss of groundwater if water related infrastructure; i.e. pipelines, dams and troughs, are not adequately maintained.

Prospecting:

The invasive prospecting activities that will be conducted by GEJ are drilling and bulk sampling. Thirty boreholes are planned. The site clearance for drill rigs will be kept to a minimum and provision is made for a 10m x 10m surface disturbance around each borehole. Provision is further made for thirty trenches, each 40mx 21m, during phase 4 of the prospecting operation, with associated infrastructure.

Existing roads and farm tracks shall be used as far as possible. Provision is made for 500m x 10m wide roads for the prospecting operation.

The total anticipated surface disturbance by GEJ calculates to less than 5 hectares, which includes the establishment of infrastructure during the bulk sampling phase. The total extent of the application area is 5 504.7223 hectares, thus calculating to a 0.09% surface disturbance by GEJ. The anticipated impacts associated with the proposed prospecting operation are thus negligible and it is not foreseen that the economic livelihood of the surface owner/s from the livestock farming activities will be irreversibly damaged.

• **Air Quality:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Drilling	Site	Short	Low	Definite	Low	Avoided = Yes Cause irreplaceable loss of resource = No Managed = Yes Mitigated = Yes Reversed = Yes
Blasting	Site	Short	Medium	Probable	Medium	
Bulk Sampling	Site	Medium	Low	Definite	Medium	
Roads	Site	Short	Low	Probable	Low	
Processing Plant	Local	Short	Low	Definite	Low	
Material dumping	Local	Short	Low	Highly probable	Low	
Infrastructure Establishment	Local	Long	Medium	Definite	Medium	
Vehicle emissions	Local	Short	Low	Probable	No significance	
Fumes and Noxious Gases	Site	Short	Low	Improbable	Low	
Vegetation Clearance	Local	Long	Low	Definite	Low	
Smoke – domestic fires	Site	Short	Low	Improbable	No significance	

Activity	Impact summary	Significance with mitigation
Air Quality	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> Nuisance dust created by prospecting drilling and blasting activities. Nuisance dust will be created during bulk sampling activities. Nuisance dust will be created by the equipment hauling material between the open bulk sampling areas, the plant area, stockpile areas and waste dump areas on site. Nuisance dust will be created at the processing plant. Nuisance dust will be created when material is dumped in the residue deposition site; topsoil storage site; stockpile- and waste rock dump areas. Nuisance dust will be created when infrastructure is established. Vehicle emissions from vehicles and equipment utilized by the prospecting operation. Fumes and noxious gases generated by blasting. Vehicle emissions from vehicles utilized by farming activities. Nuisance dust from the farm roads and road network in the surrounding area. 	Negative: Very Low
	<p><i>Indirect impacts:</i></p> <ul style="list-style-type: none"> Nuisance dust will be created in all areas where vegetation is cleared for prospecting. 	Negative: Very Low

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Activity	Impact summary	Significance with mitigation
	<p><i>Cumulative impacts:</i></p> <ul style="list-style-type: none"> • Nuisance dust created by prospecting drilling and blasting activities. • Nuisance dust will be created during bulk sampling activities. • Nuisance dust will be created by the equipment hauling material between the open bulk sampling areas, the plant area, stockpile areas and waste dump areas on site. • Nuisance dust will be created at the processing plant. • Nuisance dust will be created when material is dumped in the residue deposition site; topsoil storage site; stockpile- and waste rock dump areas. • Nuisance dust will be created when infrastructure is established. • Vehicle emissions from vehicles and equipment utilized by the prospecting operation. • Fumes and noxious gases generated by blasting. • Vehicle emissions from vehicles utilized by farming activities. • Nuisance dust from the farm roads and road network in the surrounding area. • Nuisance dust will be created in all areas where vegetation is cleared for prospecting. • Smoke from domestic open fires. 	<p>Negative Very Low</p>

• **Fauna:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Drilling	Local	Long	Medium	Highly probable	Medium	Avoided = Yes Cause irreplaceable loss of resource = No Managed = Yes Mitigated = Yes Reversed = Yes
Bulk Sampling	Local	Long	Medium	Definite	Medium	
Roads	Local	Long	Medium	Highly probable	Medium	
Infrastructure establishment	Local	Long	Medium	Definite	Medium	
Road Kills	Site	Short	Low	Improbable	Low	
Firebreak	Local	Permanent	Low	Definite	Low	
Hunting & Snaring	Site	Short	Low	Improbable	Low	
Overgrazing	Site	Long	Medium	Improbable	Medium	

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Activity	Impact summary	Significance with mitigation
Fauna	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> • Disturbance of natural habitat of wild animals when vegetation is cleared for drilling sites. • Disturbance of natural habitat of wild animals when vegetation is cleared for bulk sampling. • Disturbance of natural habitat of wild animals when vegetation is cleared for roads. • Disturbance of natural habitat of wild animals when vegetation is cleared for the establishment of infrastructure. • Disturbance of natural habitat of wild animals when vegetation is cleared for a firebreak • Hunting and snaring of wild animals. • Disturbance of natural habitat of wild animals in the instance of overgrazing. 	Negative: Low
	<p><i>Indirect impacts:</i></p> <ul style="list-style-type: none"> • Road kills. 	Negative: Very Low
	<p><i>Cumulative impacts:</i></p> <ul style="list-style-type: none"> • Disturbance of natural habitat of wild animals when vegetation is cleared for drilling sites. • Disturbance of natural habitat of wild animals when vegetation is cleared for bulk sampling. • Disturbance of natural habitat of wild animals when vegetation is cleared for roads. • Disturbance of natural habitat of wild animals when vegetation is cleared for the establishment of infrastructure. • Disturbance of natural habitat of wild animals when vegetation is cleared for a firebreak • Hunting and snaring of wild animals. • Disturbance of natural habitat of wild animals in the instance of overgrazing. • Road kills. 	Negative: Low

• **Flora:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Drilling	Local	Long	High	Definite	High	Avoided = Yes
Bulk Sampling	Local	Long	High	Definite	High	Cause irreplaceable
Roads	Local	Long	High	Definite	High	loss of resource = No
Infrastructure establishment	Local	Long	High	Definite	High	Managed = Yes
Firebreak	Local	Permanent	Low	Definite	Low	Mitigated = Yes

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Overgrazing	Site	Long	Medium	Improbable	Medium	Reversed = Yes
Veld Fires	Regional	Short	High	Probable	High	

Activity	Impact summary	Significance with mitigation
Flora	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for drilling sites. • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for bulk sampling. • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for roads. • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for the establishment of infrastructure. • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for a firebreak. • Disturbance and/or destruction of natural vegetation cover in the instance of overgrazing. • Runaway veld fires. 	Negative: Medium
	<p><i>Indirect impacts:</i></p> <ul style="list-style-type: none"> • Disturbance of natural habitat of wild animals when vegetation is cleared for drilling sites. • Disturbance of natural habitat of wild animals when vegetation is cleared for bulk sampling. • Disturbance of natural habitat of wild animals when vegetation is cleared for roads. • Disturbance of natural habitat of wild animals when vegetation is cleared for the establishment of infrastructure. • Disturbance of natural habitat of wild animals when vegetation is cleared for a firebreak • Disturbance of natural habitat of wild animals in the instance of overgrazing. 	Negative: Low
	<p><i>Cumulative impacts:</i></p> <ul style="list-style-type: none"> • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for drilling sites. • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for bulk sampling. • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for roads. • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for the 	Negative: Medium

	establishment of infrastructure. <ul style="list-style-type: none"> • Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for a firebreak. • Disturbance and/or destruction of natural vegetation cover in the instance of overgrazing. • Runaway veld fires. • Disturbance of natural habitat of wild animals when vegetation is cleared for drilling sites. • Disturbance of natural habitat of wild animals when vegetation is cleared for bulk sampling. • Disturbance of natural habitat of wild animals when vegetation is cleared for roads. • Disturbance of natural habitat of wild animals when vegetation is cleared for the establishment of infrastructure. • Disturbance of natural habitat of wild animals when vegetation is cleared for a firebreak • Disturbance of natural habitat of wild animals in the instance of overgrazing. 	
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• **Groundwater:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Groundwater Abstraction for Prospecting Activities	Site	Short	Low	Probable	Low	Avoided = Yes Cause irreplaceable loss of resource = No Managed = Yes Mitigated = Yes Reversed = Yes
Groundwater Contamination	Site	Medium	Medium	Probable	Medium	
Groundwater Loss – Farming Activities	Site	Short	Low	Improbable	Low	

Activity	Impact summary	Significance with mitigation
Groundwater	<i>Direct impacts:</i> <ul style="list-style-type: none"> • Utilization of groundwater for prospecting activities could cause a drop in the groundwater table. • Loss of groundwater if water related infrastructure; i.e. pipelines, dams and troughs, are not adequately maintained by the surface owner/s. 	Negative: Very Low
	<i>Indirect impacts:</i> <ul style="list-style-type: none"> • Possible hydrocarbon spills from prospecting vehicles and equipment, which could contaminate the groundwater. 	Negative: Very Low

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	<ul style="list-style-type: none"> Possible chemical spills from chemical toilets utilized by the prospecting operation, which could contaminate the groundwater. 	Negative: Very Low
	<p><i>Cumulative impacts:</i></p> <ul style="list-style-type: none"> Utilization of groundwater for prospecting activities could cause a drop in the groundwater table. Loss of groundwater if water related infrastructure; i.e. pipelines, dams and troughs, are not adequately maintained by the surface owner/s. Possible hydrocarbon spills from prospecting vehicles and equipment, which could contaminate the groundwater. Possible chemical spills from chemical toilets utilized by the prospecting operation, which could contaminate the groundwater. 	

• **Noise:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Drill Rig	Site	Short	Low	Definite	Low	Avoided = Yes Cause irreplaceable loss of resource = No Managed = Yes Mitigated = Yes Reversed = Yes
Bulk Sampling	Site	Medium	Low	Definite	Medium	
Blasting	Regional	Short	High	Highly Probable	High	
Roads	Site	Short	Low	Highly Probable	Low	
Processing Plant	Site	Medium	High	Definite	High	
Farming Activities	Site	Short	Low	Probable	Low	

Activity	Impact summary	Significance with mitigation
Noise	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> Noise from drilling rigs. Noise from bulk sampling activities. Noise from blasting activities. Noise from prospecting vehicles and equipment. Noise from processing plant. Noise from farming activities and traffic on surrounding road network. 	Negative: Medium

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	<p><i>Indirect impacts:</i></p> <ul style="list-style-type: none"> • None 	N/A
	<p><i>Cumulative impacts:</i></p> <ul style="list-style-type: none"> • Noise from drilling rigs. • Noise from bulk sampling activities. • Noise from blasting activities. • Noise from prospecting vehicles and equipment. • Noise from processing plant. • Noise from farming activities and traffic on surrounding road network. 	<p>Negative: Medium</p>

• **Soil:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Drilling	Local	Short	Medium	Definite	Medium	Avoided = Yes Cause irreplaceable loss of resource = No Managed = Yes Mitigated = Yes Reversed = Yes
Bulk Sampling	Local	Medium	Medium	Definite	Medium	
Establishment of Infrastructure	Local	Medium	Medium	Definite	Medium	
Roads	Local	Medium	Medium	Highly Probable	Medium	
Hydrocarbon Spills	Site	Short	Low	Probable	Low	
Chemical Toilet Spills	Site	Short	Low	Improbable	Low	
Erosion	Site	Short	Low	Probable	Low	
Overgrazing	Site	Medium	Medium	Improbable	Medium	

Activity	Impact summary	Significance with mitigation
Soil	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> • Disturbance and/or compaction of the soil structure during drilling activities. • Disturbance of the soil structure during bulk sampling activities. • Disturbance and/or compaction of the soil structure where infrastructure is established. • Disturbance and/or compaction of the soil structure where roads are established. • Possible hydrocarbon spills from prospecting vehicles and equipment. • Possible chemical toilet spills. 	<p>Negative: Very Low</p>

	<p><i>Indirect impacts:</i></p> <ul style="list-style-type: none"> Erosion in areas where vegetation has been cleared. Compaction of soil in the event of overgrazing. 	Negative: Very Low
	<p><i>Cumulative impacts:</i></p> <ul style="list-style-type: none"> Disturbance and/or compaction of the soil structure during drilling activities. Disturbance of the soil structure during bulk sampling activities. Disturbance and/or compaction of the soil structure where infrastructure is established. Disturbance and/or compaction of the soil structure where roads are established. Possible hydrocarbon spills from prospecting vehicles and equipment. Possible chemical toilet spills. Erosion in areas where vegetation has been cleared. Compaction of soil in the event of overgrazing. 	Negative: Very Low

• **Surface water:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Hydrocarbon Spills	Site	Short	Low	Probable	Low	Avoided = Yes Cause irreplaceable loss of resource = No Managed = Yes Mitigated = Yes Reversed = Yes
Erosion	Site	Short	Low	Probable	Low	
Non-Perennial Drainage Line	Regional	Short	Medium	Improbable	Medium	

Activity	Impact summary	Significance
Surface water	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> None anticipated if buffer zones around non-perennial drainage lines are adhered to. 	N/A
	<p><i>Indirect impacts:</i></p> <ul style="list-style-type: none"> Hydrocarbon spills could potentially flow into non-perennial drainage lines during rain events. Erosion during rain events which could lead to silt flow into non-perennial drainage lines. 	Negative: Very Low
	<p><i>Cumulative impacts:</i></p> <ul style="list-style-type: none"> Hydrocarbon spills could potentially flow into non-perennial drainage lines during rain events. Erosion during rain events which could lead to silt flow into non-perennial drainage lines. 	Negative: Very Low

• **Topography:**

Activity	Extent	Duration	Intensity	Probability	Significance without mitigation	Management of impact
Natural slopes	Local	Medium	Low	Probable	Low	Avoided = Yes Cause irreplaceable loss of resource = No Managed = Yes Mitigated = Yes Reversed = Yes

Activity	Impact summary	Significance
Topography	<i>Direct impacts:</i> • Changing of natural slopes will take place during bulk sampling activities.	N/A
	<i>Indirect impacts:</i> • None	Negative: Very Low
	<i>Cumulative impacts:</i> • Changing of natural slopes will take place during bulk sampling activities.	Negative: Very Low

(vi) **Methodology used in determining and ranking the nature, significance, consequence, 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 were determined in order to decide the extent to which the initial site layout needs revision.)

The assessment of the impacts has been conducted according to a synthesis of criteria required by the integrated environmental management procedure.

Nature of impact

This is an appraisal of the type of effect the activity would have on the affected environmental component. Its description should include what is being affected, and how.

Extent

The physical and spatial size of the impact. This is classified as follows:

- **Local**
The impacted area extends only as far as the activity, e.g. a footprint.
- **Site**
The impact could affect the whole, or a measurable portion of the property/ies.
- **Regional**
The impact could affect the area including the neighbouring farms, transport routes and the adjoining towns.

Duration

The lifetime of the impact. This is classified as follows:

- **Short term**
The impact will either disappear with mitigation or will be mitigated through natural process in a short time period.
- **Medium term**
The impact will last up to the end of the prospecting period, where after it will be entirely negated.
- **Long term**
The impact will continue or last for the entire operational life of the operation, but will be mitigated by direct human action or by natural processes thereafter.
- **Permanent**
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

This describes how destructive, or benign, the impact is. Does it destroy the impacted environment, alter its functioning, or slightly alter it. These are rated as:

- **Low**
This alters the affected environment in such a way that the natural processes or functions are not affected.
- **Medium**
The affected environment is altered, but function and process 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 very low, due either to the circumstances, design or experience.
- **Probable**
There is a possibility that the impact will occur to the extent that provisions must be made therefore.
- **Highly probable**
It is most likely that the impacts will occur at some or other stage of the development.
- **Definite**
The impact will take place regardless of any preventative plans, and mitigation measures or contingency plans will have to be implemented to contain the impact.

Determination of significance

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The classes are rated as follows:

- **No significance**
The impact is not likely to be substantial and does not require any mitigatory action.
- **Low**
The impact is of little importance, but may require limited mitigation.
- **Medium**
The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
- **High**
The impact is of great importance. Failure to mitigate, with the objective to reduce the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

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

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

During the operational stages of the bulk sampling operation, there is a possibility of sterilisation of the mineral reserves and resources due to improper placement of infrastructure. The infrastructure and stockpiles/dumps will alter the topography by adding features to the landscape. Topsoil removal and excavations will unearth the natural topography. The construction of infrastructure and various facilities in the prospecting area can also result in loss of soil due to erosion. Vegetation will be stripped in preparation for placement of infrastructure and excavations, and therefore the areas will be bare and susceptible to erosion.

The topsoil that is stripped and piled on surrounding areas can be eroded by wind and rain. The soil will be carried away during runoff. The cleared areas will be rehabilitated, but full restoration of soils might only occur over a number of years, subsequent to the re-establishment of vegetation. Furthermore, improper stockpiling and soil compaction can result in soil sterilisation. Leaching can also occur, resulting in the loss of nutrients.

There is also a possibility that equipment might leak oil, thus causing surface spillages. The hydrocarbon soil contamination will render the soil useless unless they are decontaminated. The storage of fuels on site might have an impact on soil if the tanks that are available on site are not properly monitored and maintained to avoid leakages. Then there is the potential that contaminated soil can be carried through runoff to contaminate water resources and soil stockpiled for rehabilitation. Soil pollution is therefore possible, but through mitigation it can be minimised.

The loss of land capability and land use can occur in two ways. Firstly, through topsoil removal, disturbances and loss of soil fertility; and secondly through the improper placement of infrastructure. Most of the site has a land capability for grazing, but grazing activities can still be performed in areas not earmarked for the operation, and with proper rehabilitation the land capabilities and land use potential can be restored.

Groundwater could be directly affected if any deep excavations reach the primary aquifers. Furthermore, if any oil and fuel spillages occur during these scenarios and activities, then groundwater will be directly contaminated. Similarly, hazardous surface spillages will seep into the underlying aquifers and contaminate ground water. Improper handling of hazardous material will cause contamination of nearby surface water resources (dry water course and non-perennial drainage lines) during runoff episodes. Lack of storm control structures will lead to erosion of stockpiles during heavy rains and runoff will carry suspended solids into the downstream environment. This might cause high silt load and affect stream flow. If no, or inadequate ablution facilities are available then workers might feel the need to use the veld for this purpose, which can contaminate natural resources.

Any excavations within the dry water course or non-perennial drainage lines will impact on the surface water environment by altering their physical characteristics. These impacts include the alteration of flow patterns, ponding

and an increase in the concentration of suspended solids and sedimentation. Furthermore, species eggs/seeds that usually remain dormant due to their adaptations to ephemerality, will be lost when the top biological layer of the dry water course are removed during excavations.

Bulk sampling activities on site will reduce the natural habitat for ecological systems to continue their operation. It is not expected that the areas of high ecological function will rehabilitate following disturbance events. It is likely that the pristine vegetation and any protected species will be destroyed during the operation. While general clearing of the area and bulk sampling activities destroy natural vegetation, invasive plants can increase due to their opportunistic nature in disturbed areas. If invasive plants establish in disturbed areas, it may cause an impact beyond the boundaries of the prospecting site. These alien invasive species are thus a threat to surrounding natural vegetation and can result in the decrease of biodiversity and ecological value of the area. Therefore, if alien invasive species are not controlled and managed, their propagation into new areas could have a high impact on the surrounding natural vegetation in the long term. With proper mitigation, the impacts can be substantially reduced.

The transformation of natural habitats to bulk sampling and associated infrastructure will result in the loss of habitat affected individual species, and ecological processes. In turn this will result in the displacement of faunal species dependent upon such habitat. Increased noise and vibration due to operational activities will disturb and possibly displace birds and other wildlife. Fast moving vehicles take a heavy toll in the form of road kills of small mammals, birds, reptiles, amphibians and a large number of invertebrates. Associated infrastructure will result in the loss of connectivity and fragmentation of natural habitat. Fragmentation of habitat will lead to the loss of migration corridors, in turn resulting in degeneration of the affected populations genetic make-up. This results in a subsequent loss of genetic variability between meta-populations occurring within the study site. Pockets of fragmented natural habitats hinder the growth and development of populations.

During the operation the abovementioned activities have potential for dust generation. It is anticipated that the extent of dust emissions would vary substantially from day to day depending on the level of activity and the specific operations. The operation will typically have low to moderate levels of noise, along with man-influenced sounds such as traffic on the roads, activities on the farm and very occasional air traffic. The proposed operation will add a certain amount of noise to the existing noise in the area. However, levels of noise generated by prospecting activities especially with blasting can be substantial.

The impact of site generated trips on the traffic and infrastructure of the existing roads is expected to be moderate. Furthermore, if road safety is not administered it can have a high impact on the safety of fellow road users.

The activities on site have the potential to impact upon heritage resources. Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon these resources will be permanent and irreversible. Any movement of vehicles, equipment or personnel through

areas containing these artefacts could result in the permanent destruction of the artefacts and loss of heritage resources.

The operation will create a number of new employment opportunities and uplift the local community. The magnitude of this impact will depend on the number of people that will be employed and the number of contractors sourced. An influx of people into the area could possibly impact on safety and security of local farm residents. During the decommissioning and at closure of the site, staff will most likely be retrenched, resulting in people being unable to find new employment for a long period of time.

Economic slump of the local towns after site closure is not considered to be an associated potential impact, because there are numerous other mining operations in the region. However, income streams from wage bills as well as goods and services contracts (at all geographical levels) will come to an end, reducing the monetary income of individuals and operation-related businesses.

It is likely, however that there will be residual positive economic impacts that are not fully reversed with the closure of the site, and that the economy will not decline to its original level prior to the development of this project. This is because the operation will generate substantial income for the regional and local economy, both directly and indirectly, during its life.

(viii) The possible mitigation measures that could be applied and the level of risk:

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

Impact	Mitigation	Risk
Air quality	<ul style="list-style-type: none"> • Speed limits; • Spraying of surfaces with water (where necessary); • Avoidance of unnecessary removal of vegetation; • Re-vegetation; • Monitoring; • Backfilling and rehabilitation of disturbed areas; and • Controlled drilling and blasting operations, preferably on wind-free days. 	Very Low
Fauna	<ul style="list-style-type: none"> • Speed limits; • Avoidance of unnecessary removal of vegetation; • Continuous backfilling of open excavations; • Low angle access ramp in excavations; • Continuous rehabilitation of disturbed areas; • Snares & traps removed and destroyed; and • Maintenance of firebreaks. 	Low
Flora	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation; • Continuous backfilling of open excavations; • Continuous rehabilitation of disturbed areas; • Maintenance of firebreaks; • No trees felled for firewood; • Obtain relevant permit before removal of protected tree or plant species; and 	Medium

	<ul style="list-style-type: none"> • Re-seeding where necessary. 	
Ground water	<ul style="list-style-type: none"> • Immediate removal of any hydrocarbon spill; • Maintenance in dedicated area; • Re-fuelling in dedicated area; • Drip pans; • Storage of hydrocarbons in dedicated areas; • Monitoring of groundwater abstraction and quality; and • Clean & Dirty water system. 	Very Low
Noise	<ul style="list-style-type: none"> • Hearing protection; • Non-metallic washers to join infrastructure; • Working hours; • Controlled drilling & blasting operations; • Silencers on equipment and vehicles; • Acoustic enclosure for generators; and • Distance from residences of surface owners. 	Medium
Soil	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation; • Continuous backfilling of open excavations; • Continuous rehabilitation of disturbed areas; • Ripping of compacted areas; • Replacing layer of topsoil over backfilled areas; • Maintenance & refuelling in dedicated areas; • Drip pans; • Storage of hydrocarbons in dedicated areas; and • Immediate removal of any hydrocarbon spill. 	Very Low
Surface water	<ul style="list-style-type: none"> • Storm water control; • Immediate removal of any hydrocarbon spill; • Maintenance & re-fuelling in dedicated areas; • Drip pans; • Storage of hydrocarbons in dedicated areas; and • Clean & dirty water plan. 	Very Low
Topography	<ul style="list-style-type: none"> • Continuous backfilling of open excavations; • Replacing layer of topsoil over backfilled areas; • Sloping of rehabilitated and disturbed areas; and • Sloping of topsoil dumps, stockpiles and waste rock dumps. 	Very Low
Visual	<ul style="list-style-type: none"> • Continuous backfilling of open excavations; • Replacing layer of topsoil over backfilled areas; • Sloping of rehabilitated and disturbed areas; • Sloping of topsoil dumps, stockpiles and waste rock dumps; and • Removal of all infrastructure upon closure. 	Very Low

(ix) Motivation where no alternative sites were considered:

No viable alternative sites were identified for the following reason:
 A detailed Site Plan cannot be provided in this early stage of the application process as the locality of the proposed boreholes and trenches is dependent on the results of the following:

- Reconnaissance visit;
- Desktop study; and
- Geological mapping

(x) Statement motivating the alternative development location within the overall site:

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

GEJ has considered the following:

- The Geological formation that supports the possibility that the minerals applied for could be found within the PR Area.
- The availability of farms within the area that is not already occupied by existing prospecting or mining rights.
- The availability of infrastructure, such as a road network, in the immediate surrounding area, which could be utilized to allow easy access to the site.

The final design and layout of the infrastructure can only be decided upon by the management team after granting and execution of the Prospecting Right and during the construction phase and after taking into account of the following:-

- Locality of the ore bodies to be determined by:
 - Reconnaissance visit;
 - Desktop study; and
 - Geological mapping
- Topography of the area;
- Environmental features;
- Operational requirements;
- Discussions with the surface owner.

h) 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 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.)

The methodology for the predication and assessment of impacts has been in accordance with *DEA Guideline 5: Assessment of Alternatives and Impacts*. Potential impacts have been rated in terms of the direct, indirect and cumulative impacts.

Criteria taken into account:

- Spatial extent – The size of the area that will be affected by the impact.
- Intensity –The anticipated severity of the impact.
- Duration –The timeframe during which the impact will be experienced.

Using the criteria above, the impacts have further been assessed in terms of the following:

- Probability –The probability of the impact occurring.
- Significance – Will the impact cause a notable alteration of the environment?
- Status - Whether the impact on the overall environment will be positive, negative or neutral.
- Confidence – The degree of confidence in predictions based on available information and specialist knowledge.

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Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance		
Air quality	<ul style="list-style-type: none"> Nuisance dust created by prospecting drilling and blasting activities. Nuisance dust will be created during bulk sampling activities. Nuisance dust will be created by the equipment hauling material between the open bulk sampling areas, the plant area, stockpile areas and waste dump areas on site. Nuisance dust will be created at the processing plant. Nuisance dust will be created when material is dumped in the residue deposition site; topsoil storage site; stockpile- and waste rock dump areas. Nuisance dust will be created when infrastructure is established. Vehicle emissions from vehicles and equipment utilized by the prospecting operation. Fumes and noxious gases generated by blasting. Nuisance dust will be created in all areas where vegetation is cleared for prospecting. 	Negative	Regional	Short Term	Medium	Definite	Medium		
	Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance	
	Archaeological, cultural & heritage	<ul style="list-style-type: none"> Archaeological artefacts Burial grounds and graves Buildings and structures older than sixty years 	N/A	N/A	N/A	N/A	N/A	No impact	
		Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
		Fauna	<ul style="list-style-type: none"> Disturbance of natural habitat of wild animals when vegetation is cleared for drilling sites. Disturbance of natural habitat of wild animals when vegetation is cleared for bulk sampling. Disturbance of natural habitat of wild animals when vegetation is cleared for roads. Disturbance of natural habitat of wild animals when vegetation is cleared for the establishment of infrastructure. Disturbance of natural habitat of wild animals when vegetation is cleared for a firebreak. Hunting and snaring of wild animals. Road kills. 	Negative	Local	Long term	Medium	Definite	Medium

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Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance		
Flora	<ul style="list-style-type: none"> Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for drilling sites. Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for bulk sampling. Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for roads. Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for the establishment of infrastructure. Disturbance and/or destruction of natural vegetation cover when vegetation is cleared for a firebreak. Runaway veld fires. 	Negative	Local	Long term	High	Definite	High		
	Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance	
	Groundwater	<ul style="list-style-type: none"> Utilization of groundwater for prospecting activities. Possible hydrocarbon spills from vehicles and equipment, which could contaminate the groundwater. Possible chemical spills from chemical toilets utilized by the prospecting operation, which could contaminate the groundwater. 	Negative	Regional	Short Term	Low	Probable	Low	
		Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
		Noise	<ul style="list-style-type: none"> Noise from drilling rigs. Noise from bulk sampling activities. Noise from blasting activities. Noise from prospecting vehicles and equipment. Noise from processing plant. 	Negative	Regional	Long term	High	Definite	High
	Impact		Description	Nature	Extent	Duration	Intensity	Probability	Significance
Soil	<ul style="list-style-type: none"> Disturbance and/or compaction of the soil structure during drilling activities. Disturbance of the soil structure during bulk sampling activities. Disturbance and/or compaction of the soil structure where infrastructure is established. Disturbance and/or compaction of the soil structure where roads are established. Possible hydrocarbon spills from prospecting vehicles and equipment. Possible chemical toilet spills. Erosion 		Negative	Site	Long term	Medium	Definite	Medium	
	Impact		Description	Nature	Extent	Duration	Intensity	Probability	Significance
	Surface water		<ul style="list-style-type: none"> Hydrocarbon spills could potentially flow into non-perennial drainage lines during rain events. Erosion during rain events which could lead to silt flow into non-perennial drainage lines. Collection of water in open excavations during and after thunderstorms. 	Negative	Regional	Long term	Low	Probable	Low

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Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Topography	<ul style="list-style-type: none"> Changing of natural slopes will take place during bulk sampling activities. 	Negative	Site	Long term	Low	Definite	Low
Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Visual	<ul style="list-style-type: none"> The prospecting activities will be visible to some extent from the immediate surroundings. 	Negative	Site	Long term	Low	Highly probable	Low
	<ul style="list-style-type: none"> Changing of natural aesthetic view of environment could take place from prospecting activities and relating infrastructure. 						
	<ul style="list-style-type: none"> Breaking of natural skyline. 						

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i) 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 interested and affected parties.)

ACTIVITY Whether listed or not listed. (e.g. excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc...)	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc...)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (e.g. Construction, commissioning, operational, decommissioning, closure, post-closure)	SIGNIFICANCE If not mitigated	MITIGATION TYPE modify, remedy, control or stop through: (e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc...) (e.g. modify through alternative method. Control through noise control. Control through management and monitoring through rehabilitation.)	SIGNIFICANCE If mitigated
Ablution Facilities (Chemical toilets)	Chemical spills which could lead to: <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination 	Groundwater Soil	Construction Commissioning Operational Decommissioning Closure	Low	<ul style="list-style-type: none"> • Maintenance of chemical toilets on regular basis by registered service provider. • Removal of chemical toilets upon closure. 	Very Low
Blasting	<ul style="list-style-type: none"> • Nuisance dust • Fumes and noxious gases • Removal and disturbance of vegetation cover and natural habitat of fauna • Noise • Disturbance of soil structure • Changing topography • Fly-rock 	Air quality Fauna Flora Noise Soil Topography Safety	Operational	High	<ul style="list-style-type: none"> • Controlled blasting activities, preferably on wind-free days. • Dust control and monitoring. • Noise control and monitoring. • Access control. 	Medium

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Boreholes	<ul style="list-style-type: none"> Nuisance dust Removal and disturbance of vegetation cover and natural habitat of fauna Possible hydrocarbon spills Noise Disturbance and/or compaction of soil structure during drilling activities The drill rig will be visible to some extent from the immediate surroundings 	Air quality Fauna Flora Groundwater Noise Soil Visual	Operational	Medium	<ul style="list-style-type: none"> Avoidance of unnecessary removal of vegetation Continuous rehabilitation PVC lining under drill rig / lined sumps Dust control and monitoring Noise control and monitoring Groundwater quality monitoring. 	Low
Diesel tanks	Hydrocarbon spills which could lead to: <ul style="list-style-type: none"> Groundwater contamination Soil contamination Surface water (non-perennial drainage line) contamination Establishment of diesel tanks: <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	Fauna Flora Groundwater Soil Surface water	Construction Commissioning Operational Decommissioning Closure	Medium	<ul style="list-style-type: none"> Maintenance of diesel tanks and bund walls. Oil traps. Groundwater quality monitoring. Drip tray at re-fuelling point. Immediately clean hydrocarbon spill. 	Low
Excavations	<ul style="list-style-type: none"> Nuisance dust Removal and disturbance of vegetation cover and natural habitat of fauna Hydrocarbon spills which could lead to groundwater and/or soil contamination 	Air quality Fauna Flora Groundwater Noise Soil Topography	Operational Decommissioning Closure	High	<ul style="list-style-type: none"> Access control Avoidance of unnecessary removal of vegetation Dust control and monitoring Groundwater quality 	Medium

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	<ul style="list-style-type: none"> Noise Disturbance of soil structure during bulk sampling activities Erosion Collection of rainwater in open excavations during and after thunderstorms Changing of natural slopes 	Safety			<ul style="list-style-type: none"> monitoring Noise control and monitoring Continuous rehabilitation Stormwater run-off control Immediately clean hydrocarbon spill Drip trays Rock stability control and monitoring Erosion control 	
Generator	<ul style="list-style-type: none"> Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination Surface water (non-perennial drainage line) contamination <p>Establishment of generators:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	Fauna Flora Groundwater Noise Soil Surface water	Construction Commissioning Operational Decommissioning Closure	High	<ul style="list-style-type: none"> Access control Maintenance of generator and bund walls Noise control and monitoring Oil traps Groundwater quality monitoring Immediately clean hydrocarbon spill 	Medium
Office – mobile container	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination 	Fauna Flora Groundwater Soil	Construction Commissioning Operational Decommissioning Closure	Low	<ul style="list-style-type: none"> Immediately clean hydrocarbon spill Avoidance of unnecessary removal of vegetation 	Very low

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	<p>Establishment of offices:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 					
Processing plant	<ul style="list-style-type: none"> • Groundwater usage • Nuisance dust • Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination • Surface water (non-perennial drainage line) contamination <p>Establishment of processing plant:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<p>Air quality Fauna Flora Groundwater Noise Soil Surface water Safety</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	High	<ul style="list-style-type: none"> • Access control • Maintenance of processing plant • Dust control and monitoring • Groundwater abstraction, quality and level monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	Medium
Roads	<ul style="list-style-type: none"> • Nuisance dust • Vehicle emissions • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Road kills • Erosion 	<p>Air quality Fauna Flora Groundwater Noise Soil Surface water</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> • Maintenance of roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits • Stormwater run-off 	Low

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	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination • Surface water (non-perennial drainage line) contamination 				<p>control.</p> <ul style="list-style-type: none"> • Erosion control • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	
Salvage yard	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<p>Fauna Flora Groundwater Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> • Access control • Maintenance of fence. • Groundwater quality monitoring • Stormwater run-off control • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 	Low
Security access control point – mobile container	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<p>Fauna Flora Groundwater Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> • Access control • Maintenance of boom gates and container. • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 	Low
Stockpile area	<ul style="list-style-type: none"> • Nuisance dust • Noise 	<p>Air quality Fauna</p>	<p>Commissioning Operational</p>	Medium	<ul style="list-style-type: none"> • Dust control and monitoring 	Low

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	<ul style="list-style-type: none"> Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of stockpile area:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Flora Groundwater Noise Soil Surface water</p>	<p>Decommissioning Closure</p>		<ul style="list-style-type: none"> Groundwater quality monitoring Noise control and monitoring Drip trays Stormwater run-off control. Immediately clean hydrocarbon spills Avoidance of unnecessary removal of vegetation 	
Storage facility – mobile containers	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Fauna Flora Groundwater Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Low	<ul style="list-style-type: none"> Immediately clean hydrocarbon spill Avoidance of unnecessary removal of vegetation 	Very low
Topsoil storage area	<ul style="list-style-type: none"> Nuisance dust Noise Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination 	<p>Air quality Fauna Flora Groundwater Noise Soil Surface water</p>	<p>Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> Dust control and monitoring Stormwater run-off control. Continuous rehabilitation Avoidance of unnecessary removal of vegetation Measures to protect 	Low

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	<p>Establishment of topsoil storage area:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 				<p>topsoil from being eroded or blown away</p> <ul style="list-style-type: none"> Backfilling of topsoil during rehabilitation 	
Washbay	<ul style="list-style-type: none"> Nuisance dust Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of washbay:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Air quality Fauna Flora Groundwater Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> Groundwater abstraction, quality and level monitoring Concrete floor with oil/water separator Stormwater run-off control Immediately clean hydrocarbon spills 	Low
Waste rock dumps	<ul style="list-style-type: none"> Nuisance dust Noise Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of waste rock dumps:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural 	<p>Air quality Fauna Flora Groundwater Noise Soil Surface water</p>	<p>Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> Dust control and monitoring Groundwater quality monitoring Noise control and monitoring Stormwater run-off control. Avoidance of unnecessary removal of vegetation 	Low

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	<ul style="list-style-type: none"> habitat of fauna Disturbance and/or compaction of soil structure 					
Water tank	<ul style="list-style-type: none"> Groundwater abstraction and usage <p>Establishment of water tank:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Fauna Flora Groundwater Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Low	<ul style="list-style-type: none"> Maintain water tanks and structures. Groundwater abstraction, levels and quality monitoring. 	Very Low
Weighbridge and weighbridge control room	<ul style="list-style-type: none"> Nuisance dust Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of weighbridge and weighbridge control room:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Air quality Fauna Flora Groundwater Noise Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> Access control Maintenance of weighbridge Dust control and monitoring Noise control and monitoring Groundwater quality monitoring Immediately clean hydrocarbon spill Stormwater run-off control. Avoidance of unnecessary removal of vegetation 	Low
Workshop	<ul style="list-style-type: none"> Nuisance dust Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination 	<p>Air quality Fauna Flora Groundwater Noise Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	Medium	<ul style="list-style-type: none"> Access control Concrete floor with oil/water separator Maintenance of mobile containers Noise control and 	Low

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	<ul style="list-style-type: none"> • Soil contamination <p>Establishment of workshop:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 						<ul style="list-style-type: none"> • monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	
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j) 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
HIA Appendix '8a'	<p>Professor Jesmael Mataga and Dr. Joseph Chikumbirike conducted a Desktop Heritage Impact Assessment. The Recommendations of this report is as follows:</p> <p><i>"The scatter of heavily weathered stone tools found on outcrops in the study area require no further action (Ubique Heritage Consultants, 2020). They are of Low significance, therefore, based on the desktop study presented in the assessment, the proposed prospecting right, including bulk sampling, for iron ore and manganese ore over Remaining Extent, Remaining Extent of Portion 1 and Portion 2 of the Farm Bulls Run 164 and the Remaining Extent of the Farm Hartfell 172, Hay District, Northern Cape</i></p>	X	Page 37 & 92

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<p>PIA Appendix '8b'</p>	<p><i>Province, is supported.</i></p> <p>Dr. Joseph Chikumbirike and Dr. Sifelani Jirah conducted a Desktop Palaeontological Impact Assessment. The Impact Statement and Recommendation of this report is as follows: <i>"It is expected that the proposed prospecting activities could impact on early Proterozoic sedimentary strata (c. 2.2 Ga) that are represented by siliciclastic rocks, volcanic lavas and ironstones which are not considered to be palaeontologically sensitive. Given the scope of the proposed activities, the likelihood of palaeontological impact on early Proterozoic carbonate rocks (e.g. Rooinekke Formation) is considered low, especially if prospecting by way of core drilling is considered. However, because of the thick sandy overburden (which is not considered to be palaeontologically significant in this case) and the lack of details regarding the position of the proposed prospecting and campsite localities, it is recommended that in the event of impact on fresh carbonate rocks that may result from trenching and pitting, new exposures should require brief monitoring by a palaeontologist. The superficial Aeolian (Kalahari Group) overburden within the vicinity of the study area is not considered to be palaeontologically significant."</i></p>	<p style="text-align: center;">X</p>	<p style="text-align: center;">Page 38 & 95</p>
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Attach copies of Specialist Reports as appendices.

k) Environmental impact statement

(i) Summary of the key findings of the environmental impact assessment;

- Ablution facilities (chemical toilets) may have a very low impact on groundwater and soil after mitigation.
- Blasting may have a medium impact on air quality, fauna, flora, noise, soil and topography after mitigation.
- Boreholes may have a low impact on air quality, fauna, flora, groundwater, noise, soil and visual.
- The diesel tanks may have a low impact on fauna, flora, groundwater, soil and surface water after mitigation.
- The excavations may have a medium impact on air quality, fauna, flora, groundwater, noise, soil, surface water and topography after mitigation.
- The generators may have a medium impact on air quality, fauna, flora, groundwater, noise, soil and surface water after mitigation.
- The office (mobile container) may have a very low impact on fauna, flora, groundwater and soil after mitigation.
- The processing plant may have a medium impact on air quality, fauna, flora, groundwater, noise, soil and surface water after mitigation.
- The roads may have a low impact on air quality, fauna, flora, groundwater, noise, soil and surface water after mitigation.
- The salvage yard may have a low impact on fauna, flora, groundwater and soil after mitigation.
- The security access point (mobile container) may have a low impact on air quality, fauna, flora, groundwater and soil after mitigation.
- The stockpile area may have a low impact on air quality, fauna, flora, groundwater, noise, soil and surface water after mitigation.
- The storage facility (mobile container) may have a very low impact on air quality, fauna, flora, groundwater and soil after mitigation.
- The topsoil storage site may have a low impact on air quality, fauna, flora, groundwater, noise, soil and surface water after mitigation.
- The washbay may have a low impact on air quality, fauna, flora, groundwater and soil after mitigation.
- The waste rock dumps may have a low impact on air quality, fauna, flora, groundwater, noise, soil, surface water and topography after mitigation.
- The water tank may have a very low impact on fauna, flora, groundwater and soil after mitigation.
- The weighbridge and weighbridge control room may have a low impact on air quality, fauna, flora, groundwater, noise and soil after mitigation.
- The weighbridge control room may have a very low impact on fauna, flora, groundwater, soil and surface water after mitigation.
- The workshop (mobile containers) may have a low impact on air quality, fauna, flora, groundwater, noise and soil.

(ii) 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.

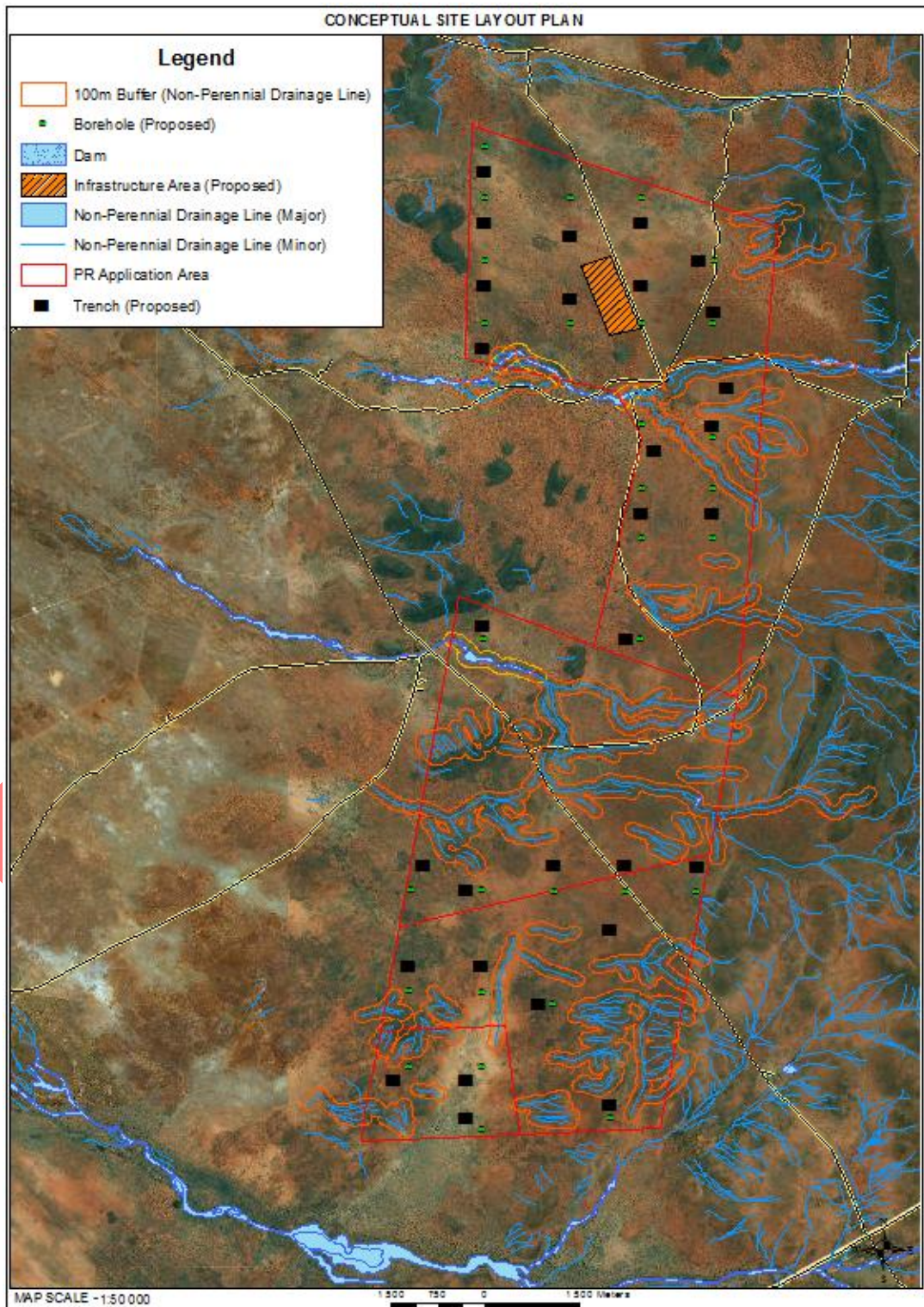


Figure 16 – Conceptual Site layout including buffer zones

(iii) Summary of the positive and negative implications and risks of the proposed activity and identified alternatives;

During the operational stages of the bulk sampling operation, there is a possibility of sterilisation of the mineral reserves and resources due to improper placement of infrastructure. The infrastructure and stockpiles/dumps will alter the topography by adding features to the landscape. Topsoil removal and excavations will unearth the natural topography. The construction of infrastructure and various facilities in the prospecting area can also result in loss of soil due to erosion. Vegetation will be stripped in preparation for placement of infrastructure and excavations, and therefore the areas will be bare and susceptible to erosion.

The topsoil that is stripped and piled on surrounding areas can be eroded by wind and rain. The soil will be carried away during runoff. The cleared areas will be rehabilitated, but full restoration of soils might only occur over a number of years, subsequent to the re-establishment of vegetation. Furthermore, improper stockpiling and soil compaction can result in soil sterilisation. Leaching can also occur, resulting in the loss of nutrients.

There is also a possibility that equipment might leak oil, thus causing surface spillages. The hydrocarbon soil contamination will render the soil useless unless they are decontaminated. The storage of fuels on site might have an impact on soil if the tanks that are available on site are not properly monitored and maintained to avoid leakages. Then there is the potential that contaminated soil can be carried through runoff to contaminate water resources and soil stockpiled for rehabilitation. Soil pollution is therefore possible, but through mitigation it can be minimised.

The loss of land capability and land use can occur in two ways. Firstly, through topsoil removal, disturbances and loss of soil fertility; and secondly through the improper placement of infrastructure. Most of the site has a land capability for grazing, but grazing activities can still be performed in areas not earmarked for the operation, and with proper rehabilitation the land capabilities and land use potential can be restored.

Groundwater could be directly affected if any deep excavations reach the primary aquifers. Furthermore, if any oil and fuel spillages occur during these scenarios and activities, then groundwater will be directly contaminated. Similarly, hazardous surface spillages will seep into the underlying aquifers and contaminate ground water. Improper handling of hazardous material will cause contamination of nearby surface water resources (dry water course and non-perennial drainage lines) during runoff episodes. Lack of storm control structures will lead to erosion of stockpiles during heavy rains and runoff will carry suspended solids into the downstream environment. This might cause high silt load and affect stream flow. If no, or inadequate ablation facilities are available then workers might feel the need to use the veld for this purpose, which can contaminate natural resources.

Any excavations within the dry water course or non-perennial drainage lines will impact on the surface water environment by altering their physical characteristics. These impacts include the alteration of flow patterns, ponding and an increase in the concentration of suspended solids and sedimentation. Furthermore, species eggs/seeds that usually remain dormant due to their adaptations to ephemerality,

will be lost when the top biological layer of the dry water course are removed during excavations.

Bulk sampling activities on site will reduce the natural habitat for ecological systems to continue their operation. It is not expected that the areas of high ecological function will rehabilitate following disturbance events. It is likely that the pristine vegetation and any protected species will be destroyed during the operation. While general clearing of the area and bulk sampling activities destroy natural vegetation, invasive plants can increase due to their opportunistic nature in disturbed areas. If invasive plants establish in disturbed areas, it may cause an impact beyond the boundaries of the prospecting site. These alien invasive species are thus a threat to surrounding natural vegetation and can result in the decrease of biodiversity and ecological value of the area. Therefore, if alien invasive species are not controlled and managed, their propagation into new areas could have a high impact on the surrounding natural vegetation in the long term. With proper mitigation, the impacts can be substantially reduced.

The transformation of natural habitats to bulk sampling and associated infrastructure will result in the loss of habitat affected individual species, and ecological processes. In turn this will result in the displacement of faunal species dependent upon such habitat. Increased noise and vibration due to operational activities will disturb and possibly displace birds and other wildlife. Fast moving vehicles take a heavy toll in the form of road kills of small mammals, birds, reptiles, amphibians and a large number of invertebrates. Associated infrastructure will result in the loss of connectivity and fragmentation of natural habitat. Fragmentation of habitat will lead to the loss of migration corridors, in turn resulting in degeneration of the affected populations genetic make-up. This results in a subsequent loss of genetic variability between meta-populations occurring within the study site. Pockets of fragmented natural habitats hinder the growth and development of populations.

During the operation the abovementioned activities have potential for dust generation. It is anticipated that the extent of dust emissions would vary substantially from day to day depending on the level of activity and the specific operations. The operation will typically have low to moderate levels of noise, along with man-influenced sounds such as traffic on the roads, activities on the farm and very occasional air traffic. The proposed operation will add a certain amount of noise to the existing noise in the area. However, levels of noise generated by prospecting activities especially with blasting can be substantial.

The impact of site generated trips on the traffic and infrastructure of the existing roads is expected to be moderate. Furthermore, if road safety is not administered it can have a high impact on the safety of fellow road users.

The activities on site have the potential to impact upon heritage resources. Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon these resources will be permanent and irreversible. Any movement of vehicles, equipment or personnel through areas containing these artefacts could result in the permanent destruction of the artefacts and loss of heritage resources.

The operation will create a number of new employment opportunities and uplift the local community. The magnitude of this impact will depend on the number of people that will be employed and the number of contractors sourced. An influx of

people into the area could possibly impact on safety and security of local farm residents. During the decommissioning and at closure of the site, staff will most likely be retrenched, resulting in people being unable to find new employment for a long period of time.

Economic slump of the local towns after site closure is not considered to be an associated potential impact, because there are numerous other mining operations in the region. However, income streams from wage bills as well as goods and services contracts (at all geographical levels) will come to an end, reducing the monetary income of individuals and operation-related businesses.

It is likely, however that there will be residual positive economic impacts that are not fully reversed with the closure of the site, and that the economy will not decline to its original level prior to the development of this project. This is because the operation will generate substantial income for the regional and local economy, both directly and indirectly, during its life.

I) 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.

- **Air quality:**

To limit the creation of nuisance dust the following management guidelines must be followed:

 - Avoidance of unnecessary removal of vegetation.
 - Routine spraying of unpaved site areas and roads utilized by the bulk sampling operation with water.
 - Speed limits of vehicles inside the prospecting right area must be strictly controlled to avoid excessive dust or the excessive deterioration of the roads to be used.
 - Continuous backfilling and rehabilitation of disturbed areas.
 - All cleared, disturbed or exposed areas must be re-vegetated as soon as practically possible to prevent the formation of additional sources of dust.
 - Drilling and blasting activities preferably to take place on wind-free days.
 - Monitoring of dust fall-out.

- **Archaeology:**
 - Adhering to any conditions set by SAHRA.
 - Buffer zones to be established and implemented.
 - The area with graves and burial grounds should be avoided at all cost. Should prospecting extend into the burial grounds localities, then there will be a need for mitigation.
 - Adhering to the recommendations and Chance Findings Procedure of the Heritage Impact Assessment:

“It has already been highlighted that sub-surface materials may still be lying hidden from surface surveys. Therefore, absence (during surface survey) is not evidence of absence all together. The following monitoring and reporting procedures must be followed in the event of a chance find, in order to ensure compliance with heritage laws and policies for best practice. This procedure applies to the developer’s permanent employees, its subsidiaries, contractors and subcontractors, and service providers. Accordingly, all construction crews must

be properly inducted to ensure they are fully aware of the procedures regarding chance finds.

- If during the drilling operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- The senior on-site Manager must then make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area before informing SAHRA/PHRA.
- If a human grave/burial is encountered, the remains must be left as undisturbed as possible before the local police and SAHRA or PHRA are informed. If the burial is deemed to be over 60 years old and no foul play is suspected, an emergency exhumation permit may be issued by SAHRA for an archaeologist to exhume the remains."

- Fauna:

To ensure a minimum of impact to animals the following management guidelines will be followed:

- Speed limits of vehicles inside the prospecting right area must be strictly controlled to avoid road kills.
- Avoidance of unnecessary removal of vegetation.
- Continuous backfilling and rehabilitation of open excavations (created by the bulk sampling activities).
- Operational areas must be low angled as a preventative measure to ensure an escape route for animals.
- No hunting (snares) must be allowed at the prospecting right area or in the surrounding area.
- Maintenance of firebreaks.

- Flora

- Avoidance of unnecessary removal of vegetation.
- No trees or shrubs must be felled or damaged for the purpose of obtaining firewood.
- Management must take responsibility to control declared invader or exotic species on the site. The following control methods must be used:
 - "The plants will be uprooted, felled or cut off and can be destroyed completely."
 - "The plants will be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."
- Valid permits from DAFF must be obtained before any protected plant species are removed or damaged.
- Continuous backfilling and rehabilitation of open excavations (created by bulk sampling activities) and spreading of previously stored topsoil over the rehabilitated areas.
- All rehabilitated areas, where applicable and possible, must be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to bulk sampling activities commenced, if the natural succession of vegetation is unacceptably slow.
- Fires may only be allowed in facilities or equipment specially constructed for this purpose. A firebreak must be cleared around the perimeter of the site.

- The end objective of the re-vegetation program must be to achieve a stable self-sustaining habitat unit.
- Groundwater
 - Vehicle- and equipment maintenance must only be allowed within the maintenance area. Only emergency breakdowns may be allowed in other areas.
 - The following procedure must be followed if a vehicle or piece of equipment would break down inside an excavation and outside of the maintenance area.
 - Drip pans must be placed at all points where diesel, oil or hydraulic fluid may drip and in so doing contaminate the soil.
 - All efforts must be made to move the broken down vehicle or piece of equipment to the maintenance area.
 - If the vehicle/piece of equipment cannot be moved, the broken part must firstly be drained of all fluid. The part must then be removed and taken to the maintenance area.
 - No repairs may be allowed outside the maintenance area except for emergencies.
 - Equipment used as part of the proposed operation must be adequately maintained so as to ensure that oil, diesel, grease or hydraulic fluid does not leak during operation.
 - Fuel and other petrochemicals must be stored in steel receptacles that comply with SANS 10089-1:2003 (SABS 089-1:2003) standards. An adequate bund wall, 150% of volume of the largest storage receptacle, must be provided for fuel and diesel areas to accommodate any spillage or overflow of these substances. The area inside the bund wall must be lined with an impervious lining to prevent infiltration of the fuel into the soil (and ultimately groundwater).
 - Proper sanitation facilities must be provided for employees. No person may pollute the workings with faeces or urine, misuse the facilities provided or inappropriately foul the surrounding environment with faeces or urine. Acceptable hygienic and aesthetic practices must be adhered to.
 - The workshops, washing bays and conservancy tanks should be constructed far away from significant aquifer systems.
 - Conservancy tanks must be adequately maintained.
 - Groundwater levels and water quality must be measured monthly.
 - A clean- and dirty water system must be developed and established.
 - Rainfall must be recorded.
 - Data must be analysed by a qualified hydrogeologist annually.
 - SOP for storage, handling and transport of different hazardous materials.
 - Place oil traps (drip trays) under stationary vehicles, only re-fuel at fuelling stations, construct structures to trap fuel spills at fuelling stations, immediately clean oil and fuel spills and dispose of contaminated material at licensed sites only.
 - Ensure good housekeeping rules.
- Noise
 - As a minimum, ambient noise levels emanating from the prospecting activities may not exceed 45dBA at the site boundary.
 - GEJ must comply with the Occupational Noise Regulations of the Occupational Health and Safety Act, Act 85 of 1993.
 - GEJ must comply with the measures for good practice with regard to management of noise related impacts during construction and operation.
 - The management objective must be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the plant area and that which may migrate outside the plant area.

- When the equivalent noise exposure, as defined in the South African Bureau of Standards Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABS 083 as amended, in any place or in any mine or works where persons may travel or work, exceeds 82 dB (A), the site manager will take the necessary steps to reduce the noise below this level.
- Hearing protection must be provided to all employees where attenuation cannot be implemented.
- A buffer zone of 1.5km must be placed around all residential areas, in which buffer zone no plant may be established.
- Working hours should, preferably, be kept between sunrise and sunset.
- If any complaints are received from the public or state department regarding noise levels the levels will be monitored at prescribed monitoring points.
- Blasting noise and vibrations must be monitored during each blast.

Mechanical equipment:

- All mechanical equipment must be in good working order and vehicles must adhere to the relevant noise requirements of the Road Traffic Act.
- All vehicles in operation must be equipped with a silencer on its exhaust system.
- Safety measures, which generate noise such as reverse gear alarms on large vehicles, must be appropriately calibrated / adjusted.

Screening / Migration control:

- Appropriate measures must specifically be installed and / or employed at the plant to act as screen and to reflect/reduce the noise.
- Appropriate non-metallic washers/insulation must be used with any joining of apparatus made from materials such as corrugated iron. Such apparatus must be maintained in a fixed position.

Palaeontology:

- Adhering to any conditions set by SAHRA.
- Adhering to the Impact Statement and Recommendations of the Palaeontological Impact Assessment.

Safety

- No employees may reside on the active prospecting site. Transport must be arranged for employees on a daily basis from Niekerkshoop/Grobler'shoop to the site.
- Access and haul roads must be maintained.
- Security access point to ensure monitoring of access to the site.

Soil

- Avoidance of unnecessary removal of vegetation.
- In all places of development the first 300mm of loose or weathered material found will be classified as a growth medium. The topsoil must be removed, where possible, from all areas where physical disturbance of the surface will occur.
- In all areas where the above growth medium will be impacted on, it must be removed and stockpiled on a dedicated area. The maximum height of stockpiles may not exceed 2 meters.
- The growth medium/topsoil must be used during the rehabilitation of any impacted areas, after sloping in order to re-establish the same land capability.
- If any soil is contaminated during the life of the prospecting operation, it must either be treated on site or be removed together with the contaminant and placed

- in acceptable containers to be removed with the industrial waste to a recognized facility or company.
 - Erosion control in the form of re-vegetation and contouring of slopes must be implemented on disturbed areas in and around the site.
 - Topsoil must be kept separate from overburden and may not be used for building or maintenance of access roads.
 - The stored topsoil must be adequately protected from being blown away or being eroded.
 - Compacted areas must be ripped to a depth of 300mm, where possible, during the continuous rehabilitation, decommissioning and closure phases of the operation in order to establish a growth medium for vegetation.
 - Vehicle movement must be confined to established roads for as far as practical in order to prevent the compaction of soils.
- Surface water
 - The disposal of oil, grease and related industrial waste must be transported to the stores area where it will be stored in steel containers supplied by an oil recycling contractor. All oil and grease must be removed on a regular basis from the operation by a registered approved contractor.
 - All refuse and waste from the different sections must be handled according to NEMA Guidelines. Recycling of waste is encouraged in all the consumer sections of the operation, where recyclable materials must be collected before dumping them in the domestic waste storage area.
 - All non-biodegradable (recyclable) refuse such as glass bottles, plastic bags and metal scrap must be stored in a container in the waste area and collected on a regular basis and disposed of at a recognized disposal facility.
 - Erosion and storm water control measures must be implemented.
 - An application for an Integrated Water Use License must be submitted at the Department of Water and Sanitation for all actions to be performed which requires authorization in terms of water uses.
 - Vehicle repairs must only take place within the maintenance area for vehicles. Repairs within open excavations must be limited to emergency break downs with drip trays.
 - Re-fuelling must only take place in the re-fuelling area. If this is found not be practical, drip trays must be used whenever re-fuelling takes place outside of this area.
 - During rehabilitation the applicant must endeavour to reconstruct flow patterns in such a way that surface water flow is in accordance with the natural drainage of the area as far as practically possible.
 - Buffer zones must be placed around all non-perennial drainage lines and dry water course in which no prospecting activities may take place.
- Topography
 - All open excavations must be backfilled and rehabilitated if and when possible and made safe so as to reflect as far as possible the pre-prospecting topography of the area.
 - All temporary features, e.g. plant, containers and stockpiling, must be removed and handled in the prescribed manner during rehabilitation.
- Visual
 - Lights must be fixed at an angle to ensure that it does not cause a disturbance to the surrounding environment at night.
 - Open excavations must be subject to progressive backfilling and rehabilitation and made safe (including the re-establishment of vegetation).

- Permanent structures or features that are part of the proposed prospecting operation must be kept neat and well presented.
- Waste material of any description must be removed from the prospecting area on a regular basis and be disposed of at a recognized landfill facility.

m) Final proposed alternatives.

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

The final locality of the infrastructure can only be determined after the first stages of the prospecting period (reconnaissance visit; desktop study; geological mapping and drilling) have been finalized.

The following features will be taken into account during the planning phase:

- Locality of any infrastructure (i.e. residential and associated buildings);
- Locality of the ore bodies;
- Topography of the area;
- Sensitive environmental features; and
- Discussions with the surface owners of the land.

n) Aspects for inclusion as conditions of Authorisation.

(Any aspects which have not formed part of the EMPr that must be made conditions of the Environmental Authorisation.)

The general conditions; including management of activity, monitoring, recording and reporting to the Department, commissioning of the activity, operation of the activity, site closure and decommissioning as well as non-compliances; as required in terms of the Environmental Impact Assessment Regulations promulgated in terms of NEMA (Act 107 of 1998) as well as objectives and requirements of relevant legislation, policies and guidelines must be included in the Authorisation.

o) Descriptions of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed.)

The abovementioned mitigation measures are tried and tested over many years in the iron ore and manganese ore mining industry. GEJ must monitor the potential impacts throughout the life of operation, and mitigate any deviations detected. This has been proven to be very effective in existing operations.

The EAP who compiled this document and the specialists who compiled the respective specialist reports have extensive knowledge in their field and it is hereby assumed that the above assumptions are adequate and that the information provided is in the region of 85% - 95% correct.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorized or not.

The surface disturbances and anticipated impacts associated with the proposed prospecting activities will, although negative, have a very small environmental impact in relation to the overall extent of the PR Area.

Five measures of economic impacts can be used to demonstrate the potential effect of the proposed prospecting operation on the local economy:

- Employment - The extent of employment can be measured as number of jobs or in terms of full time equivalents.
- Payroll income - The gross remuneration of employees in terms of salaries and wages.
- Capital Expenditure (CAPEX) - The total amount spent on the purchasing of fixed assets and total spent on construction.
- Operating expenditure and maintenance (OPEX) - The total amount spent locally by businesses on goods and services, excluding salaries and wages as well as rents or interest.
- Revenue - The total value of sales arising from business activity at the prospecting operation.

The abovementioned positive impacts will be lost if the proposed prospecting project is not developed.

It is recommended that the activity should be authorized for the above reasons.

ii) Conditions that must be included in the authorisation

(1) Specific conditions to be included into the compilation and approval of EMPr:

The general conditions; including management of activity, monitoring, recording and reporting to the Department, commissioning of the activity, operation of the activity, site closure and decommissioning as well as non-compliances; as required in terms of the Environmental Impact Assessment Regulations promulgated in terms of NEMA (Act 107 of 1998) as well as objectives and requirements of relevant legislation, policies and guidelines must be included in the Authorisation.

(2) Rehabilitation requirements:

The applicant must provide to the DMRE, before execution of the Prospecting Right, a financial rehabilitation guarantee to the amount as calculated in terms of the Financial Quantum Guideline and approved by the DMRE.

q) Period for which the Environmental Authorisation is required.

Three Years

r) 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.

GEJ's undertaking to meet the requirements of the Basic Assessment Report and Environmental Management Programme Report is attached at the end of the EMPr and is applicable to both documents.

s) Financial Provision

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

(i) Explain how the aforesaid amount was derived.

The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) ('MPRDA') requires a holder of a right to provide to the Department of Mineral Resources and Energy ('DMRE') sufficient financial provision for environmental rehabilitation and closure requirements of mining operations. Regulation 54 of the

MPRDA, 'Quantum of financial provision', as well as the 'Guideline document for evaluation of the quantum of closure-related financial provision provided by a mine' has been used to calculate the required financial provision for the Ringside Project.

Furthermore, the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires a Right Holder to make financial provision for rehabilitation and remediation; decommissioning and closure activities as well as remediation and management of latent or residual environmental impacts. The 'Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations' as published on 20 November 2015 under Government Notice R. 1147 of Government Gazette 39425 has also been used to guide the calculations in this report.

- **Section A.1, number 1.2:**

In terms of the guideline document 'the Master Rates in Section B will be updated on an annual basis, based on CPIX or similar approved method. The first of these updates will take place during 2005.'

The 2004 Master Rates were updated annually in terms of the published STATS SA CPI rates.

Table B2 – CPI headline year-on-year rates³

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
2005	3,0	2,6	3,0	3,4	3,3	2,8	3,4	3,9	4,4	4,0	3,4	3,6	3,4
2006	4,0	3,9	3,4	3,3	3,9	4,9	5,0	5,4	5,3	5,4	5,4	5,8	4,7
2007	6,0	5,7	6,1	7,0	6,9	7,0	7,0	6,7	7,2	7,9	8,4	9,0	7,1
2008	9,3	9,8	10,6	11,1	11,7	12,2	13,4	13,7	13,1	12,1	11,8	9,5	11,5
2009	8,1	8,6	8,5	8,4	8,0	6,9	6,7	6,4	6,1	5,9	5,8	6,3	7,1
2010	6,2	5,7	5,1	4,8	4,6	4,1	3,7	3,5	3,2	3,4	3,6	3,5	4,3
2011	3,7	3,7	4,1	4,2	4,6	5,0	5,3	5,3	5,7	6,0	6,1	6,1	5,0
2012	6,3	6,1	6,0	6,1	5,7	5,5	4,9	5,0	5,5	5,6	5,6	5,7	5,6
2013	5,4	5,9	5,9	5,9	5,6	5,5	6,3	6,4	6,0	5,5	5,3	5,4	5,7
2014	5,8	5,9	6,0	6,1	6,6	6,6	6,3	6,4	5,9	5,9	5,8	5,3	6,1
2015	4,4	3,9	4,0	4,5	4,6	4,7	5,0	4,6	4,6	4,7	4,8	5,2	4,6
2016	6,2	7,0	6,3	6,2	6,1	6,3	6,0	5,9	6,1	6,4	6,6	6,8	6,4
2017	6,6	6,3	6,1	5,3	5,4	5,1	4,6	4,8	5,1	4,8	4,6	4,7	5,3
2018	4,4	4,0	3,8	4,5	4,4	4,6	5,1	4,9	4,9	5,1	5,2	4,5	4,7
2019	4,0	4,1	4,5	4,4	4,5	4,5	4,0	4,3	4,1	3,7	3,6	4,0	4,1
2020	4,5	4,6	4,1	3,0	2,1	2,2	3,2	3,1	3,0	3,3	3,2	3,1	3,3
2021	3,2	2,9	3,2	4,4	5,2	4,9	4,6	4,9	5,0	5,0	5,5	5,9	4,5
2022	5,7	5,7	5,9	5,9	6,5	7,4	7,8						

³ Rates shown in Table B2 show the official inflation rates as published in the monthly CPI release.

- **Section B.1 – Process followed:**

- **Step 1: Determine primary mineral and saleable mineral by-products:**
 In terms of Table B.12 the mineral prospected for falls under base metals (iron ore and manganese ore) for a small mine with mine, mine waste, plant and plant waste.
- **Step 2A: Determine primary risk class:**
 The primary risk class is 'A' in terms of Table B.12.
- **Step 2B: Revise primary risk class (if applicable) based on saleable by-products:**
 Not applicable. There are no saleable by-products.
- **Step 3: Determine environmental sensitivity of mine area:**
 The criteria in terms of Table B.4 were used to determine the area sensitivity:

Sensitivity	Sensitivity criteria		
	Biophysical	Social	Economic
Low		X	
Medium			X
High	X		

The area sensitivity has been determined as 'High'.

Step 4: For Class A or B mining operations:

▪ **Step 4.1: Determine level of information available:**

The level of information available for the operation is classified as 'extensive' as the following information is available:

- A Basic Assessment Report / Environmental Management Programme Report that is in the process of being approved;
- Closure Plan (included in the BAR/EMPR); and
- Detailed breakdown of costs envisaged for rehabilitation and closure.

▪ **Step 4.2: Identify closure components:**

The bulk sampling will be open-cast.

All closure components in terms of Table B.5 for open-cast operations are applicable to the quantum calculation.

▪ **Step 4.3: Identify unit rates for closure components:**

Component	Risk Class	Sensitivity	Multiplication Factor	Unit	Master Rate 2004	Master Rate 2022
1	A	High	1.00	m ³	6.82	17.38
2(A)	A	High	1.00	m ²	95.00	242.05
2(B)	A	High	1.00	m ²	140.00	356.71
3	A	High	1.00	m ²	17.00	43.31
4(A)	A	High	1.00	m	165.00	420.41
4(B)	A	High	1.00	m	90.00	229.31
5	A	High	1.00	m ²	190.00	484.10
6	A	High	1.00	Ha	96,700.00	246,383.83
7	N/A	N/A	N/A	N/A	N/A	N/A
8(A)	A	High	1.00	Ha	66,400.00	164,086.02
8(B)	A	High	1.00	Ha	82,700.00	210,712.95
8(C)	A	High	1.00	Ha	240,200.00	612,010.29
9	A	High	1.00	Ha	55,600.00	141,664.33
10	A	High	1.00	Ha	52,600.00	134,020.57
11	A	High	1.00	Ha	52,600.00	134,020.57
12	A	High	1.00	-	60.00	152.88
13	A	High	1.00	-	20,000.00	50,958.39
14	A	High	1.00	-	7,000.00	17,835.44

▪ **Step 4.4: Identify and apply weighting factors:**

Weighting Factor 1 = 1.10

The nature of the terrain has been determined as Undulating: A mix of sloped and undulating areas within the mine area.

Weighting Factor 2 = 1.05

The proximity to urban area where goods and services are to be supplied has been determined as Peri-urban: Less than 150km from a developed urban area.

▪ **Step 4.5: Identify areas of disturbance:**

No	Description	Quantity
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines) - 20m x 30m footprint x 5m average height = 3 000m ³	<u>3 000m³</u>
2(A)	Demolition of steel buildings and structures - Diesel tank - Generator - Office - Weighbridge and Weighbridge Control Room - Workshop	200m ² 25m ² 18m ² 60m ² 18m ² <u>321m²</u>
2(B)	Demolition of reinforced concrete buildings and structures Not applicable – GEJ will not establish any reinforced concrete buildings or structures	<u>0m²</u>
3	Rehabilitation of access roads Provision is made for 500m x 10m wide roads	<u>5 000m²</u>
4(A)	Demolition and rehabilitation of electrified railway lines There are no electrified railway lines on the site.	<u>0m</u>
4(B)	Demolition and rehabilitation of non-electrified railway lines There are no non-electrified railway lines on the site.	<u>0m</u>
5	Demolition of housing and/or administration facilities - Washbay	<u>600m²</u>
6	Opencast rehabilitation including final voids and ramps Provision is made for 30 trenches during phase 4 of the prospecting operation 30 x 40mx21m = 2.52 Ha Only two excavations will be allowed to be open at any one time. 2 x 40mx21m = 0.16 Ha	<u>0.16Ha</u>
7	Sealing of shafts adits and inclines Not applicable	<u>0m³</u>
8(A)	Rehabilitation of overburden and spoils - Stockpile area (0.2 Ha) - Waste rock dumps (0.1 Ha)	<u>0.3Ha</u>
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) Not applicable	<u>0Ha</u>

8(C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) Not applicable	<u>0Ha</u>
9	Rehabilitation of subsided areas There are no subsided areas	<u>0Ha</u>
10	General surface rehabilitation: - Boreholes x 30 (10m x 10m surface disturbance each) = 0.3 Ha - Processing Plant (vegetation clearance around plant) = 0.21 Ha - Salvage yard = 0.1 Ha	<u>0.61Ha</u>
11	River diversions There are no rivers on the site	<u>0Ha</u>
12	Fencing No provision is made for fencing	<u>0m</u>
13	Water management - Water tank (9m ²)	<u>0Ha</u>
14	2 to 3 years maintenance and aftercare Provision is made for 2 hectares aftercare and maintenance.	<u>2Ha</u>
15 (A) & 15(B)	Specialist study Provision is made for the following specialist studies upon closure of the operation: - Water pollution potential study - Quantified Risk Assessment	<u>R50 000</u>

▪ **Step 4.6: Identify closure costs from specialists studies**

GEJ shall conduct a Water pollution potential study and Quantified Risk Assessment upon closure of its operation in accordance with Table B.9 of the Quantum Guideline.

▪ **Step 4.7: Calculate closure costs:**

CALCULATION OF THE QUANTUM

Applicant:

GEJ RESOURCES (PTY) LTD

Ref No:

NC 13159 PR

Date:

SEPTEMBER 2022

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	3 000.00	17.38	1	1.1	57 343.48
2 (A)	Demolition of steel buildings and structures	m2	321.00	242.05	1	1.1	85 468.69
2(B)	Demolition of reinforced concrete buildings and structures	m2	0.00	356.71	1	1.1	0.00
3	Rehabilitation of access roads	m2	5 000.00	43.31	1	1.1	238 230.48
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	420.41	1	1.1	0.00
4 (B)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	229.31	1	1.1	0.00
5	Demolition of housing and/or administration facilities	m2	600.00	484.10	1	1.1	319 509.12
6	Opencast rehabilitation including final voids and ramps	ha	0.160	246 383.83	1	1.1	43 363.55
7	Sealing of shafts adits and inclines	m3	0.00	129.94	1	1.1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	0.300	164 086.02	1	1.1	54 148.39
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	210 712.95	1	1.1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	612 010.29	1	1.1	0.00
9	Rehabilitation of subsided areas	ha	0.00	141 664.33	1	1.1	0.00
10	General surface rehabilitation	ha	0.61	134 020.57	1	1.1	89 927.80
11	River diversions	ha	0.00	134 020.57	1	1.1	0.00
12	Fencing	m	0.00	152.88	1	1.1	0.00
13	Water management	ha	0.00	50 958.39	1	1.1	0.00
14	2 to 3 years of maintenance and aftercare	ha	2.00	17 835.44	1	1.1	39 237.96
15 (A)	Specialist study	Sum	1.00	25 000.00	1	1.1	27 500.00
15 (B)	Specialist study	Sum	1.00	25 000.00	1	1.1	27 500.00
Total of 1 - 15 above							982 229.48

weighting factor 2
1.05

Subtotal 1	1 031 340.95
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1	Preliminary and General (6% of Sub Total 1)	58 933.77	58 933.77
2	Contingencies (10% of Sub Total 1)	98 222.95	98 222.95

Subtotal 2	1 188 497.67
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VAT (15%)	178 274.65
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Grand Total	1 366 772.32
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(ii) 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.)

GEJ has made provision in the Prospecting Work Programme for environmental rehabilitation. The calculation above indicates a 'worst-case scenario' whereby all surface disturbances will be open at any one time.

GEJ undertakes to, upon request of DMRE, provide a financial guarantee, as per the quantum calculations to the amount of R1 366 772.32 to cover the financial costs related to rehabilitation.

t) Deviations from the approved scoping report and plan of study:

i) Deviations from the methodology used in determining the significance of potential environmental impacts and risks

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

Not applicable – No deviations from the methodology proposed in the Scoping Report.

ii) Motivation for the deviation

Not applicable – No deviations from the methodology proposed in the Scoping Report.

u) Other information required by the competent Authority:

i) 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:-

(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 and confirm that the applicable mitigation is reflected in this document.)

- Impact on landowner:
Positive: Compensation of land lost to prospecting.
Negative: Loss of grazing land.
- Impact on other I&AP:
Five measures of economic impacts can be used to demonstrate the potential effect of the proposed prospecting operation on the local economy:
 - Employment - The extent of employment can be measured as number of jobs or in terms of full time equivalents.
 - Payroll income - The gross remuneration of employees in terms of salaries and wages.
 - Capital Expenditure (CAPEX) - The total amount spent on the purchasing of fixed assets and total spent on construction.
 - Operating expenditure and maintenance (OPEX) - The total amount spent locally by businesses on goods and services, excluding salaries and wages as well as rents or interest.
 - Revenue - The total value of sales arising from business activity at the prospecting operation.

The abovementioned positive impacts will be lost if the proposed prospecting project is not developed.

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

The Heritage Impact Assessment Report and Palaeontological Heritage Report should list a number of recommendations relating to any archaeological or palaeontological finds.

Should these recommendations be adhered to by GEJ, no impact on any national estate in terms of Section 3(2) of the National Heritage Resources Act is foreseen.

v) 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.)

No viable alternative sites were identified for the following reason:

A detailed Site Plan cannot be provided in this stage of the application process as the locality of the proposed boreholes and trenches is dependent on the results of the following:

- Reconnaissance visit;
- Desktop study; and
- Geological mapping

GEJ has considered the following:

- The Geological formation that supports the possibility that the minerals applied for could be found within the PR Area.
- The availability of farms within the area that is not already occupied by existing prospecting or mining rights.
- The availability of infrastructure, such as a road network, in the immediate surrounding area, which could be utilized to allow easy access to the site.

The final locality of the above infrastructure can only be determined after the first stages of the prospecting period (reconnaissance visit; desktop study; geological mapping and drilling) have been finalized.

The following features will be taken into account during the planning phase:

- Locality of any infrastructure (i.e. residential and associated buildings);
- Locality of the ore bodies;
- Topography of the area;
- Sensitive environmental features; and
- Discussions with the surface owners of the land.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

a) Details of the EAP

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

Refer to Part A, page 4 of this document for the details of EAP, Ms. T. Jooste.

b) 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 aspects of the activity have been included in Part A.

c) 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 on the preferred site, indicating any areas that should be avoided, including buffers.)

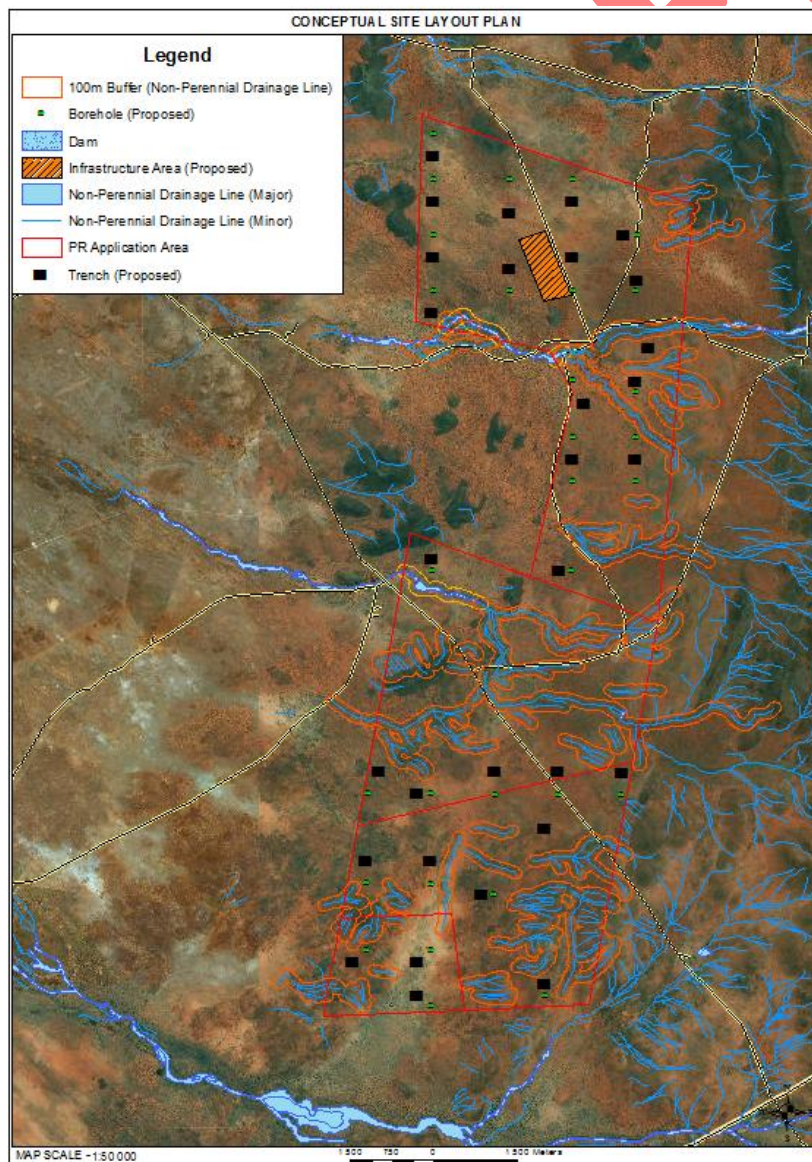


Figure 17 – Conceptual Site layout, including buffer zones

d) Description of Impact Management Objectives including management statements

(i) Determination of closure objectives

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

The main closure objectives of GEJ' planned prospecting operation are:

- To restore the site to its pre-prospecting land capability in a sustainable matter.
- To prevent the sterilization of any ore reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- To establish a stable and self sustainable vegetation cover.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability.
- To limit and manage the visual impact of the prospecting activities.
- To safeguard the safety and health of humans and animals on the site.
- To close the prospecting operation efficiently, cost effectively and in accordance with Government Policy.

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

Environmental management on the site must be conducted in terms of GEJ's Environmental Management System. This system must be used to develop and implement its environmental policy. The environmental policy must:

- be in line with the nature, scale and environmental impacts of the organizations activities;
- include a commitment to continual improvement and prevention of pollution;
- include a commitment to comply with applicable legal requirements or other codes of good practice;
- provide a framework for setting and reviewing environmental objectives and targets;
- be documented, implemented, maintained and reviewed at least annually;
- be available to the public;
- establish, maintain and implement procedures to identify the environmental aspects of future or planned new developments or modified activities;
- establish, maintain, and implement a procedure to identify and have access to applicable legal and other requirements to which the organization subscribes related to its environmental aspects;
- establish and maintain documented environmental objectives and targets; establish, maintain and implement a programme for achieving the objectives and targets by designating responsibilities and setting timeframes, and provide the necessary evidence that the said targets and objectives have been achieved;
- ensure the availability of resources;
- document and communicate defined roles, responsibilities and authorities;
- provide training and awareness;
- establish and maintain communication procedures;
- keep record of all EMS documentation;
- identify and plan those operations that are associated with the identified significant environmental aspects consistent with the environmental policy, objectives and targets;

- establish, implement and maintain a procedure for emergency preparedness and response;
- establish, implement and maintain a procedure for dealing with actual and potential nonconformities, taking corrective and preventative action;
- conduct internal audits at planned intervals; and
- review the EMS at planned intervals.

(iii) Potential risk of Acid Mine Drainage:

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

The prospecting activities of GEJ will not result in acid mine drainage.

(iv) Steps taken to investigate, assess, and evaluate the impact of acid mine drainage:

The mineral Pyrite, with a chemical composition of iron disulfide (FeS_2), is the most common sulphide mineral which causes acid mine drainage. It is highly unlikely that this occurs in the geological formation of the prospecting right area. However, should this mineral be found (in minimal quantities at most), the very low rainfall of the Niekerkshoop/Groblersshoop area will not be sufficient to cause the chemical reaction of the mineral which causes mine acid drainage.

(v) Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage:

Not applicable

(vi) Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage:

Not applicable

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

The only water use will be for domestic use calculated at 100 litres per day / employee.

(viii) Has a water use license been applied for?

The Acting Director-General of Water and Sanitation has, in terms of Section 39 of the National Water Act, published the revised General Authorisation (GNR 538 of 02 September 2016) pertaining to the taking and storing of water, water uses in terms of Section 21(a) and 21(b) of the National Water Act respectively. The General Authorisation came into effect on 1 March 2017 and replaced the General Authorisation for the taking and storing of water contained in GNR399 of 26 March 2004. In terms of clause 7.2 of the Schedule to the 2017 General Authorisations, registration of a water use is only required if more than 10m^3 of water is taken from a groundwater resource per day on average over a year on a property.

GEJ's water use shall not exceed 10 000 litres (10m^3) per day. Accordingly, GEJ is not required to apply for a water use license or register its water use after 3 March 2017 with the responsible authority by virtue of clause 7 of the 2017 General Authorisations.

(ix) Impacts to be mitigated in their respective phases

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

ACTIVITY (e.g. For prospecting – drill site, site camp, ablation facility, accommodation, equipment storage, sample storage, site office, access rout etc...etc...etc e.g. For mining - excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablation, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc...)	PHASE Of operation in which activity will take place State: Planning and design, pre-construction, construction, operational, rehabilitation, closure, post-closure	SIZE AND SCALE of disturbances Volumes, tonnages and hectares or m ²)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants.)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to rehabilitation specifically this must take place at the earliest opportunity. With regard to rehabilitation, therefore state either: - Upon cessation of the individual activity, or - Upon cessation of the mining, bulk sampling or alluvial diamond prospecting as the case may be.
Ablution Facilities (Chemical toilets)	Construction Commissioning Operational Decommissioning Closure	2m x 3m =6m ² each	<ul style="list-style-type: none"> • Maintenance of chemical toilets on regular basis by registered service provider. • Removal of chemical toilets upon closure. 	Upon cessation of the individual activity.
Blasting	Operational	Various	<ul style="list-style-type: none"> • Controlled blasting activities, preferably on wind-free days. • Dust control and monitoring. • Noise control and monitoring. • Access control. 	Upon cessation of the individual activity.
Boreholes	Operational	30 x 10 x 10 = 0.3 Ha	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation • Continuous rehabilitation • PVC lining under drill rig / lined sumps • Dust control and monitoring • Noise control and monitoring 	Upon cessation of the individual activity.

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			<ul style="list-style-type: none"> • Groundwater quality monitoring. 	
Diesel tanks	Construction Commissioning Operational Decommissioning Closure	10m x 20m = 200m ²	<ul style="list-style-type: none"> • Maintenance of diesel tanks and bund walls. • Oil traps. • Groundwater quality monitoring. • Drip tray at re-fuelling point. • Immediately clean hydrocarbon spill. 	Removal of diesel tanks upon closure of prospecting right.
Excavations	Operational Decommissioning Closure	2 x 40m x 21m = 0.16 Ha	<ul style="list-style-type: none"> • Access control • Avoidance of unnecessary removal of vegetation • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Continuous rehabilitation • Stormwater run-off control • Immediately clean hydrocarbon spill • Drip trays • Rock stability control and monitoring • Erosion control 	Upon cessation of the individual activity (continuous rehabilitation).
Generator	Construction Commissioning Operational Decommissioning Closure	5m x 5m = 25m ² each	<ul style="list-style-type: none"> • Access control • Maintenance of generator and bund walls • Noise control and monitoring • Oil traps • Groundwater quality monitoring • Immediately clean 	Removal of generator and generator building upon closure of prospecting right.

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Office – mobile container	Construction Commissioning Operational Decommissioning Closure	3m x 6m = 18m ² each	hydrocarbon spill <ul style="list-style-type: none"> • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 	Removal of container upon closure of prospecting right.
Processing plant	Construction Commissioning Operational Decommissioning Closure	100m x 50m = 0.5Ha	<ul style="list-style-type: none"> • Access control • Maintenance of processing plant • Dust control and monitoring • Groundwater abstraction, quality and level monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	Removal of processing plant and ripping of compacted area upon closure of prospecting right.
Roads	Construction Commissioning Operational Decommissioning Closure	500m x 10m wide = 0.5Ha	<ul style="list-style-type: none"> • Maintenance of roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion control • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	Ripping of roads upon closure.
Salvage yard	Construction Commissioning	20m x 50m = 0.1 Ha	<ul style="list-style-type: none"> • Access control • Maintenance of fence. 	Removal of fence of salvage yard and ripping of

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	Operational Decommissioning Closure		<ul style="list-style-type: none"> • Groundwater quality monitoring • Stormwater run-off control • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 	salvage yard upon closure of prospecting right.
Security access control point – mobile container	Construction Commissioning Operational Decommissioning Closure	3m x 6m = 18m ² each	<ul style="list-style-type: none"> • Access control • Maintenance of boom gates and container. • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 	Removal of container upon closure of prospecting right.
Stockpile area	Commissioning Operational Decommissioning Closure	20m x 100m = 0.2 Ha	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	Ripping of stockpile area upon closure of prospecting right.
Storage facility – mobile containers	Construction Commissioning Operational Decommissioning Closure	3m x 6m = 18m ² each	<ul style="list-style-type: none"> • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 	Removal of mobile container upon closure of prospecting right.

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Washbay	Construction Commissioning Operational Decommissioning Closure	20m x 30m = 600m ²	<ul style="list-style-type: none"> • Groundwater abstraction, quality and level monitoring • Concrete floor with oil/water separator • Stormwater run-off control • Immediately clean hydrocarbon spills 	Removal of washbay equipment, breaking and removal of rubble from the concrete floors and bund walls upon closure of prospecting right.
Waste rock dumps	Commissioning Operational Decommissioning Closure	20m x 50m = 0.1 Ha	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	Backfilling of waste rock into open excavations. Ripping of disturbed areas upon closure of prospecting right.
Water tank	Construction Commissioning Operational Decommissioning Closure	3m x 3m = 9m ² each	<ul style="list-style-type: none"> • Maintain water tanks and structures. • Groundwater abstraction, levels and quality monitoring. 	Removal of water tank upon closure of the prospecting right.
Weighbridge and weighbridge control room	Construction Commissioning Operational Decommissioning Closure	3m x 20m = 60m ²	<ul style="list-style-type: none"> • Access control • Maintenance of weighbridge • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	Removal of weighbridge and weighbridge control room upon closure of the prospecting right.
Workshop	Construction Commissioning Operational Decommissioning	3m x 6m = 18m ² each	<ul style="list-style-type: none"> • Access control • Concrete floor with oil/water separator 	Removal of container upon closure of the prospecting right.

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	Closure		<ul style="list-style-type: none"> • Maintenance of mobile containers • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	
<p>COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p> <p>Environmental Awareness Training must be provided to employees.</p> <p>The operation must have a rehabilitation and closure plan. Management and staff must be trained to understand the contents of these documents, and to adhere to thereto.</p> <p>Annual Performance Assessment Reports and Quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA & EMPR documents.</p>			

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e) Impact Management Outcomes

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

ACTIVITY (whether listed or not listed) (e.g. excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc...)	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc...)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (e.g. Construction, commissioning, operational, decommissioning, closure, post-closure)	MITIGATION TYPE modify, remedy, control or stop through: (e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc...) (e.g. modify through alternative method. Control through noise control. Control through management and monitoring through rehabilitation.)	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives etc.)
Ablution Facilities (Chemical toilets)	Chemical spills which could lead to: <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination 	Groundwater Soil	Construction Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> • Maintenance of chemical toilets on regular basis by registered service provider. • Removal of chemical toilets upon closure. 	<ul style="list-style-type: none"> • Minimize the potential for a chemical spill on soil, which could infiltrate to groundwater.
Blasting	<ul style="list-style-type: none"> • Nuisance dust • Fumes and noxious gases • Removal and disturbance of vegetation cover and natural habitat of fauna • Noise • Disturbance of soil structure • Changing topography • Fly-rock 	Air quality Fauna Flora Noise Soil Topography Safety	Operational	<ul style="list-style-type: none"> • Controlled blasting activities, preferably on wind-free days. • Dust control and monitoring. • Noise control and monitoring. • Access control. 	<ul style="list-style-type: none"> • Safety ensured. • Dust levels minimized. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Noise levels minimized. • Rehabilitation standards and closure

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					<p>objectives met.</p> <ul style="list-style-type: none"> Erosion potential minimized.
Boreholes	<ul style="list-style-type: none"> Nuisance dust Removal and disturbance of vegetation cover and natural habitat of fauna Possible hydrocarbon spills Noise Disturbance and/or compaction of soil structure during drilling activities The drill rig will be visible to some extent from the immediate surroundings 	<p>Air quality Fauna Flora Groundwater Noise Soil Visual</p>	Operational	<ul style="list-style-type: none"> Avoidance of unnecessary removal of vegetation Continuous rehabilitation PVC lining under drill rig / lined sumps Dust control and monitoring Noise control and monitoring Groundwater quality monitoring. 	<ul style="list-style-type: none"> Dust levels minimized. Minimize potential for hydrocarbon spills to infiltrate into groundwater. Noise levels minimized. Rehabilitation standards and closure objectives met. Erosion potential minimized.
Diesel tanks	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination Surface water (non-perennial drainage line) contamination <p>Establishment of diesel tanks:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Fauna Flora Groundwater Soil Surface water</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<ul style="list-style-type: none"> Maintenance of diesel tanks and bund walls. Oil traps. Groundwater quality monitoring. Drip tray at re-fuelling point. Immediately clean hydrocarbon spill. 	<ul style="list-style-type: none"> Minimize potential for hydrocarbon spills to infiltrate into groundwater. Rehabilitation standards and closure objectives met.
Excavations	<ul style="list-style-type: none"> Nuisance dust Removal and disturbance of vegetation cover and natural habitat of fauna 	<p>Air quality Fauna Flora Groundwater</p>	<p>Operational Decommissioning Closure</p>	<ul style="list-style-type: none"> Access control Avoidance of unnecessary removal of vegetation 	<ul style="list-style-type: none"> Safety ensured. Dust levels minimized. Minimize potential for hydrocarbon spills to

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	<ul style="list-style-type: none"> Hydrocarbon spills which could lead to groundwater and/or soil contamination Noise Disturbance of soil structure during bulk sampling activities Erosion Collection of rainwater in open excavations during and after thunderstorms Changing of natural slopes 	<p>Noise Soil Topography Safety</p>		<ul style="list-style-type: none"> Dust control and monitoring Groundwater quality monitoring Noise control and monitoring Continuous rehabilitation Stormwater run-off control Immediately clean hydrocarbon spill Drip trays Rock stability control and monitoring Erosion control 	<p>infiltrate into groundwater.</p> <ul style="list-style-type: none"> Noise levels minimized. Rehabilitation standards and closure objectives met. Erosion potential minimized.
Generator	<ul style="list-style-type: none"> Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination Surface water (non-perennial drainage line) contamination <p>Establishment of generators:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Fauna Flora Groundwater Noise Soil Surface water</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<ul style="list-style-type: none"> Access control Maintenance of generator and bund walls Noise control and monitoring Oil traps Groundwater quality monitoring Immediately clean hydrocarbon spill 	<ul style="list-style-type: none"> Safety ensured. Minimize potential for hydrocarbon spills to infiltrate into groundwater. Noise levels minimized. Rehabilitation standards and closure objectives met.
Office – mobile container	<p>Hydrocarbon spills which could lead to:</p>	<p>Fauna Flora</p>	<p>Construction Commissioning</p>	<ul style="list-style-type: none"> Immediately clean hydrocarbon spill 	<ul style="list-style-type: none"> Minimize potential for hydrocarbon spills to

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	<ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of offices:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	Groundwater Soil	Operational Decommissioning Closure	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation 	<p>infiltrate into groundwater.</p> <ul style="list-style-type: none"> • Rehabilitation standards and closure objectives met.
Processing plant	<ul style="list-style-type: none"> • Groundwater usage • Nuisance dust • Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination • Surface water (non-perennial drainage line) contamination <p>Establishment of processing plant:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	Air quality Fauna Flora Groundwater Noise Soil Surface water Safety	Construction Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> • Access control • Maintenance of processing plant • Dust control and monitoring • Groundwater abstraction, quality and level monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	<ul style="list-style-type: none"> • Safety ensured. • Dust levels minimized. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Noise levels minimized. • Rehabilitation standards and closure objectives met. • Erosion potential minimized.
Roads	<ul style="list-style-type: none"> • Nuisance dust • Vehicle emissions • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna 	Air quality Fauna Flora Groundwater Noise Soil	Construction Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> • Maintenance of roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and 	<ul style="list-style-type: none"> • Dust levels minimized. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Noise levels

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	<ul style="list-style-type: none"> • Road kills • Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination • Surface water (non-perennial drainage line) contamination 	Surface water		<ul style="list-style-type: none"> • monitoring • Speed limits • Stormwater run-off control. • Erosion control • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	<p>minimized.</p> <ul style="list-style-type: none"> • Rehabilitation standards and closure objectives met. • Erosion potential minimized.
Salvage yard	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	Fauna Flora Groundwater Soil	Construction Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> • Access control • Maintenance of fence. • Groundwater quality monitoring • Stormwater run-off control • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 	<ul style="list-style-type: none"> • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Rehabilitation standards and closure objectives met. • Erosion potential minimized.
Security access control point – mobile container	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	Fauna Flora Groundwater Soil	Construction Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> • Access control • Maintenance of boom gates and container. • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Avoidance of 	<ul style="list-style-type: none"> • Safety ensured. • Dust levels minimized. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Noise levels minimized. • Rehabilitation standards and closure objectives met. • Erosion potential

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				unnecessary removal of vegetation	minimized.
Stockpile area	<ul style="list-style-type: none"> Nuisance dust Noise Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of stockpile area:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	Air quality Fauna Flora Groundwater Noise Soil Surface water	Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> Dust control and monitoring Groundwater quality monitoring Noise control and monitoring Drip trays Stormwater run-off control. Immediately clean hydrocarbon spills Avoidance of unnecessary removal of vegetation 	<ul style="list-style-type: none"> Dust levels minimized. Minimize potential for hydrocarbon spills to infiltrate into groundwater. Noise levels minimized. Rehabilitation standards and closure objectives met. Erosion potential minimized.
Storage facility – mobile containers	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	Fauna Flora Groundwater Soil	Construction Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> Immediately clean hydrocarbon spill Avoidance of unnecessary removal of vegetation 	<ul style="list-style-type: none"> Minimize potential for hydrocarbon spills to infiltrate into groundwater. Rehabilitation standards and closure objectives met.
Topsoil storage area	<ul style="list-style-type: none"> Nuisance dust Noise Erosion <p>Hydrocarbon spills which could lead to:</p>	Air quality Fauna Flora Groundwater Noise Soil	Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> Dust control and monitoring Stormwater run-off control. Continuous rehabilitation 	<ul style="list-style-type: none"> Dust levels minimized. Minimize potential for hydrocarbon spills to infiltrate into groundwater. Rehabilitation

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	<ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of topsoil storage area:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	Surface water		<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation • Measures to protect topsoil from being eroded or blown away • Backfilling of topsoil during rehabilitation 	<p>standards and closure objectives met.</p> <ul style="list-style-type: none"> • Erosion potential minimized.
Washbay	<ul style="list-style-type: none"> • Nuisance dust • Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of washbay:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	Air quality Fauna Flora Groundwater Soil	Construction Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> • Groundwater abstraction, quality and level monitoring • Concrete floor with oil/water separator • Stormwater run-off control • Immediately clean hydrocarbon spills 	<ul style="list-style-type: none"> • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Rehabilitation standards and closure objectives met. • Erosion potential minimized.
Waste rock dumps	<ul style="list-style-type: none"> • Nuisance dust • Noise • Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination 	Air quality Fauna Flora Groundwater Noise Soil Surface water	Commissioning Operational Decommissioning Closure	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Stormwater run-off control. • Avoidance of 	<ul style="list-style-type: none"> • Dust levels minimized. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Noise levels minimized. • Rehabilitation standards and closure

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	<p>Establishment of waste rock dumps:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 			unnecessary removal of vegetation	<p>objectives met.</p> <ul style="list-style-type: none"> Erosion potential minimized.
Water tank	<ul style="list-style-type: none"> Groundwater abstraction and usage <p>Establishment of water tank:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Fauna Flora Groundwater Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<ul style="list-style-type: none"> Maintain water tanks and structures. Groundwater abstraction, levels and quality monitoring. 	<ul style="list-style-type: none"> Safety ensured. Rehabilitation standards and closure objectives met.
Weighbridge and weighbridge control room	<ul style="list-style-type: none"> Nuisance dust Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of weighbridge and weighbridge control room:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<p>Air quality Fauna Flora Groundwater Noise Soil</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<ul style="list-style-type: none"> Access control Maintenance of weighbridge Dust control and monitoring Noise control and monitoring Groundwater quality monitoring Immediately clean hydrocarbon spill Stormwater run-off control. Avoidance of unnecessary removal of vegetation 	<ul style="list-style-type: none"> Safety ensured. Dust levels minimized. Minimize potential for hydrocarbon spills to infiltrate into groundwater. Noise levels minimized. Rehabilitation standards and closure objectives met. Erosion potential minimized.
Workshop	<ul style="list-style-type: none"> Nuisance dust Noise 	<p>Air quality Fauna</p>	<p>Construction Commissioning</p>	<ul style="list-style-type: none"> Access control Concrete floor with 	<ul style="list-style-type: none"> Safety ensured. Dust levels minimized.

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	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of workshop:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<p>Flora Groundwater Noise Soil</p>	<p>Operational Decommissioning Closure</p>	<p>oil/water separator</p> <ul style="list-style-type: none"> • Maintenance of mobile containers • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	<ul style="list-style-type: none"> • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Noise levels minimized. • Rehabilitation standards and closure objectives met. • Erosion potential minimized.
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f) Impact Management Actions

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

<p>ACTIVITY (whether listed or not listed) (e.g. excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc...)</p>	<p>POTENTIAL IMPACT (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc...)</p>	<p>MITIGATION TYPE (modify, remedy, control, or stop through e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)</p>	<p>TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to rehabilitation specifically this must take place at the earliest opportunity. With regard to rehabilitation, therefore state either: - Upon cessation of the individual activity, or - Upon cessation of the mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p>COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed management standards or practices that have been identified by Competent Authorities.)</p>
<p>Ablution Facilities (Chemical toilets)</p>	<p>Chemical spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination 	<ul style="list-style-type: none"> • Maintenance of chemical toilets on regular basis by registered service provider. 	<p>Upon cessation of the individual activity.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation;

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	<ul style="list-style-type: none"> • Soil contamination 	<ul style="list-style-type: none"> • Removal of chemical toilets upon closure. 		<ul style="list-style-type: none"> ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Blasting	<ul style="list-style-type: none"> • Nuisance dust • Fumes and noxious gases • Removal and disturbance of vegetation cover and natural habitat of fauna • Noise • Disturbance of soil structure • Changing topography • Fly-rock 	<ul style="list-style-type: none"> • Controlled blasting activities, preferably on wind-free days. • Dust control and monitoring. • Noise control and monitoring. • Access control. 	Upon cessation of the individual activity.	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Boreholes	<ul style="list-style-type: none"> • Nuisance dust • Removal and disturbance of vegetation cover and natural habitat of fauna • Possible hydrocarbon spills • Noise • Disturbance and/or compaction of soil 	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation • Continuous rehabilitation • PVC lining under drill rig / lined sumps • Dust control and monitoring • Noise control and monitoring 	Upon cessation of the individual activity.	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to</p>

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	<p>structure during drilling activities</p> <ul style="list-style-type: none"> The drill rig will be visible to some extent from the immediate surroundings 	<ul style="list-style-type: none"> Groundwater quality monitoring. 		<p>understand the contents of these documents, and to adhere thereto.</p>
Diesel tanks	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination Surface water (non-perennial drainage line) contamination <p>Establishment of diesel tanks:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> Maintenance of diesel tanks and bund walls. Oil traps. Groundwater quality monitoring. Drip tray at re-fuelling point. Immediately clean hydrocarbon spill. 	<p>Removal of diesel tanks upon closure of prospecting right.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> Relevant Legislation; Acts; Regulations; COP's; and SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Excavations	<ul style="list-style-type: none"> Nuisance dust Removal and disturbance of vegetation cover and natural habitat of fauna Hydrocarbon spills which could lead to groundwater and/or soil contamination Noise 	<ul style="list-style-type: none"> Access control Avoidance of unnecessary removal of vegetation Dust control and monitoring Groundwater quality monitoring Noise control and monitoring 	<p>Upon cessation of the individual activity (continuous rehabilitation).</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> Relevant Legislation; Acts; Regulations; COP's; and SOP's <p>Management and staff</p>

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	<ul style="list-style-type: none"> Disturbance of soil structure during bulk sampling activities Erosion Collection of rainwater in open excavations during and after thunderstorms Changing of natural slopes 	<ul style="list-style-type: none"> Continuous rehabilitation Stormwater run-off control Immediately clean hydrocarbon spill Drip trays Rock stability control and monitoring Erosion control 		<p>must be trained to understand the contents of these documents, and to adhere thereto.</p>
Generator	<ul style="list-style-type: none"> Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination Surface water (non-perennial drainage line) contamination <p>Establishment of generators:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> Access control Maintenance of generator and bund walls Noise control and monitoring Oil traps Groundwater quality monitoring Immediately clean hydrocarbon spill 	Removal of generator and generator building upon closure of prospecting right.	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> Relevant Legislation; Acts; Regulations; COP's; and SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Office – mobile container	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination 	<ul style="list-style-type: none"> Immediately clean hydrocarbon spill Avoidance of unnecessary removal of 	Removal of container upon closure of prospecting right.	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> Relevant Legislation;

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	<ul style="list-style-type: none"> • Soil contamination <p>Establishment of offices:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	vegetation		<ul style="list-style-type: none"> ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Processing plant	<ul style="list-style-type: none"> • Groundwater usage • Nuisance dust • Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination • Surface water (non-perennial drainage line) contamination <p>Establishment of processing plant:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Access control • Maintenance of processing plant • Dust control and monitoring • Groundwater abstraction, quality and level monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	Removal of processing plant and ripping of compacted area upon closure of prospecting right.	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Roads	<ul style="list-style-type: none"> • Nuisance dust • Vehicle emissions 	<ul style="list-style-type: none"> • Maintenance of roads • Dust control and 	Ripping of roads upon closure.	The following must be placed at the site and is

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	<ul style="list-style-type: none"> Noise Removal and disturbance of vegetation cover and natural habitat of fauna Road kills Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination Surface water (non-perennial drainage line) contamination 	<ul style="list-style-type: none"> monitoring Groundwater quality monitoring Noise control and monitoring Speed limits Stormwater run-off control. Erosion control Immediately clean hydrocarbon spills Avoidance of unnecessary removal of vegetation 		<p>applicable to all activities:</p> <ul style="list-style-type: none"> Relevant Legislation; Acts; Regulations; COP's; and SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Salvage yard	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater contamination Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> Access control Maintenance of fence. Groundwater quality monitoring Stormwater run-off control Immediately clean hydrocarbon spill Avoidance of unnecessary removal of vegetation 	Removal of fence of salvage yard and ripping of salvage yard upon closure of prospecting right.	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> Relevant Legislation; Acts; Regulations; COP's; and SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Security access control point – mobile container	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> Groundwater 	<ul style="list-style-type: none"> Access control Maintenance of boom gates and container. 	Removal of container upon closure of prospecting right.	<p>The following must be placed at the site and is applicable to all activities:</p>

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	<p>contamination</p> <ul style="list-style-type: none"> • Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Avoidance of unnecessary removal of vegetation 		<ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Stockpile area	<ul style="list-style-type: none"> • Nuisance dust • Noise • Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of stockpile area:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Avoidance of unnecessary removal of vegetation 	Ripping of stockpile area upon closure of prospecting right.	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Storage facility – mobile containers	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater 	<ul style="list-style-type: none"> • Immediately clean hydrocarbon spill • Avoidance of 	Removal of mobile container upon closure of prospecting right.	<p>The following must be placed at the site and is applicable to all activities:</p>

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	<ul style="list-style-type: none"> contamination • Soil contamination <p>Establishment of salvage yard:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<p>unnecessary removal of vegetation</p>		<ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Topsoil storage area	<ul style="list-style-type: none"> • Nuisance dust • Noise • Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of topsoil storage area:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Dust control and monitoring • Stormwater run-off control. • Continuous rehabilitation • Avoidance of unnecessary removal of vegetation • Measures to protect topsoil from being eroded or blown away • Backfilling of topsoil during rehabilitation 	<p>Upon cessation of the individual activity (continuous rehabilitation).</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
Washbay	<ul style="list-style-type: none"> • Nuisance dust • Noise 	<ul style="list-style-type: none"> • Groundwater abstraction, quality and level 	<p>Removal of washbay equipment, breaking and removal of rubble</p>	<p>The following must be placed at the site and is</p>

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	<p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of washbay:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<p>monitoring</p> <ul style="list-style-type: none"> • Concrete floor with oil/water separator • Stormwater run-off control • Immediately clean hydrocarbon spills 	<p>from the concrete floors and bund walls upon closure of prospecting right.</p>	<p>applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
<p>Waste rock dumps</p>	<ul style="list-style-type: none"> • Nuisance dust • Noise • Erosion <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of waste rock dumps:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	<p>Backfilling of waste rock into open excavations. Ripping of disturbed areas upon closure of prospecting right.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>

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<p>Water tank</p>	<ul style="list-style-type: none"> • Groundwater abstraction and usage <p>Establishment of water tank:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Maintain water tanks and structures. • Groundwater abstraction, levels and quality monitoring. 	<p>Removal of water tank upon closure of the prospecting right.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
<p>Weighbridge and weighbridge control room</p>	<ul style="list-style-type: none"> • Nuisance dust • Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of weighbridge and weighbridge control room:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Access control • Maintenance of weighbridge • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	<p>Removal of weighbridge and weighbridge control room upon closure of the prospecting right.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
<p>Workshop</p>	<ul style="list-style-type: none"> • Nuisance dust 	<ul style="list-style-type: none"> • Access control 	<p>Removal of container upon</p>	<p>The following must be</p>

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	<ul style="list-style-type: none"> • Noise <p>Hydrocarbon spills which could lead to:</p> <ul style="list-style-type: none"> • Groundwater contamination • Soil contamination <p>Establishment of workshop:</p> <ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Disturbance and/or compaction of soil structure 	<ul style="list-style-type: none"> • Concrete floor with oil/water separator • Maintenance of mobile containers • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Stormwater run-off control. • Avoidance of unnecessary removal of vegetation 	<p>closure of the prospecting right.</p>	<p>placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's <p>Management and staff must be trained to understand the contents of these documents, and to adhere thereto.</p>
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Draft

g) Financial Provision

(1) Determination of the amount of Financial Provision.

- a. Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation 22(2)(d) as described in 2.4 herein.**

The main closure objectives of GEJ' planned prospecting operation are:

- To restore the site to its pre-prospecting land capability in a sustainable matter.
- To prevent the sterilization of any ore reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- To establish a stable and self sustainable vegetation cover.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability.
- To limit and manage the visual impact of the prospecting activities.
- To safeguard the safety and health of humans and animals on the site.
- To close the prospecting operation efficiently, cost effectively and in accordance with Government Policy.

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

A meeting was held on the 24th of October 2022 with the surface owners. The attendees of this meeting were provided with a copy of the draft BAR/EMPr document. The closure objectives of GEJ, as contained in the BAR/EMPR, were discussed during this meeting.

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

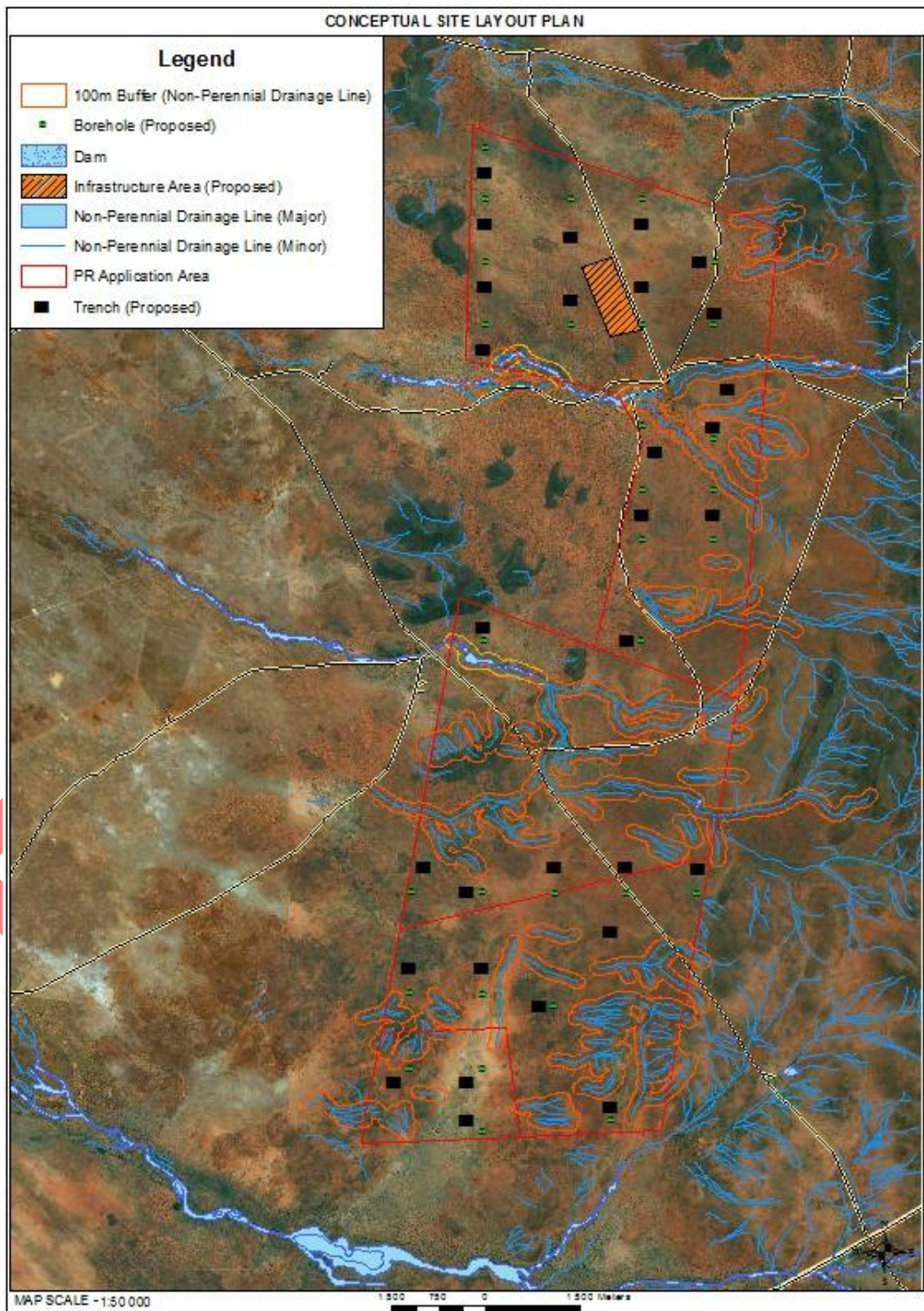


Figure 18 – Site layout map indicating proposed prospecting activities

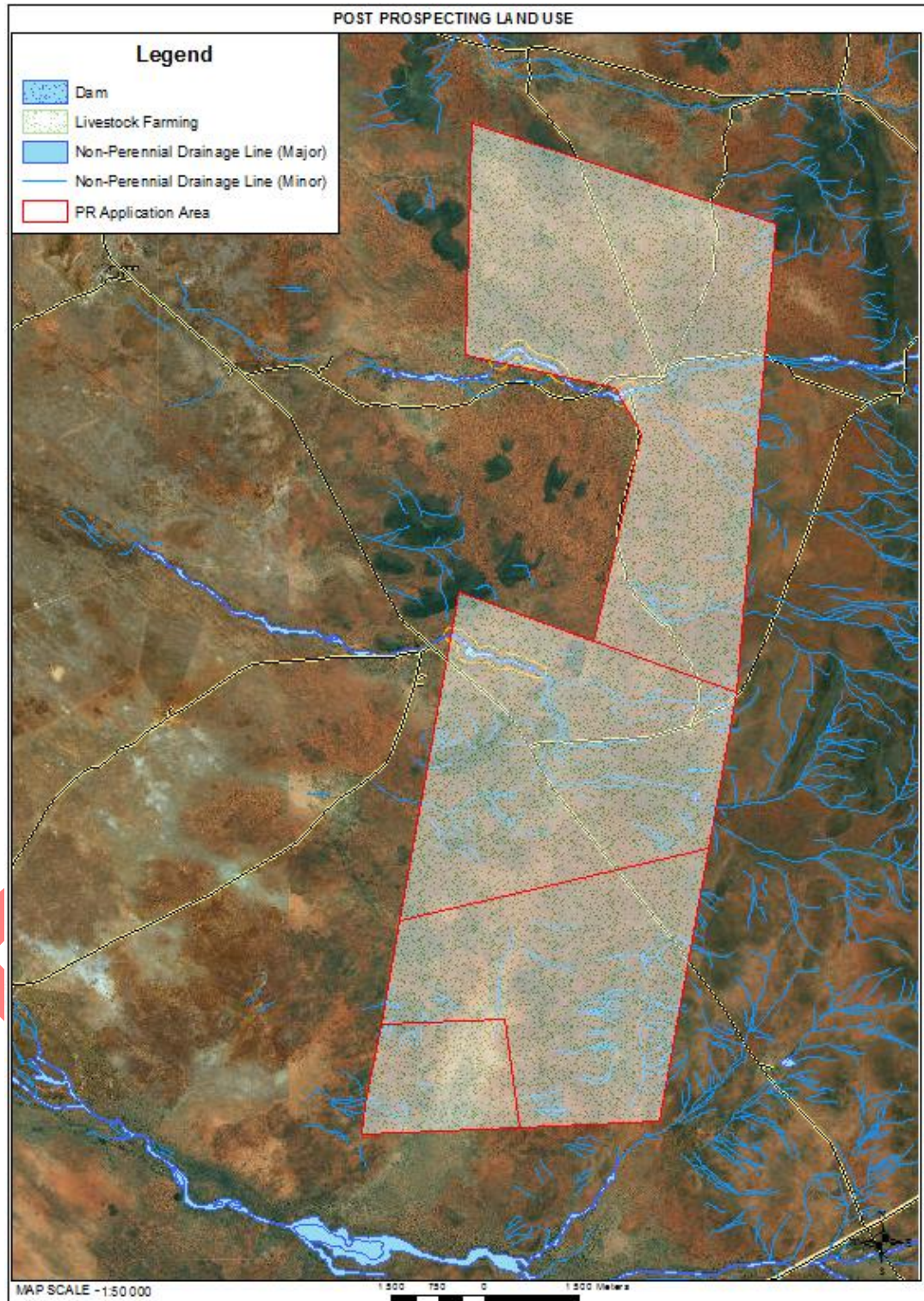


Figure 19 – Post prospecting land use map

Rehabilitation Plan:

This rehabilitation strategy has been developed to ensure that the post-prospecting land use supports agricultural / livestock farming activities.

GEJ's closure objectives are:

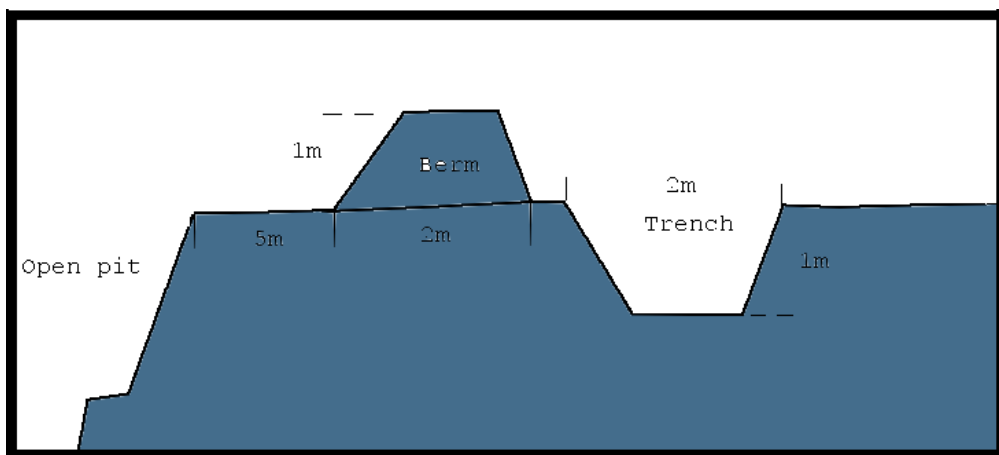
- The main closure objective is to restore the site to its pre-prospecting land capability in a sustainable matter.
- To prevent the sterilization of any ore reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- To establish a stable and self sustainable vegetation cover.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability of the site.
- To limit and manage the visual impact of the operation.
- To safeguard the safety and health of humans and animals on the site.
- That the operation is closed efficiently, cost effectively and in accordance with government policy.

The proposed site has been divided into a range of different categories as each category will require a different rehabilitation methodology to achieve the intended post-prospecting land use. The categories are:

- Excavation (bulk sampling) areas
- Fencing
- General
- Infrastructure
- Residue deposits
- Processing plant
- Roads
- Water
- Excavation areas:
Continuous rehabilitation must be enforced to limit open excavations at any one time on the site.

Upon closure all available material, which includes fines stockpiles, on-grade stockpiles, sub-grade stockpiles and waste rock dumps must be used during backfilling to limit the existence of dangerous excavations. The backfilled excavation must be levelled and contoured to represent the pre-prospecting topography where after previously stored growth medium (topsoil) must be spread evenly over the area in order to re-establish vegetation growth.

If during closure it is determined that there is not sufficient material for backfilling to limit the existence of dangerous excavations a single 2m wide x 1m deep trench and 1m high berm must be constructed around the perimeter of these excavations to prevent easy access to open excavations. These excavations must also have an access ramp in order to provide an escape route for animals.



- **Fencing:**
All fencing erected during the operational phase of the prospecting operation must be dismantled and removed from site by either selling it to a scrap metal dealer or disposing thereof at the Municipal landfill area.
- **General:**
Areas where the vegetation- and soil structure has been disturbed by prospecting activities, but where no infrastructure has been established, must be rehabilitated by levelling of all safety berms. All compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.
- **Infrastructure:**
Upon closure, all buildings, structures or objects on the site must be dealt with in accordance with Regulation 44 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002), which states:

“Regulation 44:

 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 comes to an end, the holder of such right or permit may not demolish or remove any building, structure or object-*
 - (a) *which may not be demolished or removed 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.”*
- **Temporary infrastructure:**
All temporary infrastructure must be removed from the site. These may include:
 - Mobile containers utilized as offices, security access point, storage facilities and workshops.
 - Chemical toilets.

All compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

- Permanent infrastructure:
Upon closure all permanent buildings / structures must be removed from the site. These may include:
 - Buildings:
Content of all brick buildings must be removed from the site where after the buildings must be demolished and the rubble removed from the site either by re-selling of material or by disposal thereof at the Municipal landfill area. Any compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

Should the surface owner request that some of the buildings remain; the surface owner must provide both GEJ and DMRE with such a request in writing.
 - Concrete structures:
All concrete structures must be demolished and the rubble removed from the site either by re-selling of material or by disposal thereof at the Municipal landfill area. Any compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.
 - Diesel tanks:
The diesel tanks must be emptied and removed from the site. The bund wall and concrete floor must be demolished, the rubble removed from the site and disposed of at the Municipal landfill area. The soil surrounding the storage facility must be removed to ensure that no contamination can take place after closure. Any compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.
 - Salvage yard:
Upon closure of the operation the steel and metal must be removed from the site by either selling it to a scrap metal dealer or disposing thereof at the Municipal landfill area. Any other material must be removed from the site and dumped at the Municipal landfill area. The fence surrounding the salvage yard must be dismantled and removed from the site. Any compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.
 - Steel structures:
All steel or metal structures must be dismantled and removed from the site by either selling it to a scrap metal dealer or disposing thereof at the Municipal landfill area.
 - Weighbridge:
The weighbridge must be removed from the site. The concrete structures of the weighbridge must be demolished; the rubble removed from the site and disposed of at the Municipal landfill area. Any compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

- Residue deposits:
Upon closure all available material, which includes fines stockpiles, on-grade stockpiles, sub-grade stockpiles and waste rock dumps must be used during backfilling to limit the existence of dangerous excavations.

The disturbed areas must be levelled and contoured to represent the pre-prospecting topography where after all compacted areas must then be ripped to a depth of 300mm and previously stored growth medium (topsoil) must be spread evenly over the area in order to re-establish vegetation growth.

- Processing plant:
The processing plants, including conveyor belts, metal- and other relating structures, must be dismantled and removed from the site either by selling it to a scrap metal dealer or disposing thereof at the Municipal landfill area. Any compacted areas must then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

- Roads:
All haul roads utilized by the prospecting operation must be ripped upon closure. Should the surface owner request that some of the roads remain; the surface owner must provide both GEJ and DMRE with such a request in writing.

- Waste:
All domestic and industrial waste must be removed from the site and disposed of at the Municipal landfill area.

Any hazardous waste must be removed by a suitably qualified company and disposed of in the prescribed manner.

- Water:
 - Boreholes:
Any boreholes utilized by the operation shall remain after closure for use by the surface owner.
 - JoJo tanks:
The JoJo tanks must be emptied and removed from the site. All steel or metal structures must be dismantled and removed from the site by either selling it to a scrap metal dealer or disposing thereof at the Municipal landfill area.

- Maintenance (Aftercare)
Maintenance after closure will mainly concern the regular inspection and monitoring and/or completion of the re-vegetation programme.

The aim of this document is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.

The aim with the closure of the prospecting operation must be to create an acceptable post-prospecting environment and land-use. Therefore all agreed commitments must be implemented by Management.

- After-effects following closure
 - Acid drainage
No potential for bad quality leachate or acid drainage development exists.
 - Long term impact on ground water and / or surface water.
No after effect on the groundwater yield or quality or surface water quality is expected.
 - Long-term stability of rehabilitated land
One of the main aims of any rehabilitated ground must be to obtain a self-sustaining and stable end result. As the open excavations will be backfilled these areas will have long term stability.

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

The main closure objective of GEJ's planned prospecting operation is to restore the site to its pre-prospecting capability in a sustainable matter. The rehabilitation activities proposed in the above rehabilitation plan will ensure that the land reverts back to grazing land upon closure of the prospecting right.

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

The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) ('MPRDA') requires a holder of a right to provide to the Department of Mineral Resources and Energy ('DMRE') sufficient financial provision for environmental rehabilitation and closure requirements of mining operations. Regulation 54 of the MPRDA, '*Quantum of financial provision*', as well as the '*Guideline document for evaluation of the quantum of closure-related financial provision provided by a mine*' has been used to calculate the required financial provision for the Ringside Project.

Furthermore, the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires a Right Holder to make financial provision for rehabilitation and remediation; decommissioning and closure activities as well as remediation and management of latent or residual environmental impacts. The '*Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations*' as published on 20 November 2015 under Government Notice R. 1147 of Government Gazette 39425 has also been used to guide the calculations in this report.

• Section A.1, number 1.2:

In terms of the guideline document 'the Master Rates in Section B will be updated on an annual basis, based on CPIX or similar approved method. The first of these updates will take place during 2005.'

The 2004 Master Rates were updated annually in terms of the published STATS SA CPI rates.

Table B2 – CPI headline year-on-year rates³

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
2005	3,0	2,6	3,0	3,4	3,3	2,8	3,4	3,9	4,4	4,0	3,4	3,6	3,4
2006	4,0	3,9	3,4	3,3	3,9	4,9	5,0	5,4	5,3	5,4	5,4	5,8	4,7
2007	6,0	5,7	6,1	7,0	6,9	7,0	7,0	6,7	7,2	7,9	8,4	9,0	7,1
2008	9,3	9,8	10,6	11,1	11,7	12,2	13,4	13,7	13,1	12,1	11,8	9,5	11,5
2009	8,1	8,6	8,5	8,4	8,0	6,9	6,7	6,4	6,1	5,9	5,8	6,3	7,1
2010	6,2	5,7	5,1	4,8	4,6	4,1	3,7	3,5	3,2	3,4	3,6	3,5	4,3
2011	3,7	3,7	4,1	4,2	4,6	5,0	5,3	5,3	5,7	6,0	6,1	6,1	5,0
2012	6,3	6,1	6,0	6,1	5,7	5,5	4,9	5,0	5,5	5,6	5,6	5,7	5,6
2013	5,4	5,9	5,9	5,9	5,6	5,5	6,3	6,4	6,0	5,5	5,3	5,4	5,7
2014	5,8	5,9	6,0	6,1	6,6	6,6	6,3	6,4	5,9	5,9	5,8	5,3	6,1
2015	4,4	3,9	4,0	4,5	4,6	4,7	5,0	4,6	4,6	4,7	4,8	5,2	4,6
2016	6,2	7,0	6,3	6,2	6,1	6,3	6,0	5,9	6,1	6,4	6,6	6,8	6,4
2017	6,6	6,3	6,1	5,3	5,4	5,1	4,6	4,8	5,1	4,8	4,6	4,7	5,3
2018	4,4	4,0	3,8	4,5	4,4	4,6	5,1	4,9	4,9	5,1	5,2	4,5	4,7
2019	4,0	4,1	4,5	4,4	4,5	4,5	4,0	4,3	4,1	3,7	3,6	4,0	4,1
2020	4,5	4,6	4,1	3,0	2,1	2,2	3,2	3,1	3,0	3,3	3,2	3,1	3,3
2021	3,2	2,9	3,2	4,4	5,2	4,9	4,6	4,9	5,0	5,0	5,5	5,9	4,5
2022	5,7	5,7	5,9	5,9	6,5	7,4	7,8						

³ Rates shown in Table B2 show the official inflation rates as published in the monthly CPI release.

• **Section B.1 – Process followed:**

- **Step 1: Determine primary mineral and saleable mineral by-products:**

In terms of Table B.12 the mineral prospected for falls under base metals (iron ore and manganese ore) for a small mine with mine, mine waste, plant and plant waste.

- **Step 2A: Determine primary risk class:**

The primary risk class is 'A' in terms of Table B.12.

- **Step 2B: Revise primary risk class (if applicable) based on saleable by-products:**

Not applicable. There are no saleable by-products.

- **Step 3: Determine environmental sensitivity of mine area:**

The criteria in terms of Table B.4 were used to determine the area sensitivity:

Sensitivity	Sensitivity criteria		
	Biophysical	Social	Economic
Low		X	
Medium			X
High	X		

The area sensitivity has been determined as 'High'.

- **Step 4: For Class A or B mining operations:**

▪ **Step 4.1: Determine level of information available:**

The level of information available for the operation is classified as 'extensive' as the following information is available:

- A Basic Assessment Report / Environmental Management Programme Report that is in the process of being approved;
- Closure Plan (included in the BAR/EMPR); and
- Detailed breakdown of costs envisaged for rehabilitation and closure.

▪ **Step 4.2: Identify closure components:**

The bulk sampling will be open-cast.

All closure components in terms of Table B.5 for open-cast operations are applicable to the quantum calculation.

▪ **Step 4.3: Identify unit rates for closure components:**

Component	Risk Class	Sensitivity	Multiplication Factor	Unit	Master Rate 2004	Master Rate 2022
1	A	High	1.00	m ³	6.82	17.38
2(A)	A	High	1.00	m ²	95.00	242.05
2(B)	A	High	1.00	m ²	140.00	356.71
3	A	High	1.00	m ²	17.00	43.31
4(A)	A	High	1.00	m	165.00	420.41
4(B)	A	High	1.00	m	90.00	229.31
5	A	High	1.00	m ²	190.00	484.10
6	A	High	1.00	Ha	96,700.00	246,383.83
7	N/A	N/A	N/A	N/A	N/A	N/A
8(A)	A	High	1.00	Ha	66,400.00	164,086.02
8(B)	A	High	1.00	Ha	82,700.00	210,712.95
8(C)	A	High	1.00	Ha	240,200.00	612,010.29
9	A	High	1.00	Ha	55,600.00	141,664.33
10	A	High	1.00	Ha	52,600.00	134,020.57
11	A	High	1.00	Ha	52,600.00	134,020.57
12	A	High	1.00	-	60.00	152.88
13	A	High	1.00	-	20,000.00	50,958.39
14	A	High	1.00	-	7,000.00	17,835.44

▪ **Step 4.4: Identify and apply weighting factors:**

Weighting Factor 1 = 1.10

The nature of the terrain has been determined as Undulating: A mix of sloped and undulating areas within the mine area.

Weighting Factor 2 = 1.05

The proximity to urban area where goods and services are to be supplied has been determined as Peri-urban: Less than 150km from a developed urban area.

▪ **Step 4.5: Identify areas of disturbance:**

No	Description	Quantity
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines) - 20m x 30m footprint x 5m average height = 3 000m ³	<u>3 000m³</u>
2(A)	Demolition of steel buildings and structures - Diesel tank - Generator - Office - Weighbridge and Weighbridge Control Room - Workshop	200m ² 25m ² 18m ² 60m ² 18m ² <u>321m²</u>

2(B)	Demolition of reinforced concrete buildings and structures Not applicable – GEJ will not establish any reinforced concrete buildings or structures	<u>0m²</u>
3	Rehabilitation of access roads Provision is made for 500m x 10m wide roads	<u>5 000m²</u>
4(A)	Demolition and rehabilitation of electrified railway lines There are no electrified railway lines on the site.	<u>0m</u>
4(B)	Demolition and rehabilitation of non-electrified railway lines There are no non-electrified railway lines on the site.	<u>0m</u>
5	Demolition of housing and/or administration facilities - Washbay	<u>600m²</u>
6	Opencast rehabilitation including final voids and ramps Provision is made for 30 trenches during phase 4 of the prospecting operation 30 x 40mx21m = 2.52 Ha Only two excavations will be allowed to be open at any one time. 2 x 40mx21m = 0.16 Ha	<u>0.16Ha</u>
7	Sealing of shafts adits and inclines Not applicable	<u>0m³</u>
8(A)	Rehabilitation of overburden and spoils - Stockpile area (0.2 Ha) - Waste rock dumps (0.1 Ha)	<u>0.3Ha</u>
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) Not applicable	<u>0Ha</u>
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) Not applicable	<u>0Ha</u>
9	Rehabilitation of subsided areas There are no subsided areas	<u>0Ha</u>
10	General surface rehabilitation: - Boreholes x 30 (10m x 10m surface disturbance each) = 0.3 Ha - Processing Plant (vegetation clearance around plant) = 0.21 Ha - Salvage yard = 0.1 Ha	<u>0.61Ha</u>
11	River diversions There are no rivers on the site	<u>0Ha</u>
12	Fencing No provision is made for fencing	<u>0m</u>

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13	Water management - Water tank (9m ²)	<u>0Ha</u>
14	2 to 3 years maintenance and aftercare Provision is made for 2 hectares aftercare and maintenance.	<u>2Ha</u>
15 (A) & 15(B)	Specialist study Provision is made for the following specialist studies upon closure of the operation: - Water pollution potential study - Quantified Risk Assessment	<u>R50 000</u>

- **Step 4.6: Identify closure costs from specialists studies**
GEJ shall conduct a Water pollution potential study and Quantified Risk Assessment upon closure of its operation in accordance with Table B.9 of the Quantum Guideline.
- **Step 4.7: Calculate closure costs:**

CALCULATION OF THE QUANTUM

Applicant:

GEJ RESOURCES (PTY) LTD

Ref No:
Date:

NC 13159 PR
SEPTEMBER 2022

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m3	3 000.00	17.38	1	1.1	57 343.48
2 (A)	Demolition of steel buildings and structures	m2	321.00	242.05	1	1.1	85 468.69
2(B)	Demolition of reinforced concrete buildings and structures	m2	0.00	356.71	1	1.1	0.00
3	Rehabilitation of access roads	m2	5 000.00	43.31	1	1.1	238 230.48
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	420.41	1	1.1	0.00
4 (B)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	229.31	1	1.1	0.00
5	Demolition of housing and/or administration facilities	m2	600.00	484.10	1	1.1	319 509.12
6	Opencast rehabilitation including final voids and ramps	ha	0.160	246 383.83	1	1.1	43 363.55
7	Sealing of shafts adits and inclines	m3	0.00	129.94	1	1.1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	0.300	164 086.02	1	1.1	54 148.39
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	210 712.95	1	1.1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	612 010.29	1	1.1	0.00
9	Rehabilitation of subsided areas	ha	0.00	141 664.33	1	1.1	0.00
10	General surface rehabilitation	ha	0.61	134 020.57	1	1.1	89 927.80
11	River diversions	ha	0.00	134 020.57	1	1.1	0.00
12	Fencing	m	0.00	152.88	1	1.1	0.00
13	Water management	ha	0.00	50 958.39	1	1.1	0.00
14	2 to 3 years of maintenance and aftercare	ha	2.00	17 835.44	1	1.1	39 237.96
15 (A)	Specialist study	Sum	1.00	25 000.00	1	1.1	27 500.00
15 (B)	Specialist study	Sum	1.00	25 000.00	1	1.1	27 500.00
Total of 1 - 15 above							982 229.48

weighting factor 2

1.05

Subtotal 1

1 031 340.95

1	Preliminary and General (6% of Sub Total 1)	58 933.77	58 933.77
2	Contingencies (10% of Sub Total 1)	98 222.95	98 222.95
Subtotal 2		1 188 497.67	

VAT (15%)

178 274.65

Grand Total

1 366 772.32

The calculations according to the DMRE guidelines require GEJ Resources (Pty) Ltd to provide an amount of R1 366 772.32 for rehabilitation and closure.

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

GEJ undertakes to, upon request of DMRE, provide a financial guarantee, as per the quantum calculations to the amount of R1 366 772.32 to cover the financial costs related to rehabilitation.

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h) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including:

- a. Monitoring of Impact Management Actions
- b. Monitoring and reporting frequency
- c. Responsible persons
- d. Time period for implementing impact management actions
- e. Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<ul style="list-style-type: none"> - Blasting - Boreholes - Excavations - Generator - Loading & hauling - Processing plant - Roads - Salvage yard - Security access point - Stockpile areas - Topsoil storage - Waste rock dump - Weighbridge - Workshop 	Air quality	A single bucket monitoring system must be placed on the site during the operational phase to measure the air quality levels and to ensure that GEJ's operation adheres to the Management Standards as set out in the National Environmental Management: Air Quality Amendment Act, 2014 (20 of 2014), the Regulations of the MPRDA (28 of 2002) and the Mine, Health and Safety Act (29 of 1996).	Management Environmental Officer / Contractor	Monthly fall-out dust sampling and annual reporting to DMRE during operational phase.
<ul style="list-style-type: none"> - Blasting - Boreholes - Diesel tanks - Excavations - Office containers - Processing plant - Roads 	Flora	A registered mine surveyor must conduct measurements of open excavations, deposition sites, rehabilitated areas and any other infrastructure developments. The measurements must be plotted on plans and kept for life of operation.	Management Environmental Officer / Contractor	Quarterly surveys and submitted to the DMRE annually.

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<ul style="list-style-type: none"> - Salvage yard - Security access point - Stockpile area - Storage facility - Topsoil storage - Waste rock dump - Weighbridge & control room - Workshop 				
<ul style="list-style-type: none"> - Blasting - Boreholes - Chemical toilets - Diesel tanks - Excavations - Generator - Office - Processing plant - Roads - Salvage yard - Security access point - Stockpile areas - Storage facilities - Topsoil storage site - Waste rock dumps - Washbay - Water tank - Weighbridge & control room - Workshop 	<p style="text-align: center;">Groundwater</p>	<p>Water samples must be taken and analysed to ensure that they comply with the SANS 241-1:2011 drinking water quality.</p> <p>Water levels must be measured.</p> <p>Water abstraction must be documented.</p>	<p style="text-align: center;">Management Environmental Officer / Contractor</p>	<p>Quarterly analysis and submitted to the DWS/DMRE annually.</p>
<ul style="list-style-type: none"> - Blasting - Boreholes - Excavations - Generator - Processing plant 	<p style="text-align: center;">Noise</p>	<p>Noise readings must be taken at pre-determined noise monitoring points with sufficient, calibrated sound level meter.</p>	<p style="text-align: center;">Management Environmental Officer / Contractor</p>	<p>Monthly analysis and submitted to the DMRE annually.</p>

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<ul style="list-style-type: none">- Roads- Security access point- Stockpile areas- Storage facilities- Topsoil storage- Waste rock dumps- Weighbridge- Workshop				
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i) Indicate the frequency of the submission of the performance assessment / environmental audit report.

An Audit Report will be conducted annually in terms of Regulation 34 of the Environmental Impact Assessment Regulations, 2014 of the National Environmental Management Act, 1998 (Act no 107 of 1998).

j) Environmental Awareness Plan

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

GEJ shall provide and discuss the Environmental Awareness Plan with each employee during pre-employment induction. Monthly Environmental Awareness training shall be provided during life of operation.

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

GEJ shall ensure that there is an Emergency Response Plan on site, clearly indicating the different procedures to potential incidents.

k) Specific information required by the Competent Authority

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

The financial quantum will be reviewed annually as is prescribed by Regulation 54 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) and Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

GEJ shall provide the DMRE with an annual Environmental Audit Report in terms of Appendix 7 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

Application for additional Environmental Authorisation if scope of activities changes as well as a Section 102 Application at DMRE.

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) The acceptability of the project in relation to the finding of the assessment and level of mitigation proposed

Signature of Environmental Assessment Practitioner

Name of Company

Date

- END -