



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC 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: XHARIEP PLANT AND MINING (PTY) LTD

TEL NO: 053 874 3820

FAX NO: 053 874 3820

POSTAL ADDRESS: P.O. BOX 1776, KIMBERLEY, 8300

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FIRE REFERENCE NUMBER SAMRAD: (NC) 30/5/1/1/2/12455 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 BASIC ASSESSMENT PROCESS

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

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

PART A
SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

Contact Person and correspondence address:

a) Details of:

i) The EAP who prepared the report:

Name of the Practitioner: M and S Consulting (Pty) Ltd
 Tel No: 053 861 1765
 Fax No: 086 636 0731
 Cell No: 084 444 4474 – Ms. T. Jooste
 E-Mail address: ms.consulting@vodamail.co.za

(i) Expertise of the EAP:

(1) The qualifications of the EAP:

(With evidence attached as Appendix 1)

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

(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) Location of the overall activity:

Farm Name:	Remaining Extent of the Farm Gayelong 191 Portion 1 of the Farm Gayelong 191 Portion 2 of the Farm Gayelong 191 Portion 3 of the Farm Gayelong 191
Application area (Ha)	2 629.0589 Hectares
Magisterial district:	Kuruman
Distance and direction from nearest town	The application area is situated approximately 16km south-east of the town of Kuruman in the Northern Cape Province.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

	Access to the site can be obtained from the R31 between Kuruman and Daniëlskuil.
21 digit Surveyor General Code for each farm portion	C041000000001910000 C041000000001910001 C041000000001910002 C041000000001910003

c) Locality Map:

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

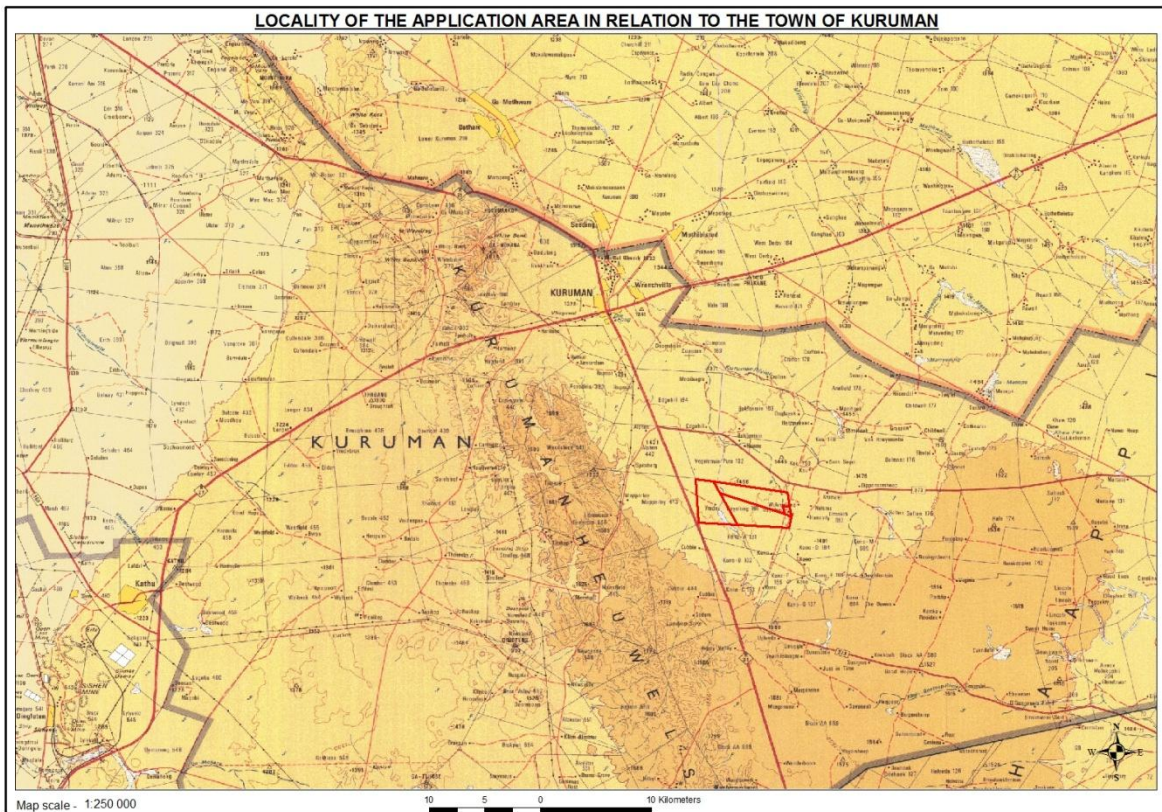


Figure 1 – Locality Map

d) Description of the scope of the proposed overall activity:

i) Listed and specified activities:

(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 and attach as Appendix 4)

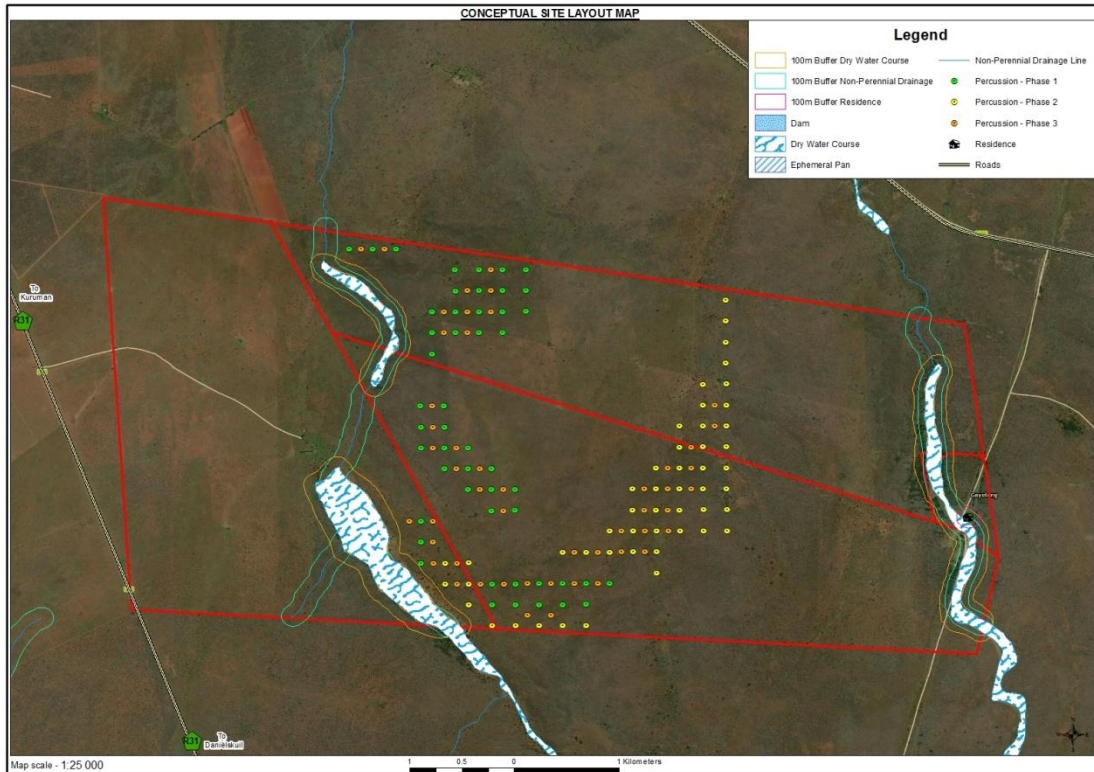


Figure 2 – Conceptual site layout plan

The final site layout can only be determined during active prospecting as set out below:

- The first phase of the proposed prospecting activities entails a reconnaissance visit.
- The second phase of the proposed prospecting activities entails the review of historical activities and data, a desktop study as well as geological mapping by a Geologist. The exact locality of the proposed first phase percussion boreholes can only be determined during this phase.
- The exact locality of the proposed second phase percussion boreholes can only be determined after the first phase drilling has been completed and the samples analysed.
- The exact locality of the proposed third phase percussion boreholes can only be determined after the second phase drilling has been completed and the samples analysed.

No offices and storerooms will be established at the site as Xhariep Plant and Mining (Pty) Ltd (hereinafter referred to as 'Xhariep') shall make use of facilities in the town of Kuruman.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

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	Percussion boreholes (150 boreholes with a 10m x 10m surface disturbance around each hole)	15 000m ² (1.5 Ha)	X	GNR327 – Activity 20 GNR327 – Activity 27
2	Access tracks: - 500m long and 3m wide access tracks will be created (anticipated). - Existing roads will be used as far as possible.	1 500m ² (0.15 Ha)	X	GNR327 – Activity 20 GNR327 – Activity 27
3	Chemical toilets	6m ² each		
Full description of listed activities applied for:				
<p>Full description of listed activities:</p> <ul style="list-style-type: none"> - GNR 327 – 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 <ul style="list-style-type: none"> a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or including activities for which an exemption has been issued in terms of Section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); 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 of Listing Notice 2 applies. - GN327: 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:- <ul style="list-style-type: none"> (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan. 				

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

(ii) Description of the activities to be undertaken:

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

Xhariep's prospecting activities for Iron Ore and Manganese Ore shall be conducted in nine phases over a period of five years.

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc)
1	Non-invasive Prospecting Reconnaissance visit	Geologist	Month 1	Memorandum to address any problems	Month 2	Geologist
2	Non-invasive Prospecting Review of historical activities; Desktop study; and Geological Mapping	Geologist	Month 2 - 12	Map & Report	Month 13	Geologist
3	Invasive Prospecting Phase 1 Percussion drilling	Geologist & Drilling contractor	Month 13 - 24	Drill logs	Month 24	Geologist
4	Non-invasive Prospecting Analysis of drill samples	Laboratory	Month 13 – 24 (Concurrent with drilling)	<ul style="list-style-type: none"> • Analyses sheets • Laboratory report • Map • Report 	Month 24	Laboratory & Geologist
5	Invasive Prospecting Phase 2 Percussion drilling	Geologist & Drilling contractor	Month 25 – 36	Drill logs	Month 36	Geologist
6	Non-invasive Prospecting Analysis of drill samples	Laboratory	Month 25 – 36 (Concurrent with drilling)	<ul style="list-style-type: none"> • Analyses sheets • Laboratory report • Map • Report 	Month 36	Laboratory & Geologist
7	Invasive Prospecting Phase 3 Percussion drilling	Geologist & Drilling contractor	Month 37 - 48	Drill logs	Month 48	Geologist
8	Non-invasive Prospecting Analysis of drill samples	Laboratory	Month 37 - 48 (Concurrent with drilling)	<ul style="list-style-type: none"> • Analyses sheets • Laboratory report • Map • Report 	Month 48	Laboratory & Geologist
9	Non-Invasive Prospecting Consolidation and interpretation of results / data	Geologist	Month 49 - 60	Feasibility Report	Month 60	Geologist & CEO

• Non-invasive prospecting:

Phase 1:

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

Phase 2:

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

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

Phases 4, 6 and 8:

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 9:

All the drill sampling data will then be modeled to obtain a final interpretation of the potential of the deposit. A detailed feasibility report will be compiled after drilling operations have been completed to evaluate the economic viability of the project.

- Invasive prospecting:

Phases 3, 5 and 7: Percussion drilling

Percussion drilling will be used 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 reconnaissance visit.

Fifty boreholes, approximately 50m deep each (can be more or less depending on results), are planned for each phase (3, 5 and 7). 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.

Each drill site will be rehabilitated. The boreholes will be filled with drill chips and covered with topsoil.

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
Conservation of Agricultural Resources Act (Act 43 of 1983) and Regulations	<ul style="list-style-type: none"> - Section 5: Implementation of control measures for alien and invasive plant species; - Section 6: Control measures. - Regulation GN R1048, published on 25 May 1984, in terms of CARA
Constitution of South Africa (Act 108 of 1996)	<ul style="list-style-type: none"> - Section 24: Environmental right - Section 25: Rights in Property - Section 27: Water and sanitation right
Environment Conservation Act (Act 73 of 1989) and Regulations	<ul style="list-style-type: none"> - 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 read together with NEMA and NEMWA	<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"> - Entire Act.
Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations as amended	<ul style="list-style-type: none"> - Entire Act. - Regulations GN R527
National Environmental Management Act (Act 107 of 1998) and Regulations as amended	<ul style="list-style-type: none"> - Section 2: Strategic environmental management principles, goals and objectives. - Section 24: Foundation for Environmental Management frameworks. - Section 24N: - Section 24O:

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

	<ul style="list-style-type: none"> - Section 28: The developer has a general duty to care for the environment and to institute such measures to demonstrate such care. - Regulations GN R547, published on 18 June 2010 in terms of NEMA (Environmental Management Framework Regulations) - Regulations GN R982 to R985, published on 4 December 2014 in terms of NEMA (Listed Activities) - Regulations GN R993, published on 8 December 2014 in terms of NEMA (Appeal) - Regulations GN R994, published on 8 December 2014 in terms of NEMA (exemption) - Regulations GN R205, published on 12 March 2015 in terms of NEMA (National appeal Amendment Regulations) - Regulations GN R1147, published on 20 November 2015 in terms of NEMA (Financial Provision)
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 - Regulation GN R551, published on 12 June 2015 (amended Categories 1 to 5 of GN 983) in terms of NEM:AQA (Atmospheric emission which have a significant detrimental effect on the environment) - Regulation GN R283, published on 2 April 2015 in terms of NEM:AQA (National Atmospheric Emissions Reporting Regulations) (Group C-Mines)
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> - Section 52 of The National Environmental Management Act: Biodiversity Act (NEMBA) (Act 10 of 2004) states that the MEC/Minister is to list ecosystems that are threatened and in need of protection. - Section 53 states that the Minister may identify any process or activity in such a listed ecosystem as a threatening process. - A list of threatened and protected species has been published in terms of Section 56(1) GG 29657 GNR 151 and GNR 152, Threatened or Protected Species Regulations. <p style="margin-top: 10px;">Commencement of Threatened or Protected Species Regulations 2007 : 1 June 2007 GNR 150/GG 29657/23-02-2007</p>

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

	<p>Publication of lists of critically endangered, vulnerable and protected species GNR 151/GG 29657/23-02-2007 *</p> <p>Threatened or Protected Species Regulations GNR 152/GG 296547/23-02-2007 *</p> <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. - Regulation GN R151, published on 23 February 2007 (List fo Critically Endangered, Vulnerable and Protected Species, 2007) in terms of NEM:BA - Regulation GN R152, published on 23 February 2007 (TOPS) in terms of NEM:BA - Regulations GN R507 to 509 of 2013 and GN 599 of 2014 in terms of NEM:BA (Alien Species)
<p>The National Environmental Management Act: Protected Areas Act (NEMPAA) (Act 57 of 2003) provides for the protection of ecologically viable areas that are representative of South Africa's natural biodiversity and its landscapes and seascapes.</p>	<ul style="list-style-type: none"> - Chapter 2 lists all protected areas.
<p>National Environmental Management: Waste Management Act (Act 59 of 2008)</p>	<ul style="list-style-type: none"> - Chapter 4: Waste management activities - Regulations GN R634 published on 23 August 2013 in terms of NEM:WA (Waste Classification and Management Regulations) - Regulations GN R921 published on 29 November 2013 in terms of NEM:WA (Categories A to C – Listed activities) - National Norms and Standards for the Remediation of contaminated Land and Soil Quality published on 2 May 2014 in terms of NEM:WA (Contaminated land regulations) - Regulations GN R634 published on 23 August 2013 in terms of NEM: WA (Waste Classification and Management Regulations) - Regulations GN R632 published on 24 July 2015 in terms of NEM: WA (Planning and Management of Mineral Residue Deposits and Mineral Residue Stockpiles)

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

	<ul style="list-style-type: none"> - Regulations GN R633 published on 24 July 2015 in terms of NEM: WA (Amendments to the waste management activities list published under GN921)
National Forest Act (Act 84 of 1998) and Regulations	<ul style="list-style-type: none"> - 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. - 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. - Regulation GN R548 published on 2 June 2000 in terms of NHRA
National Water Act (Act 36 of 1998) and and regulations as amended, <i>inter alia</i> Government Notice No. 704 of 1999	<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. - Section 21: Water uses In terms of Section 21 a licence is required for: <ul style="list-style-type: none"> (a) taking water from a water resource; (b) storing water; (c) impeding or diverting the flow of water in a watercourse; (f) Waste discharge related water use; (g) disposing of waste in a manner which may detrimentally impact on a water resource; (i) altering the bed, banks, course or characteristics of a watercourse;

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

	<ul style="list-style-type: none"> (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and; - Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities) - Regulation GN R1352, published on 12 November 1999 in terms of the National Water Act (Water use to be registered) - Regulation GN R139, published on 24 February 2012 in terms of the National Water Act (Safety of Dams) - Regulation GN R398, published on 26 March 2004 in terms of the National Water Act (Section 21 (j)) - Regulation GN R399, published on 26 March 2004 in terms of the National Water Act (Section 21 (a) and (b)) - Regulation GN R1198, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i) – rehabilitation of wetlands) - Regulations GN R1199, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i)) - Regulations GN R665, published on 6 September 2013 in terms of the National Water Act (Amended GN 398 and 399 – Section 21 (e), (f), (h), (g), (j))
Nature Conservation Ordinance (Ord 19 of 1974)	- 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)	- 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	- Entire Act.
Water Services Amendment Act (Act 30 of 2007)	- It serves to provide the right to basic water and sanitation to the citizens of South Africa (giving effect to section 27 of the Constitution).
National Land Transport Act, (Act 5 of 1998)	
Northern Cape Planning and Development Act (Act 7 of 1998)	- To control planning and development
Spatial Planning and Land Use Management (Act 16 of 2013)	- To provide a framework for spatial planning and land use management in

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

(SPLUMA) and regulations	<ul style="list-style-type: none"> - the Republic; - To specify the relationship between the spatial planning and the land use management, amongst others - Regulations GN R239 published on 23 March 2015 in terms of SPLUMA
Subdivision of Agricultural Land Act, 70 of 1970 and regulations	<ul style="list-style-type: none"> - Regulations GN R373 published on 9 March 1979 in terms of Subdivision of Agricultural Land
Basic Conditions of Employment Act (Act 3 of 1997)) as amended	<ul style="list-style-type: none"> - To regulate employment aspects
Community Development (Act 3 of 1966)	<ul style="list-style-type: none"> - To promote community development
Development Facilitation (Act 67 of 1995) and regulations	<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)) and regulations, more specifically GN R1130	<ul style="list-style-type: none"> - To control land surveying, beacons etc. and the like; - Agriculture, land survey S10
National Veld and Forest Fire Act (Act 101 of 1998)) and regulations, more specifically GN R1775	<ul style="list-style-type: none"> - To regulate law on veld and forest fires - (Draft regulations s21)
Municipal Ordinance, 20/1974	<ul style="list-style-type: none"> - To control pollution, sewers etc.
Municipal Ordinance, PN955, 29/08/1975	<ul style="list-style-type: none"> - Nature conservation Regulations
Cape Land Use Planning Ordinance, 15/85	<ul style="list-style-type: none"> - To control land use planning
Cape Land Use Planning Ordinance, PN1050, 05/12/1988	<ul style="list-style-type: none"> - Land use planning Regulations

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.)

In terms of the Environmental Impact Assessment Regulations, 2014 (GG38282, Government Notice No. R. 982) the need and desirability of any development must be included in the relevant reports to be submitted to the competent authority.

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, Xhariep will be able to ensure employment opportunities and support to the local business for a certain period of time.

Xhariep 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 owner.

g) Motivation for the overall preferred site, activities and technology alternative:

- The property on which or location where it is proposed to undertake the activity:
The Geological formation supports the possibility that the minerals applied for could be found within the application area.
- The operational aspects of the activity:
Xhariep aims to minimize its impact on the natural environment as much as possible and as such has opted to only use drilling as an invasive prospecting method.
- The technology to be used in the activity:
A percussion drill rig will be used during phases 3, 5 and 7 of the prospecting activities. There are no alternatives to these types of drill rigs that will ensure high quality samples for analysis.

h) Full description of the process followed to reach the proposed preferred alternatives within the site:

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

(i) Details of all 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:

Property description	District	Title Deed	Extent (Ha)
Remaining Extent of the Farm Gayelong 191	Kuruman	T273/2007	863.0360
Portion 1 of the Farm Gayelong 191	Kuruman	T1954/2011	863.0359
Portion 2 of the Farm Gayelong 191	Kuruman	T3235/2008	863.0330
Portion 3 of the Farm Gayelong 191	Kuruman	T2657/2019	39.9540

Alternatives considered:-

Xhariep has considered the following alternatives:

- The Geological formation that supports the possibility that the minerals applied for could be found within the 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.

Taking the above into consideration, Xhariep opted to apply for the properties as above.

(b) The type of activity to be undertaken:

Prospecting activities for Iron Ore and Manganese Ore are to take place in the form of percussion drilling.

Alternatives considered:-

The only alternative land use is livestock farming; however the applicant's main economic activity is prospecting / mining and for this reason does not favour any other alternative land use.

(c) The design or layout of the activity:

Infrastructure: No offices and storerooms will be established at the site as Xhariep shall make use of facilities in the town of Kuruman.

Invasive prospecting: The proposed locality of the boreholes was placed on a 100m x 100m grid.

Alternatives considered:-

Infrastructure: The only alternative considered was the establishment of offices and storerooms on the farms under application. As Xhariep aims to minimize its impact on the natural environment as much as possible this option was decided against.

Invasive prospecting: The drilling of boreholes over the entire property was considered, but taking into account that Xhariep aims to minimize its impact on the natural environment as much as possible this option was decided against.

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

A percussion drill rig will be used during phases 3, 5 and 7 of the prospecting activities.

Alternatives considered:-

There are no alternatives to these types of drill rigs that will ensure high quality samples for analysis.

(e) The operational aspects of the activity:

Xhariep aims to minimize its impact on the natural environment as much as possible and as such has opted to only use drilling as an invasive prospecting method.

Alternatives considered:-

Xhariep considered conducting bulk sampling as part of its prospecting activities. To ensure the prospecting activities are cost effective, Xhariep opted to only conduct drilling activities during its initial prospecting period.

(f) The option of not implementing the activity:

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.)

Public Participation process followed during Prospecting Right Application process:

The surface owners of the properties under application, surrounding landowners and various other identified interested and affected parties were notified of the proposed prospecting activity by means of registered post/e-mail, with a draft BAR/EMPR attached thereto.

Any other interested and / or affected party was also invited to register as such in advertisements that were placed in the 'Kimberley Gazette' (Local newspaper) and Volksblad (Regional newspaper). A notice board was also placed near the entrance road to the site. Attached as Appendix '5' find hereto proof of the notification process.

The following responses have been received to the notification letters (refer to Appendix '6'):

- Eskom:
Eskom responded per e-mail on the 10th of February 2020. Eskom raised no objection and requested that certain conditions must be accepted in writing. The conditions were signed by the Director of Xhariep Plant and Mining (Pty) Ltd and sent to Eskom per e-mail on the 17th of February 2020.

Surface owners consultation process (refer to Appendix '7'):

A meeting was held with the surface owners on the 17th of March 2020 at the offices of Duvenhage & van der Merwe Attorneys, Kuruman. The minutes of this meeting as well as the attendance register is attached under Appendix '7'.

- Kalahari Futures Trading Trust:
Mr. Maritz Lubbe, Trustee of Kalahari Futures Trading Trust, attended the meeting held on the 17th of March 2020. Refer to Appendix '7'.
- Marietha Freund Trust:
Duvenhage & van der Merwe Attorneys responded per e-mail on the 21st of February 2020 confirming that they act on behalf of the Marietha Freund Trust. A copy of the BAR/EMPR was requested. A copy of the draft BAR/EMPR was provided per e-mail on the 24th of February 2020. Mr. Anton Freund, Trustee of Marietha Freund Trust, attended the meeting held on the 17th of March 2020. Refer to Appendix '7'.
- Kgalagadi Dipudi Cooperative Enterprise Ltd:
This company has been liquidated and deregistered on CIPC. No contact details could be obtained for the directors of this company.
- Kylipac Property Development (Pty) Ltd:
A notification letter was sent to the registered address of the Company; however no response has been received to date. No contact details could be obtained for the two directors, Mr. Ngwane Roux and Ms. Kelebogile Jane Nkadimang to arrange a meeting.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

(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 List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.		Date comments received	Issues raised	EAPs response to the issue of the I&AP
<u>AFFECTED PARTIES</u>				
Landowner/s	X			
Kalahari Futures Trading Trust	X	17/03/2020	Mr. Maritz Lubbe, Trustee of Kalahari Futures Trading Trust, attended the meeting held on the 17 th of March 2020. Refer to Appendix '7' for the minutes of the meeting.	Refer to Appendix '7' for the minutes of the meeting.
Marietha Freund Trust	X	17/03/2020	Mr. Anton Freund, Trustee of Marietha Freund Trust, attended the meeting held on the 17 th of March 2020. Refer to Appendix '7' for the minutes of the meeting.	Refer to Appendix '7' for the minutes of the meeting.
Kgalagadi Dipudi Cooperative Enterprise (Pty) Ltd	X		This company has been liquidated and deregistered on CIPC. No contact details could be obtained for the directors of this company.	
Kylipac Property Development (Pty) Ltd	X		No contact details could be obtained for the two directors, Mr. Ngwane Roux and Ms. Kelebogile Jane Nkadimang to arrange a meeting.	
Lawful occupier/s of the land				
The surface owners occupy the land.				
Landowners or lawful occupiers on adjacent properties	X			
Kono Communal Property Association	X	N/A	No response to date.	No response to date.
Boloka Trust	X	N/A	No response to date.	No response to date.
Mr. J.P. Vorster	X	N/A	No response to date.	No response to date.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

Wilds Kraal (Pty) Ltd	X	N/A	No response to date.	No response to date.
Cubbe Plase CC	X	N/A	No response to date.	No response to date.
Municipal Councillor	X			
Ga-Segonyana Local Municipality	X	N/A	No response to date.	No response to date.
Municipality	X			
John Taolo Gaetsewe District Municipality	X	N/A	No response to date.	No response to date.
Organs of State (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA, etc.)				
Eskom	X	10/02/2020	Eskom responded per e-mail on the 10 th of February 2020. Eskom raised no objection and requested that certain conditions must be accepted in writing.	The conditions were signed by the Director of Xhariep Plant and Mining (Pty) Ltd and sent to Eskom per e-mail on the 17 th of February 2020.
SANRAL	X	N/A	No response to date.	No response to date.
Transnet	X	N/A	No response to date.	No response to date.
Communities				
Kono Communal Property Association	X	N/A	No response to date.	No response to date.
Department of Land Affairs				
Department: Agriculture, Land Reform & Rural Development	X	N/A	No response to date.	No response to date.
Traditional Leaders				
Kono Communal Property Association	X	N/A	No response to date.	No response to date.
Department of Environmental Affairs				
Department: Environment and Nature Conservation	X	N/A	No response to date.	No response to date.
Other Competent Authorities				
Department: Public Works	X	N/A	No response to date.	No response to date.
Department: Water Affairs	X	N/A	No response to date.	No response to date.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

Other Affected Parties				
Not applicable: No other parties responded to the notification process.				
Interested Parties				
SAHRA	X			

The consultation process was recorded until 20 May 2020.

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:**

The only current source of nuisance dust is created from vehicles travelling on the gravel (farm) roads transecting the immediate surrounding area. The general air quality on the application area is expected to be good.

The wind rose for Kuruman (situated approximately 5km north of the application area) shows how many hours per year the wind blows from the indicated direction.

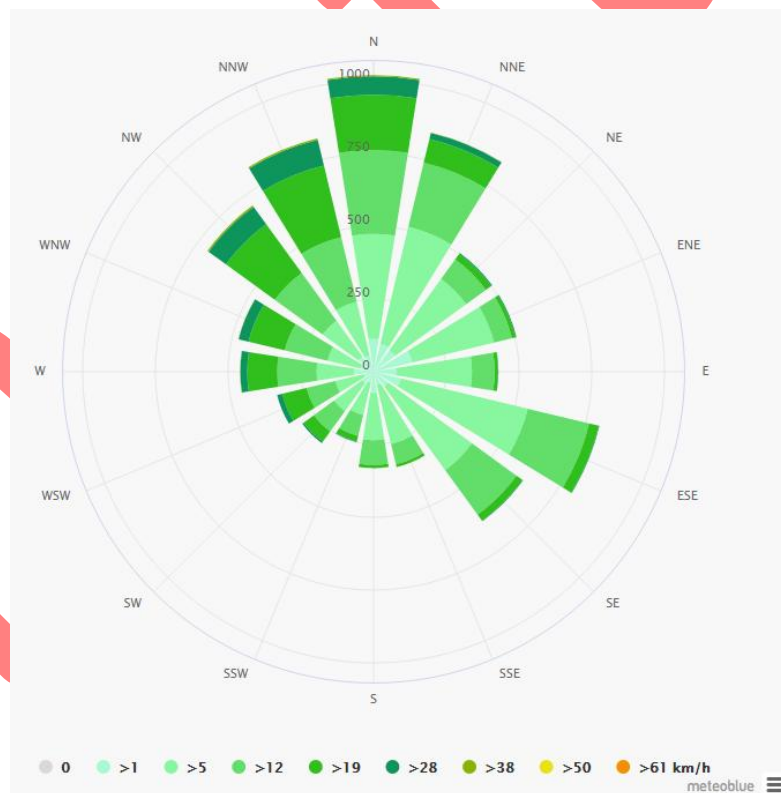


Figure 3 – Wind rose for Kuruman area

The diagram for Kuruman 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.

Basic Assessment Report and Environmental Management Programme Report
 Xhariep Plant and Mining (Pty) Ltd

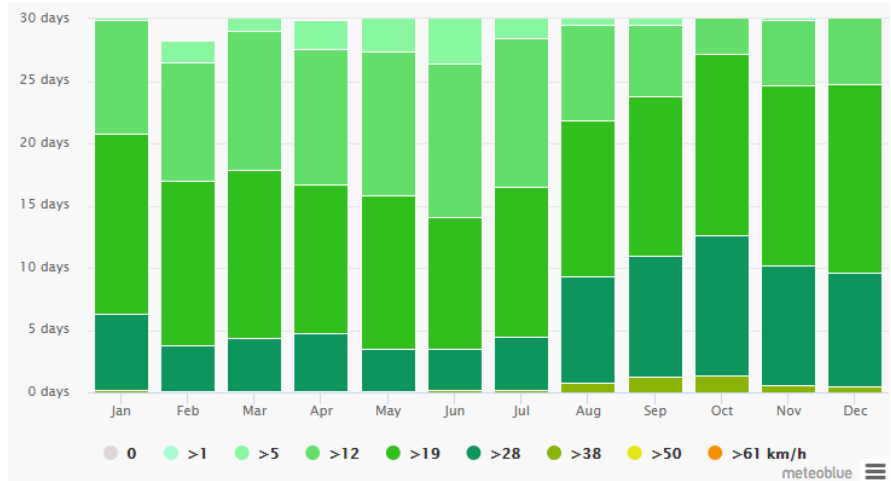


Figure 4 – Wind speed of the Kuruman area

- Archaeological, cultural & heritage environment:**
 The online Palaeosensitivity Map of South African Heritage Resources Agency (SAHRA) has been used to determine the sensitivity of the application area. In terms of this map the sensitivity of the application area is rated between low in some areas to very high in other areas and requires a field assessment.

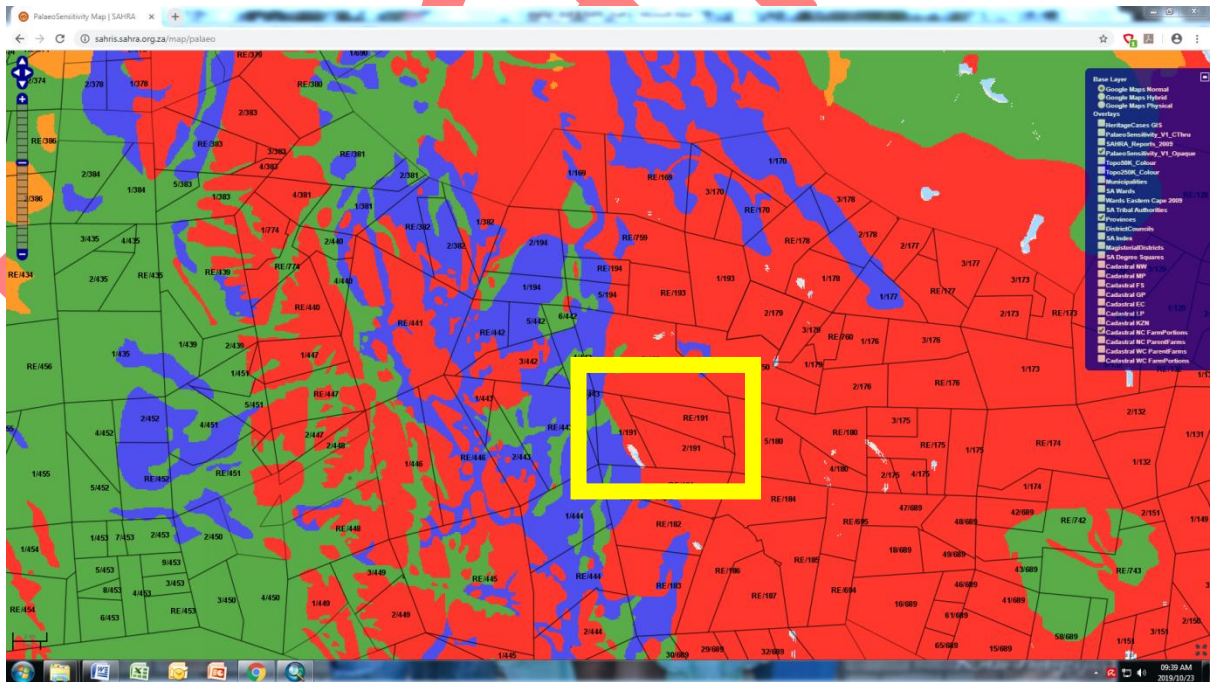


Figure 5 - Screenshot from online Palaeosensitivity Map showing prospecting right application area

Fossil Sensitivity Map

This map is available on the SAHRIS mapping system as a layer that can be switched on and off. The different colours on the map represent different levels of estimated palaeontological sensitivity.

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 6 - Legend of Palaeosensitivity Map

An Archaeologist and Palaeontologist shall be contacted to conduct field visits and to compile relevant specialist reports. These reports shall be provided to the DMR and SAHRA before granting/issuance of the Prospecting Right.

- **Climate:**

The Northern Cape experiences typical semi-desert and desert climatic conditions. The summers are hot and dry and the winters cold and frosty.

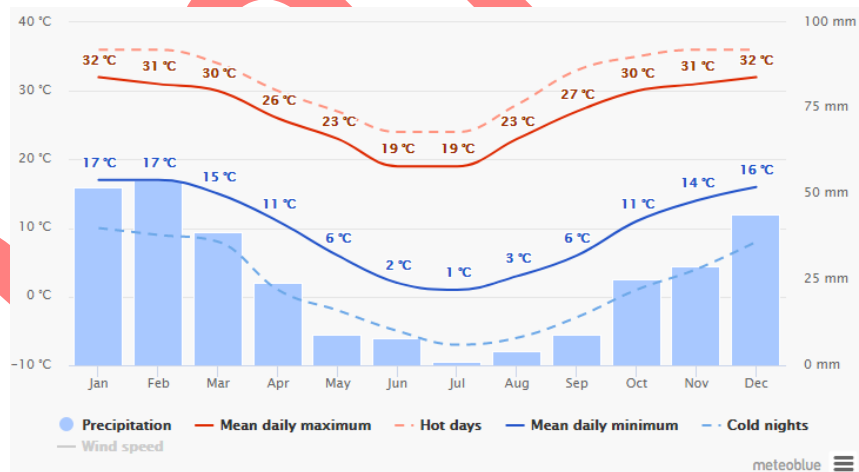


Figure 7 – Average temperatures and precipitation of the Kuruman area

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Kuruman. 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.

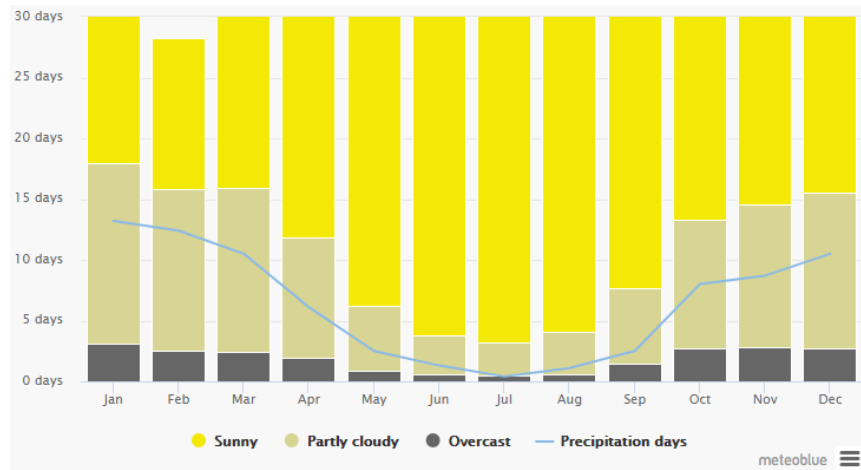


Figure 8 – Cloudy, sunny and precipitation days in the Kuruman area

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.

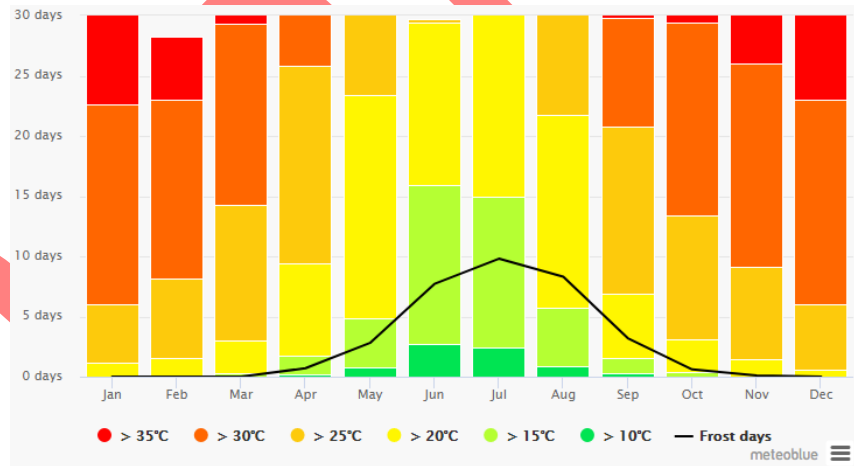


Figure 9 – Maximum temperatures in the Kuruman area

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

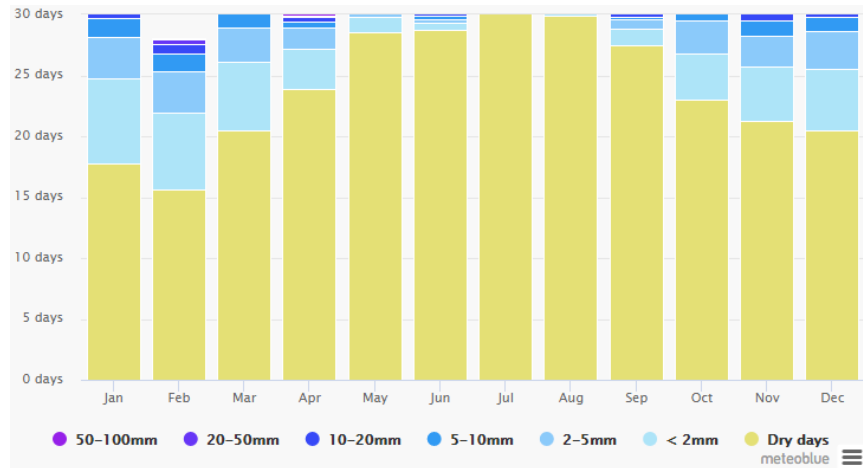


Figure 10 – Precipitation of the Kuruman area

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

- **Fauna:**

Animals likely to be found on the farm and surrounding environment include small mammals and birds that are associated with the Kuruman Thornveld and Kuruman Mountain Bushveld vegetation types.

- **Flora:**

There are two broad vegetation types found within the area under application.

The following is normally found under the Kuruman Thornveld Vegetation Type (SVk9):

- Tall Tree: *Acacia erioloba* (d).
- Small Trees: *Acacia mellifera* subsp. *detinens* (d), *Boscia albitrunca* (d).
- Tall Shrubs: *Grewia flava* (d), *Lycium hirsutum* (d), *Tarchonanthus camphoratus* (d), *Gymnosporia buxifolia*.
- Low Shrubs: *Acacia hebeclada* subsp. *hebeclada* (d), *Monechma divaricatum* (d), *Gnidia polycephala*, *Helichrysum zeyheri*, *Hermannia comosa*, *Pentzia calcarea*, *Plinthus sericeus*.
- Geoxylic Suffrutex: *Elephantorrhiza elephantina*.
- Graminoids: *Aristida meridionalis* (d), *A. stipitata* subsp. *stipitata* (d), *Eragrostis lehmanniana* (d), *E. echinochloidea*, *Melinis repens*.
- Herbs: *Dicoma schinzii*, *Gisekia africana*, *Harpagophytum procumbens* subsp. *procumbens*, *Indigofera daleoides*, *Limeum fenestratum*, *Nolletia ciliaris*, *Seddera capensis*, *Tripteris aghillana*, *Vahlia capensis* subsp. *vulgaris*.

The following is normally found under the Kuruman Mountain Bushveld Vegetation Type (SVk10):

- Small Tree: *Rhus lancea*.
- Tall Shrubs: *Diospyros austro-africana*, *Euclea crispa* subsp. *crispa*, *E. undulata*, *Olea europaea* subsp. *africana*, *Rhus pyroides* var. *pyroides*, *R. tridactyla*, *Tarchonanthus camphoratus*, *Tephrosia longipes*.
- Low Shrubs: *Rhus ciliata* (d), *Amphiglossa triflora*, *Anthospermum rigidum* subsp. *pumilum*, *Gomphocarpus fruticosus* subsp. *fruticosus*, *Helichrysum zeyheri*, *Lantana rugosa*, *Wahlenbergia nodosa*.
- Succulent Shrubs: *Ebracteola wilmania*, *Hertia pallens*.
- Herbaceous Climber: *Rhynchosia totta*.
- Graminoids: *Andropogon chinensis* (d), *A. schirensis* (d), *Anthephora pubescens* (d), *Aristida congesta* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Themeda triandra* (d), *Triraphis andropogonoides* (d), *Aristida diffusa*, *Brachiaria nigropedata*, *Bulbostylis burchellii*, *Cymbopogon caesius*, *Diheteropogon amplexans*, *Elionurus muticus*, *Eragrostis chloromelas*, *E. nindensis*, *Eustachys paspaloides*, *Heteropogon contortus*, *Melinis repens*, *Schizachyrium sanguineum*, *Trichoneura grandiglumis*.
- Herbs: *Dicoma anomala*, *D. schinzii*, *Geigeria ornativa*, *Helichrysum cerastioides*, *Heliotropium strigosum*, *Hibiscus marlothianus*, *Kohautia cynanchica*, *Kyphocarpa angustifolia*.
- Geophytic Herbs: *Boophone disticha*, *Pellaea calomelanos*.

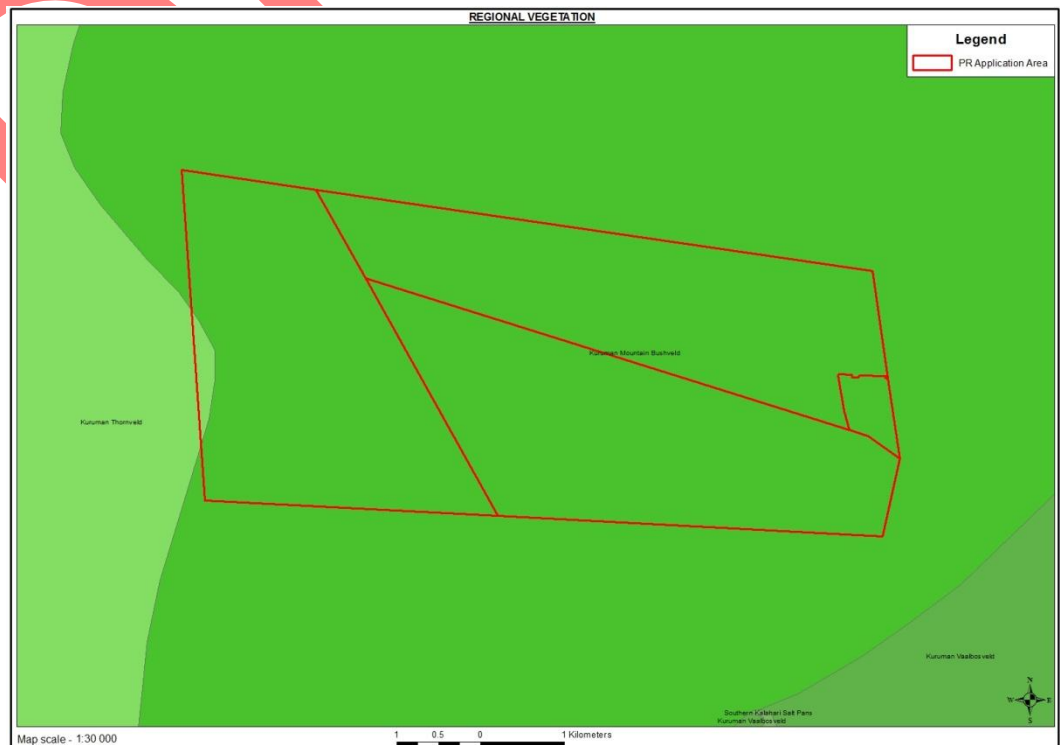


Figure 11 – Regional vegetation map

- **Geology:**

The Postmasburg iron & manganese field is situated on the Maremane Anticline dome, which is located within the Kaapvaal Craton, although close to its western margin. The country rocks are Palaeoproterozoic metasediments of the Transvaal Supergroup. Two arcuate belts of deposits extend from Postmasburg in the south to Sishen in the north. Two major ore types are present. The ferruginous type of ore is composed mainly of braunite, partidgeite and bixbyite and occurs along the center of the Gamagara Ridge, or Western belt. The siliceous type of ore consists of braunite, quartz and minor partidgeite and occurs in deposits along the Klipfontein Hills (or Eastern belt) and the northern and southern extremities of the Gamagara Ridge. Dolomites of the Campbellrand Group form the basement rock for these deposits and are overlain by the Manganore Iron-Formation and the Gamagara Formation. The dolomite palaeosurface is karsted, leading to collapse structures where iron and manganese formation has fallen into karst cavities to form the well-known Wolhaarkop Breccia body.

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 Campbellrand Group of the Transvaal Supergroup are host and source for the wad accumulations. The ore at Demaneng 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.

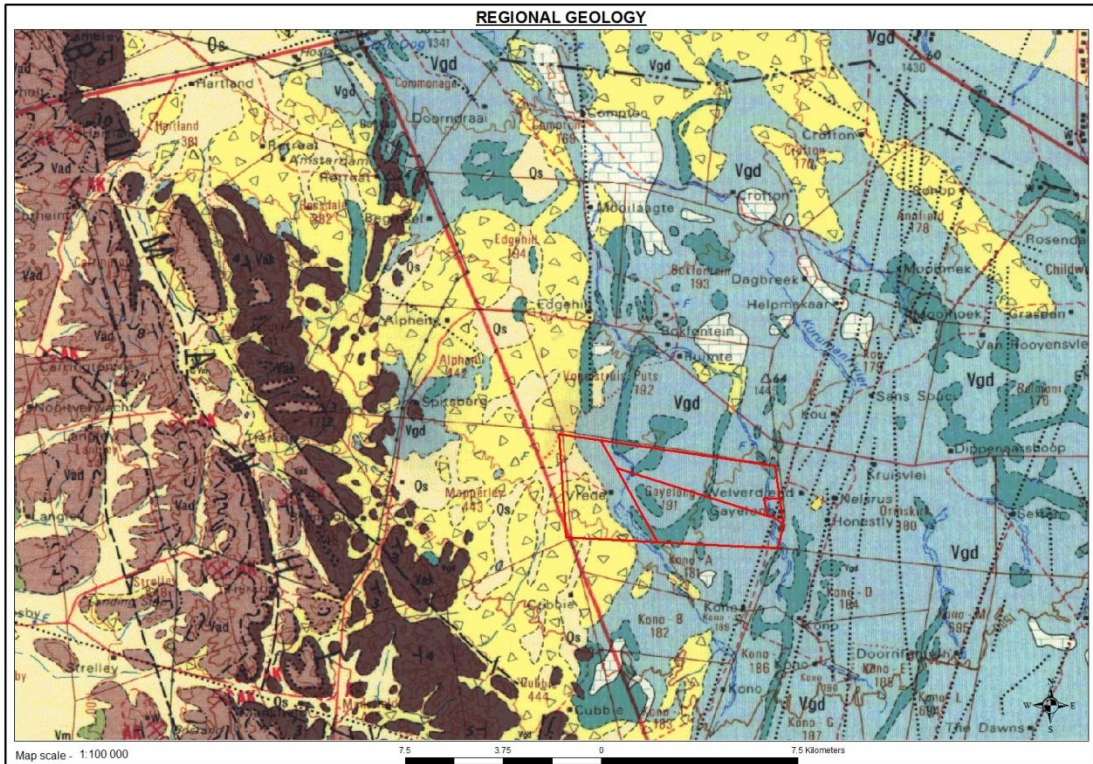


Figure 12 - Geological map

- **Groundwater:**

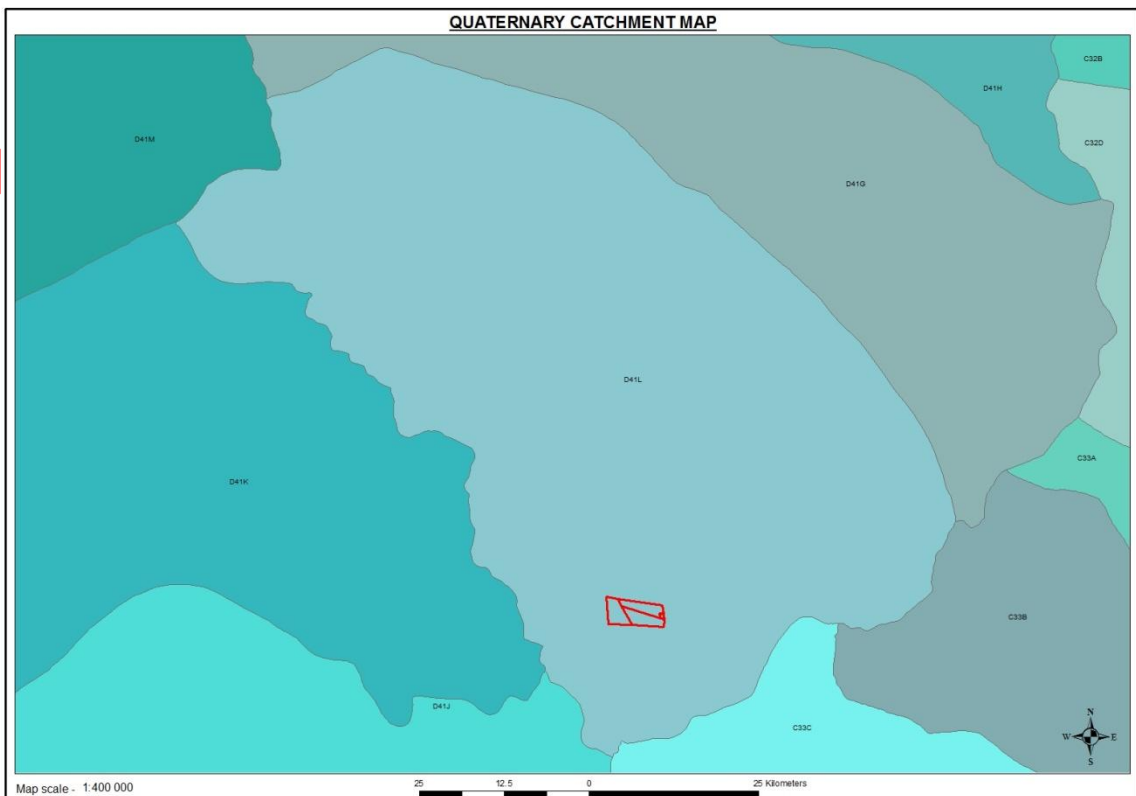


Figure 13 – Catchment map

The application area falls over the D41L quaternary drainage regions.

The D41L drainage region forms part of the Lower Vaal Water 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).

The surface owners use groundwater for livestock watering and domestic purposes. The ground water quality is expected to be reasonable.

- **Noise:**

The only current source of noise is created from vehicles travelling on the secondary roads and the gravel (farm) roads transecting the properties and immediate surrounding area.

- **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

The following sensitive environments have been identified within the boundaries of the prospecting area.

- Streams and river channels, and their banks:
There are a number of non-perennial drainage lines and dry water courses within the application area.

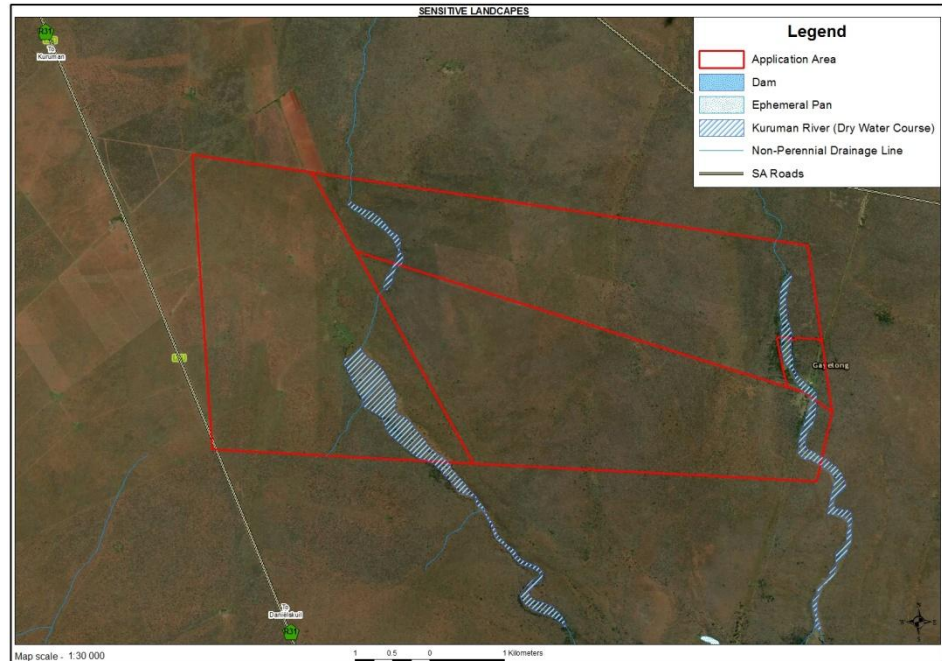


Figure 14 - Sensitive landscapes

- Archaeological and palaeontological sites:
An Archaeologist and Palaeontologist shall be contacted to conduct field visits and to compile relevant specialist reports. These reports shall be provided to the DMR and SAHRA before granting/issuance of the Prospecting Right.

- **Socio-Economic:**

The farm under application falls within the Ga-Segonyana Local Municipality, which falls under management of the John Taolo Gaetsewe District Municipality.

The municipal jurisdiction consists of 33 residential areas within a radius of approximately 80 km in and around Kuruman, and has approximately 75 000 residents. The municipality's economy is mainly based on the surrounding mining and agricultural activities.

The municipal seat, Kuruman, is situated on the Namaquari route, forming part of the main route between Gauteng and Namibia and Cape Town via Upington. The name Ga-Segonyana means a small calabash with bubbling water.

Basic Assessment Report and Environmental Management Programme Report
 Xhariep Plant and Mining (Pty) Ltd

According to the 2011 Census data the following is a description of the Socio-Economic environment for the municipal area:

Key Statistics	2011	Key Statistics	2001
Total population	93,651	Total population	70,392
Young (0-14)	32,5%	Young (0-14)	35,4%
Working Age (15-64)	63,2%	Working Age (15-64)	63,2%
Elderly (65+)	4,3%	Elderly (65+)	4,2%
Dependency ratio	58,1	Dependency ratio	65,3%
Sex ratio	92,5	Sex ratio	89,4
Growth rate	2,85% (2001-2011)	Growth rate	2,55% (2001-2011)
Population density	21 persons/km2	Unemployment rate	45,5%
Unemployment rate	33,7%	Youth unemployment rate	56,6%
Youth unemployment rate	43,2%	No schooling aged 20+	20%
No schooling aged 20+	9,7%	Higher education aged 20+	6,2%
Higher education aged 20+	9,9%	Matric aged 20+	18,4%
Matric aged 20+	23,6%	Number of households	17,163
Number of households	26,816	Average household size	3,9
Number of Agricultural households	5,984	Female headed households	51,8%
Average household size	3,4	Formal dwellings	72,5%
Female headed households	42,7%	Housing owned/paying off	61,6%
Formal dwellings	81%	Flush toilet connected to sewerage	21,5%
Housing owned/paying off	65,7%	Weekly refuse removal	20,5%
Flush toilet connected to sewerage	23,4%	Piped water inside dwelling	13,9%
Weekly refuse removal	17,6%	Electricity for lighting	74,9%
Piped water inside dwelling	19,9%		
Electricity for lighting	91,2%		

People:

According to Census 2011, Ga-Segonyana Municipality has a total population of 93 651 of which 87,0% are black African, 7,6% are coloured, 4,6% are white, and 0,4% are Indian/Asian. Other groups make up 0,4% of the population.

Of those aged 20 years and older, 4,9% completed primary school, 34,3% completed secondary school, 23,7% completed Grade 12, 10,0% have some form of higher education and only 9,7 % have no schooling.

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 Xhariep Plant and Mining (Pty) Ltd

Chart Data

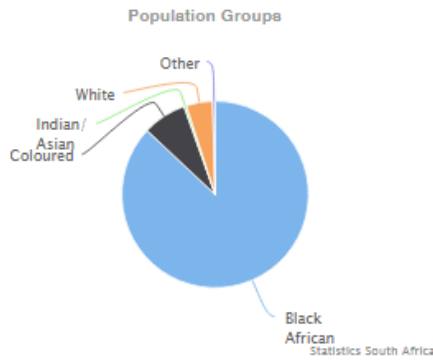


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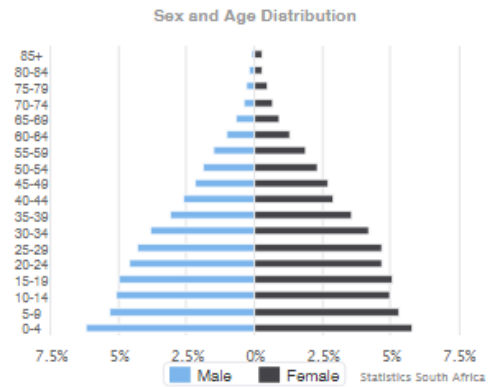


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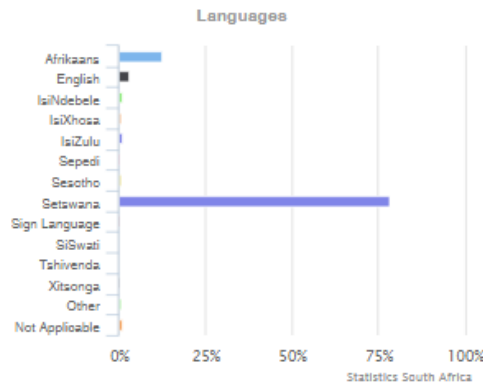


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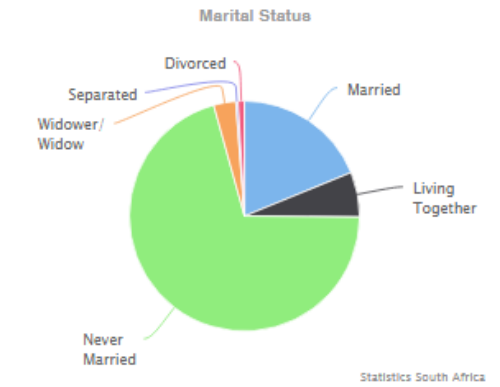


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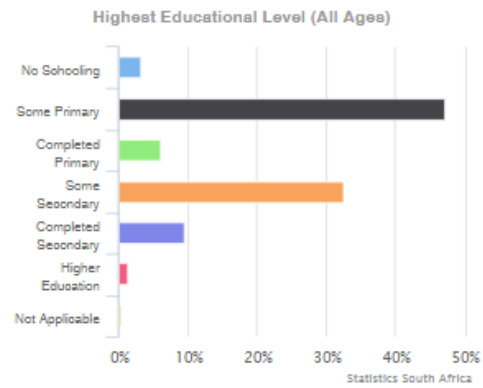
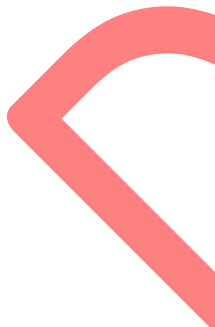
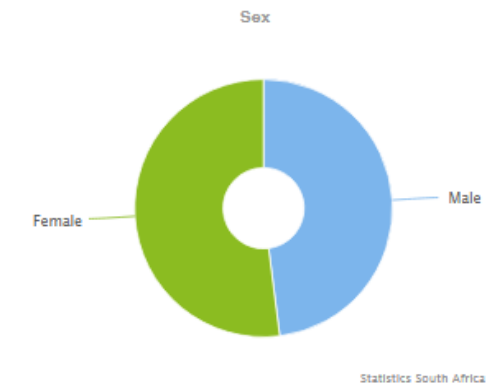


Chart Data



Living conditions:

There are 3 143 households in the Ga-Segonyana municipality, with an average household size of 3 persons per household.

Of the households in the municipality, 19,9% households have access to piped water inside their dwelling, 20,2% have access to piped water inside their yard, and 91,2% of households have access to electricity for lighting.

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 Xhariep Plant and Mining (Pty) Ltd

Chart Data

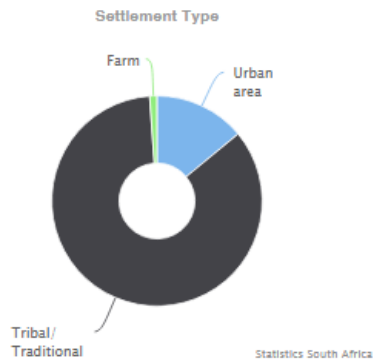


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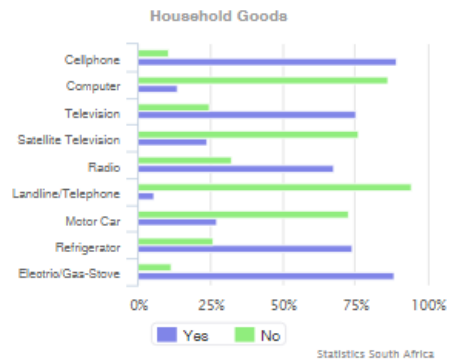


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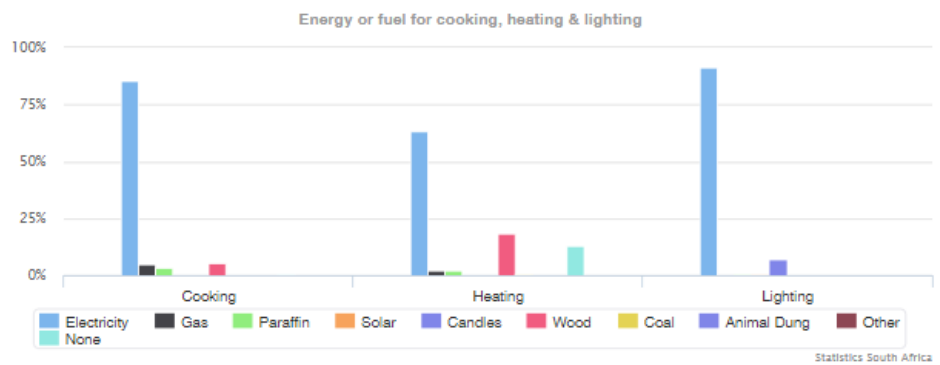


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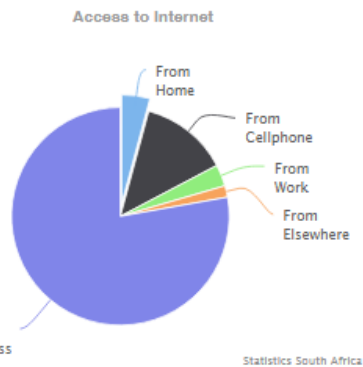
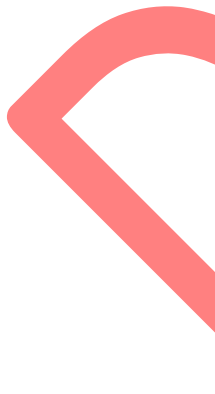
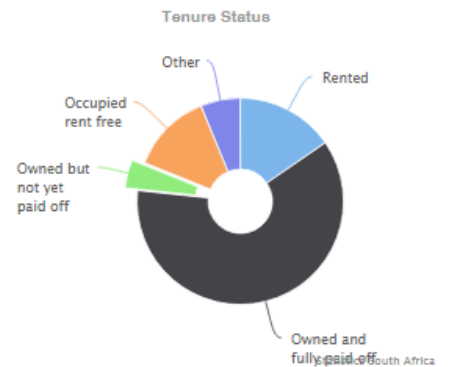
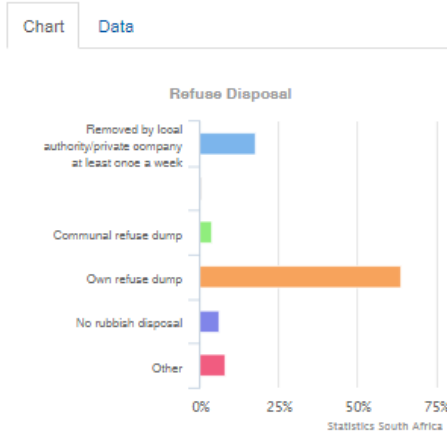
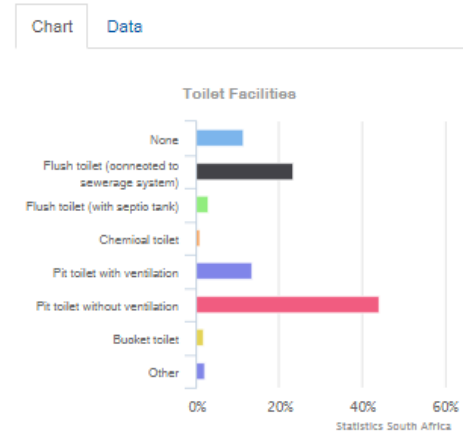
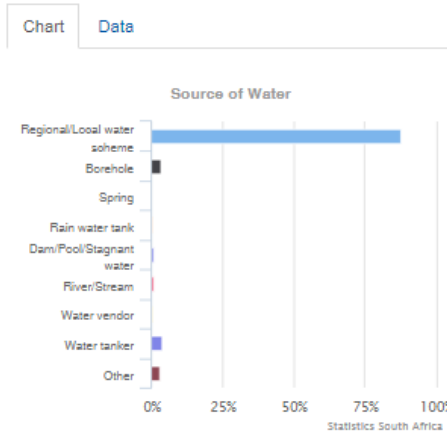


Chart Data

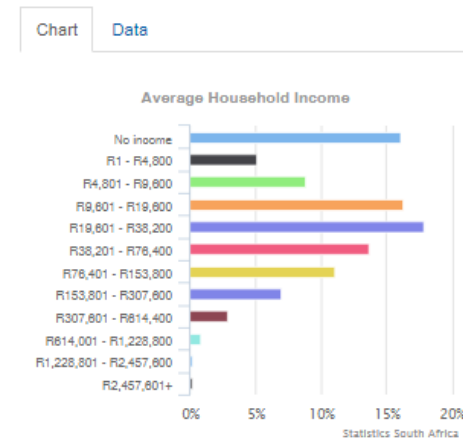
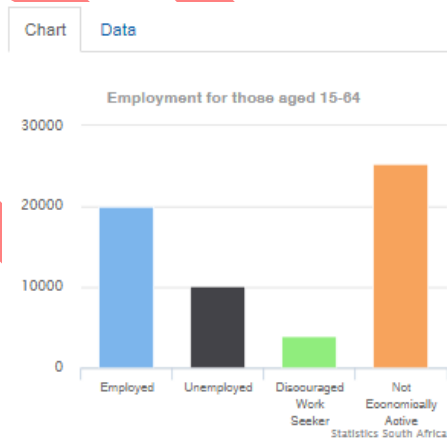


Basic Assessment Report and Environmental Management Programme Report
 Xhariep Plant and Mining (Pty) Ltd



Economy:

A total of 19 940 persons are employed, 10 154 are unemployed, and 3 895 are classified discouraged work-seekers.



- **Soil:**

The soils of the application area are described per vegetation type:

The soils in the Kuruman Thornveld vegetation type are described as red wind-blown (0.3 – 1.2m deep) sand. Locally, rocky pavements are formed in places. Most important land types Ae, Ai, Ag and Ah, with Hutton soil form.

The soils in the Kuruman Mountain Bushveld vegetation type are described as shallow sandy soils, of the Hutton form, with the most common land type Ib, followed by Ae, Ic and Ag.

- **Surface water:**

There are a number of non-perennial drainage lines and dry water courses, which traverses the application area.

A 100m no-prospecting buffer zone must be placed around these non-perennial water courses.

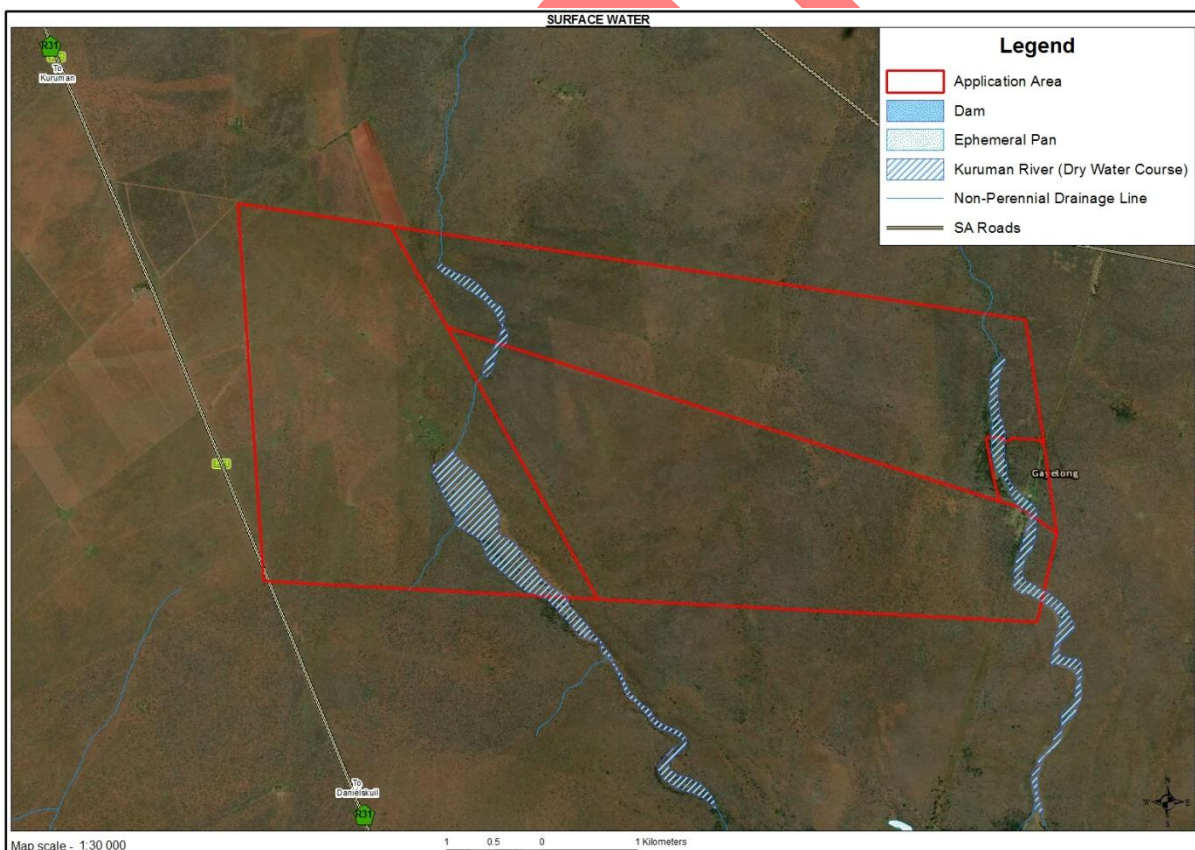


Figure 15 – Surface water map

- **Topography:**

The application area's altitude varies between 1 424m and 1 485 meters above sea level.

The landscape features for the areas located within the Kuruman Thornveld Vegetation type can be described as follows:

Flat rocky plains and some sloping hills with very well-developed, closed shrub layer and well-developed open tree stratum consisting of *Acacia erioloba*.

The landscape features for the areas located within the Kuruman Mountain Bushveld Vegetation type can be described as follows:

Rolling hills with generally gentle to moderate slopes and hill pediment areas with an open shrubveld with *Lebeckia macrantha* prominent in places. Grass layer is well developed.

(b) Description of the current land uses.

The surface owners currently utilize the land under application for livestock farming purposes.

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

- **Infrastructure:**

- The on-site gravel (farm) roads are in a reasonable condition.
- The secondary gravel roads accessing the farms are in a reasonable condition.
- There are a number of residences and associated infrastructure in the area under application.
- There are only a few windmills and relating agricultural infrastructure within the area under application.

- **Environmental:**

There are a number of non-perennial drainage lines and dry water courses which traverses the application area.

(d) Environmental and current land use map:

(Show all environmental and current land use features.)

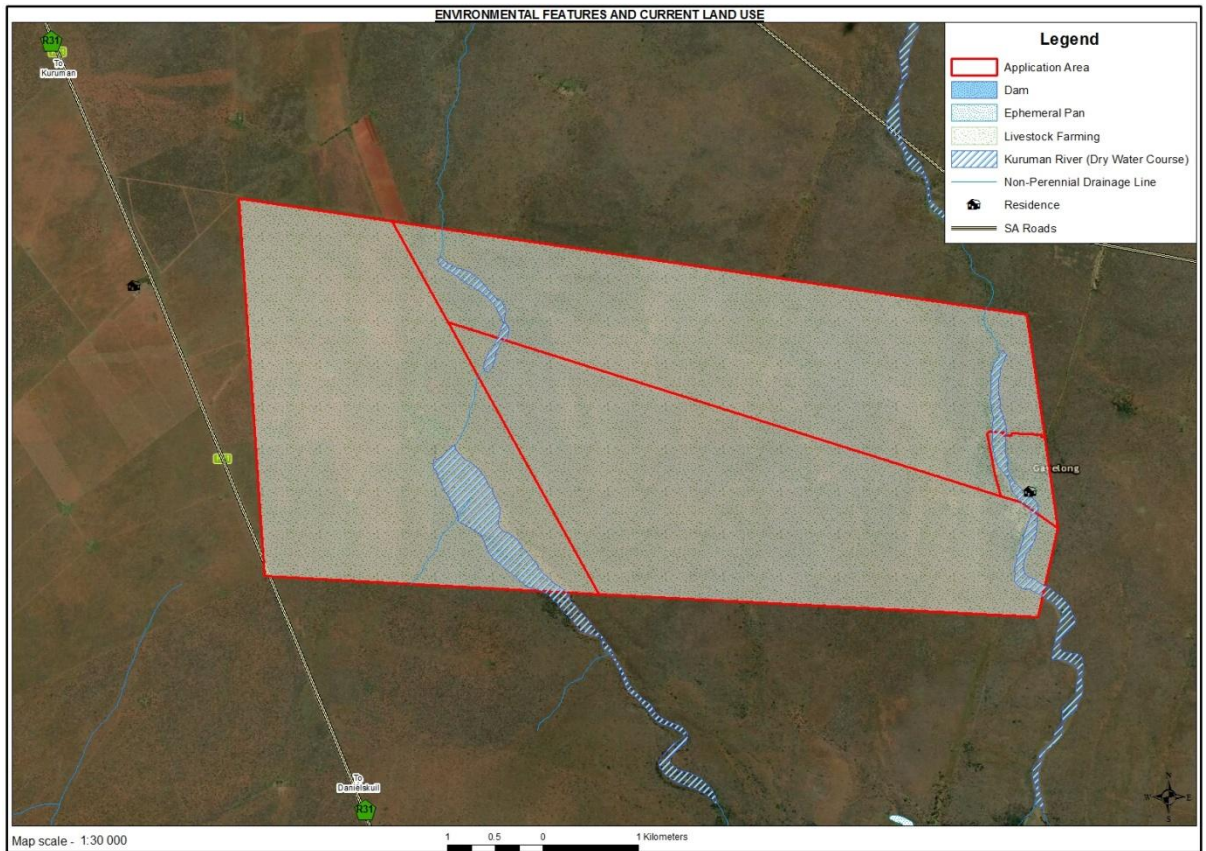
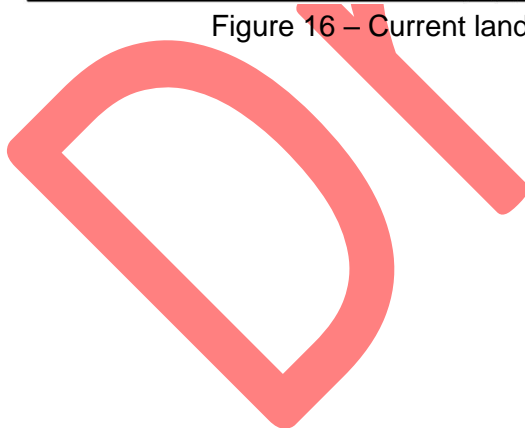


Figure 16 – Current land use and environmental map



Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

(v) Impacts identified:

(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.)

Prospecting activity	Impact on	Extent	Duration	Intensity	Probability	Significance (without mitigation)
Access Tracks	Air quality	Site	Short	Low	Definite	Low
	Fauna	Local	Long	Medium	Definite	Medium
	Flora	Local	Long	High	Definite	High
	Groundwater	Site	Short	Low	Improbable	Low
	Noise	Site	Short	Low	Definite	Low
	Soil	Local	Medium	Low	Definite	Low
	Surface water	N/A	N/A	N/A	N/A	N/A
	Topography	N/A	N/A	N/A	N/A	N/A
	Visual	Site	Medium	Low	Definite	Low

Prospecting activity	Impact on	Extent	Duration	Intensity	Probability	Significance (without mitigation)
Drilling activities	Air quality	Site	Short	Low	Definite	Low
	Fauna	Local	Long	Medium	Definite	Medium
	Flora	Local	Long	High	Definite	High
	Groundwater	Site	Short	Low	Improbable	Very Low
	Noise	Site	Short	Medium	Definite	Medium
	Soil	Local	Long	Medium	Definite	Medium
	Surface water	N/A	N/A	N/A	N/A	N/A
	Topography	N/A	N/A	N/A	N/A	N/A
	Visual	Site	Medium	Low	Definite	Low

(vi) **Methodology used in determining the significance of environmental impacts:**

(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.
- **Regional**
The impact could affect the area including the neighbouring farms, transport routes and the adjoining towns.

Duration

The lifetime of the impact which is measured in the context of the lifetime of the proposed phase (i.e. construction or operation).

- **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 mining period, where after it will be entirely negated.
- **Long term**
The impact will continue or last for the entire operational life of the mine, 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.

This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

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.)

Infrastructure: No offices and storerooms will be established at the site as Xhariep shall make use of facilities in the town of Kuruman.

Invasive prospecting: The proposed locality of the boreholes was placed on a 100m x 100m grid.

Alternatives considered:-

Infrastructure: The only alternative considered was the establishment of offices and storerooms on the application area. As Xhariep aims to minimize its impact on the natural environment as much as possible this option was decided against.

Invasive prospecting: The drilling of boreholes over the entire property was considered, but taking into account that Xhariep aims to minimize its impact on the natural environment as much as possible this option was decided against.

(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; • Avoidance of unnecessary removal of vegetation; • Re-vegetation and monitoring of re-growth; • Rehabilitation of disturbed areas; and • Controlled drilling operations, preferably on 	Low

Basic Assessment Report and Environmental Management Programme Report
 Xhariep Plant and Mining (Pty) Ltd

	wind-free days.	
Fauna	<ul style="list-style-type: none"> • Speed limits; • Continuous rehabilitation of disturbed areas; • No snares or traps may be set for animals and strict adherence to be communicated to all employees and contractors; and • Maintenance of firebreaks. 	Medium
Flora	<ul style="list-style-type: none"> • Continuous rehabilitation of disturbed areas; • Avoidance of unnecessary removal of vegetation; • Re-vegetation and monitoring of re-growth; • Maintenance of firebreaks; • No trees felled for firewood; • Obtain relevant permit before removal of protected tree or plant species; and • Re-seeding where necessary. 	High
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; and • Monitoring of groundwater quality. 	Low
Noise	<ul style="list-style-type: none"> • Hearing protection; • Working hours; • Controlled drilling operations; • Silencers on equipment and vehicles; and 	Medium
Soil	<ul style="list-style-type: none"> • Continuous rehabilitation of disturbed areas; • Ripping of compacted areas; • Maintenance & refuelling in dedicated areas; • Drip pans; • Storage of hydrocarbons in dedicated areas; and • Immediate removal of any hydrocarbon spill. 	Medium
Surface water	<ul style="list-style-type: none"> • Storm water control; • Control and monitoring of erosion; • Immediate removal of any hydrocarbon spill; • Maintenance & re-fuelling in dedicated areas; • Adhering to buffer zones; • Drip pans; and • Storage of hydrocarbons in dedicated areas. 	N/A
Topography	<ul style="list-style-type: none"> • Sloping of rehabilitated and disturbed areas. 	N/A
Visual	<ul style="list-style-type: none"> • Sloping of rehabilitated and disturbed areas; 	Low

(ix) Motivation where no alternative sites were considered:

No offices and storerooms will be established at the site as Xhariep shall make use of facilities in the town of Kuruman.

(x) Statement motivating the preferred site:

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

No offices and storerooms will be established at the site as Xhariep shall make use of facilities in the town of Kuruman.

i) 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.

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

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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(j) Assessment of each identified potentially significant impact and risk

NAME OF ACTIVITY (e.g. For prospecting – drill site, site camp, ablution 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, 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
Access Tracks	<ul style="list-style-type: none"> • Dust • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from vehicles travelling on the access 	Air quality Fauna Flora Groundwater Soil Surface water	Phases 3, 5 & 7 Percussion Drilling	Low	<ul style="list-style-type: none"> • Maintenance of access tracks / roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits 	Very Low

Basic Assessment Report and Environmental Management Programme Report
 Xhariep Plant and Mining (Pty) Ltd

	<ul style="list-style-type: none"> tracks • Compaction of soil. • Erosion 				<ul style="list-style-type: none"> • Stormwater run-off control • Erosion control • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	
Chemical toilets	<ul style="list-style-type: none"> • Soil contamination • Groundwater contamination 	Groundwater Soil	Phases 3, 5 & 7 Percussion Drilling	Very Low	<ul style="list-style-type: none"> • Maintenance of toilets on regular basis. • Removal of toilets upon closure. 	N/A
Drilling activities	<ul style="list-style-type: none"> • Nuisance dust created by drill rig • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from drill rig • Compaction and / or disturbance of soil structure • Changing of natural aesthetic view of environment by drill rig 	Air quality Fauna Flora Groundwater Soil Surface water	Phases 3, 5 & 7 Percussion Drilling	Medium	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation • Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth • Controlled drilling operations, preferably on wind-free days • Immediate removal of any hydrocarbon spill • Maintenance and re-fuelling to take place in dedicated area • Drip pans • Storage of hydrocarbons in dedicated area • Hearing protection • Working hours • Ripping of compacted areas 	Low

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

(k) 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
Heritage Impact Assessment	Await specialist report		
Palaeontological Impact Assessment	Await specialist report		

Attach copies of Specialist Reports as appendices.

(I) Environmental impact statement

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

- The creation of the access tracks will have a very low impact on air quality, fauna, flora, groundwater, soil and surface water after the implementation of mitigation measures.
- The chemical toilets are not expected to have an environmental impact should the mitigation measures be implemented.
- The drilling activities will have a low impact on air quality, fauna, flora, groundwater, soil and surface water after the implementation of mitigation measures.

(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.

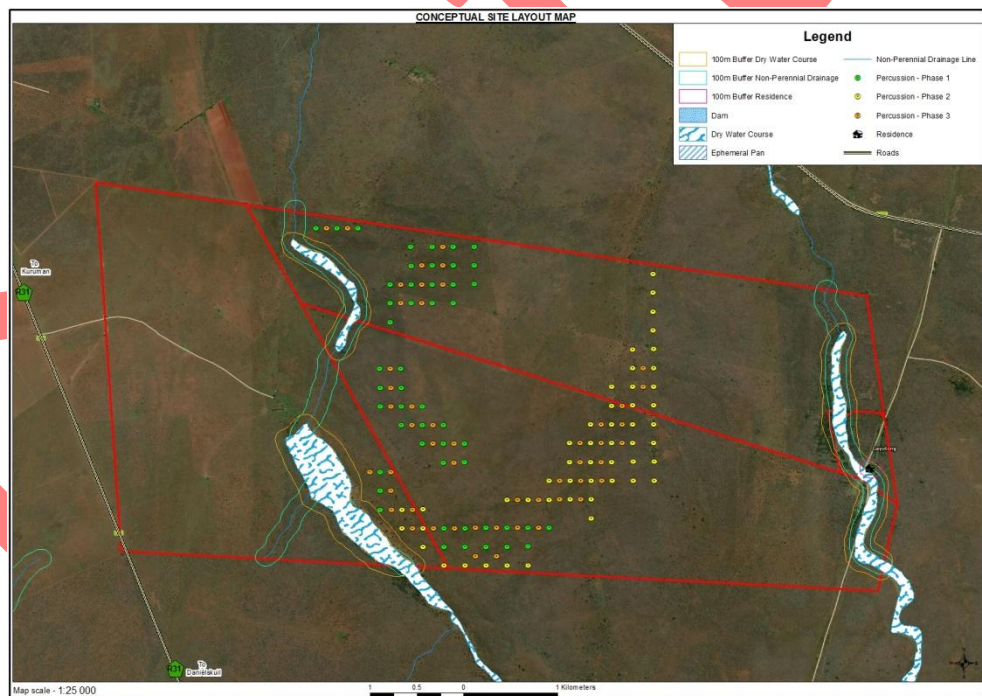


Figure 17 – Site layout with buffer zones

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

Infrastructure: No offices and storerooms will be established at the site as Xhariep shall make use of facilities in the town of Kuruman.

Invasive prospecting: The proposed locality of the boreholes was placed on a 100m x 100m grid.

Alternatives considered:-

Infrastructure: The only alternative considered was the establishment of offices and storerooms on the application area. As Xhariep aims to minimize its impact on the natural environment as much as possible this option was decided against.

Invasive prospecting: The drilling of boreholes over the entire property was considered, but taking into account that Xhariep aims to minimize its impact on the natural environment as much as possible this option was decided against.

(m) 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.

- Archaeological sites:
 - All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered.
 - All construction in the immediate vicinity (50m radius of the site) should cease.
 - The heritage practitioner should be informed as soon as possible.
 - In the event of obvious human remains the South African Police Services (SAPS) should be notified.
 - Mitigation measures (such as refilling etc.) should not be attempted.
 - The area in a 50m radius of the find should be cordoned off with hazard tape.
 - Public access should be limited.
 - The area should be placed under guard.
 - No media statements should be released until such time as the heritage practitioner has had sufficient time to analyse the finds.

- Air quality:

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

 - Speed limits of vehicles inside the application area will be strictly controlled to avoid excessive dust or the excessive deterioration of the farm roads and access tracks to be used.
 - Routine spraying of unpaved site areas and access tracks utilized by the prospecting operation with water;
 - Avoidance of unnecessary removal of vegetation;
 - All cleared, disturbed or exposed areas must be rehabilitated as soon as practically possible to prevent the forming of additional sources of dust.
 - Monitoring of vegetation re-growth in rehabilitated areas.

- Drilling activities preferably to take place on wind-free days.
- Fauna
 - To ensure a minimum of impact to animals the following management guidelines should be followed:
 - Speed limits of vehicles inside the application area will be strictly controlled to avoid road kills.
 - Continuous rehabilitation of disturbed areas to allow the fauna habitat to be re-established.
 - No hunting (snares) will be allowed at the application area.
 - Maintenance of the firebreak.
- Flora
 - Continuous rehabilitation of disturbed areas to allow the natural vegetation cover to be re-established.
 - Avoidance of unnecessary removal of vegetation cover.
 - Monitoring of vegetation re-growth in rehabilitated areas.
 - Maintenance of firebreak.
 - No trees or shrubs will be felled or damaged for the purpose of obtaining firewood.
 - Management will take responsibility to control declared invader or exotic species on the site. The following control methods will 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 Northern Cape Nature Conservation will be obtained before any protected plant species are removed.
 - All rehabilitated areas, where applicable and possible, will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to prospecting activities commenced, if the natural succession of vegetation is unacceptably slow.
 - Fires will only be allowed in facilities or equipment specially constructed for this purpose.
 - The end objective of the re-vegetation program will be to achieve a stable self-sustaining habitat unit.
- Groundwater
 - Immediate removal of any hydrocarbon spill.
 - Vehicle- and equipment maintenance will only be allowed within the dedicated maintenance area.
 - Only emergency breakdowns will be allowed in other areas. The following procedure will be followed if a vehicle or piece of equipment would break down outside of the maintenance area.
 - Drip pans will be placed at all points where diesel, oil or hydraulic fluid may drip and in so doing contaminate the soil.

- All efforts will 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 will firstly be drained of all fluid. The part will then be removed and taken to the maintenance area.
- Equipment used as part of the proposed operation will be adequately maintained so as to ensure that oil, diesel, grease or hydraulic fluid does not leak during operation.
- Fuel and other petrochemicals will be stored in steel receptacles that comply with SANS 10089-1:2003 (SABS 089-1:2003) standards.
- Monitoring of groundwater quality.
- Proper sanitation facilities will be provided for employees. No person will 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 will be adhered to.
- Noise
 - Hearing protection will be available for all employees where attenuation cannot be implemented.
 - Working hours will be kept between sunrise and sunset as far as possible.
 - As a minimum, ambient noise levels emanating from the prospecting activities will not exceed 82 dBA at the site boundary. 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 at 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.
 - Xhariep will comply with the occupational noise Regulations of the Occupational Health and Safety Act, Act 85 of 1993.
 - Xhariep will comply with the measures for good practice with regard to management of noise related impacts during construction and operation.
 - The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the drilling area and that which may migrate outside the drilling area.
 - If any complaints are received from the public or state department regarding noise levels the levels will be monitored at prescribed monitoring points.

Mechanical equipment:

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

- Palaeontological sites
 - Chance Fossil Finds Procedure as outlined in the Specialist Report should be followed:
 - Safeguarding the fossils.
 - Reporting of all significant finds to the SAHRA.
 - Judicious sampling and recording of fossil material and associated geological data by a qualified palaeontologist.
 - Any fossil material collected should be curated within an approved repository (museum / university fossil collection).

- Soil
 - In all places of development the first 300mm of loose or weathered material found will be classified as a growth medium. The topsoil will 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 will be removed and stockpiled on a dedicated area. The maximum height of stockpiles will be 2 meters.
 - The growth medium/topsoil will 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 area, it will 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 will be implemented on disturbed areas in and around the site.
 - The stored topsoil will be adequately protected from being blown away or being eroded.
 - Compacted areas will 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 will be confined to established roads and access tracks for as far as practical in order to prevent the compaction of soils.

- Surface water
 - The disposal of oil, grease and related industrial waste will be transported to the stores area in Kuruman on a daily basis where it will be stored in steel containers supplied by an oil recycling contractor. All oil and grease will be removed on a regular basis from the operation by a registered approved contractor.
 - All refuse and waste from the different sections will be handled according to NEMA Guidelines. Recycling of waste is encouraged in all the consumer sections of the operation, where recyclable materials will be collected before dumping them in the domestic waste disposal area.

- All non-biodegradable (recyclable) refuse such as glass bottles, plastic bags and metal scrap will be removed from the site on a regular basis and disposed of at a recognized disposal facility.
- Erosion and storm water control measures will be implemented.
- Vehicle repairs will only take place within the maintenance area for vehicles.
- Re-fuelling will only take place in the re-fuelling area. If this is found not be practical, drip trays will be used whenever re-fuelling takes place outside of this area.
- During rehabilitation the applicant will 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.
- Adhering to no-prospecting buffer zones placed around dry water courses.
- Topography
 - During rehabilitation the applicant will 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.
- Visual
 - Waste material of any description will be removed from the prospecting area upon completion of the operation and be disposed of at a recognized landfill facility.
 - The drill rigs will be removed from the site upon completion of the prospecting operation.

(n) Aspects for inclusion as conditions of Authorisation.

Any aspects which 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 mitigatory measures are tried and tested over many years in the prospecting / mining industry. Xhariep will 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 its annexures have extensive knowledge in her 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.

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.

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

ii) Conditions that must be included in the 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.

(q) Period for which the Environmental Authorisation is required.

Five 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.

Xhariep'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.

R402 717.53

(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 (DMR) 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 Gayelong 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 (<http://www.statssa.gov.za/publications/P0141/CPIHistory.pdf>).

Table B2 – CPI headline year-on-year rates³

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
2004	0,2	0,7	0,4	0,2	0,6	1,2	1,6	1,0	1,3	2,4	3,7	3,4	1,4
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											

- Section B – Process followed:

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

The minerals applied for are Iron Ore and Manganese Ore.

- Step 2A: Determine primary risk class:

The primary risk class is as follows in terms of Table B.12.

Mineral	Small mine (Mine, mine waste)
Iron Ore	C
Manganese Ore	C

The risk class used in this calculation is thus 'Class C – Low Risk'.

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

Not applicable. There are no saleable by-products produced.

- 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	X
Medium	X		
High			

The area sensitivity has been determined as 'Medium'.

- 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:

- BAR/EMPR;
- Rehabilitation and Closure Plan (in BAR/EMPR); and

- Step 4.2: Identify closure components:

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 (2019)
1	C	Medium	1.00	m ³	6.82	15.33
2(A)	C	Medium	1.00	m ²	95.00	213.51
2(B)	C	Medium	1.00	m ²	140.00	314.65
3	C	Medium	1.00	m ²	17.00	38.21
4(A)	C	Medium	1.00	m	165.00	370.84
4(B)	C	Medium	1.00	m	90.00	202.28
5	C	Medium	1.00	m ²	190.00	427.03
6	C	Medium	0.52	Ha	96,700.00	217,333.98
7	N/A	N/A	N/A	N/A	N/A	N/A
8(A)	C	Medium	1.00	Ha	66,400.00	144,739.49
8(B)	C	Medium	1.00	Ha	82,700.00	185,868.87
8(C)	C	Medium	0.66	Ha	240,200.00	539,851.31
9	C	Medium	1.00	Ha	55,600.00	124,961.42
10	C	Medium	1.00	Ha	52,600.00	118,218.90
11	C	Medium	1.00	Ha	52,600.00	118,218.90
12	C	Medium	1.00	m	60.00	134.85
13	C	Medium	0.25	Ha	20,000.00	44,950.15
14	C	Medium	1.00	Ha	7,000.00	15,732.55

- Step 4.4: Identify and apply weighting factors:

Weighting Factor 1 – Nature of Terrain = 1.00

The nature of the terrain has been determined as 'flat': Generally flat over the area.

Weighting Factor 2 – Proximity to urban area = 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) Not applicable – No processing plant or related structures will be established.	<u>0 m³</u>
2(A)	Demolition of steel buildings and structures Not applicable – No steel buildings or structures will be established.	<u>0 m²</u>
2(B)	Demolition of reinforced concrete buildings and structures Not applicable – No reinforced concrete buildings or structures will be established.	<u>0 m²</u>

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

3	Rehabilitation of access roads 1 000m x 3m wide access tracks	<u>3 000 m²</u>
4(A)	Demolition and rehabilitation of electrified railway lines Not applicable – There are no electrified railway lines at the site.	<u>0 m</u>
4(B)	Demolition and rehabilitation of non-electrified railway lines Not applicable – There are no non-electrified railway lines at the site.	<u>0 m</u>
5	Demolition of housing and/or administration facilities Not applicable – No housing and/or administration facilities will be established.	<u>0 m²</u>
6	Opencast rehabilitation including final voids and ramps Not applicable – Xhariep will not conduct any bulk sampling activities.	<u>0 Ha</u>
7	Sealing of shafts adits and inclines Not applicable	<u>0 m³</u>
8(A)	Rehabilitation of overburden and spoils Not applicable – Xhariep will not conduct any bulk sampling activities.	<u>0 Ha</u>
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) Not applicable – No evaporation ponds will be established.	<u>0 Ha</u>
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) Not applicable - No evaporation ponds will be established.	<u>0 Ha</u>
9	Rehabilitation of subsided areas Not applicable – There are no subsided areas at the site.	<u>0 Ha</u>
10	General surface rehabilitation 150 boreholes with a 10m x 10m surface disturbance around each.	<u>1.5 Ha</u>
11	River diversions Not applicable – There are no rivers within the prospecting right area.	0 m
12	Fencing Not applicable – Xhariep will not erect any fencing.	<u>0 m</u>
13	Water management Not applicable – Xhariep will not establish any water infrastructure.	<u>0 Ha</u>

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

14	2 to 3 years maintenance and aftercare	
	Not applicable	<u>0 Ha</u>
15 (A) & 15(B)	Specialist study	

- Step 4.6: Identify closure costs from specialists studies

It is recommended that a Screening Level Risk Assessment must be conducted.

- Step 4.7: Calculate Closure Costs

Determination of preliminary and general & Contingencies %

- Preliminary and General: Add 6% of Subtotal 1 if Subtotal < R100,000,000.
- Contingencies: Add 10% of Subtotal 1.

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	0.00	15.33	1	1	0.00
2 (A)	Demolition of steel buildings and structures	m2	0.00	213.51	1	1	0.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	0.00	314.65	1	1	0.00
3	Rehabilitation of access roads	m2	3 000.00	38.21	1	1	114 622.89
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	370.84	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	202.28	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	0.00	427.03	1	1	0.00
6	Opencast rehabilitation including final voids and ramps	ha	0.000	217 333.98	0.52	1	0.00
7	Sealing of shafts adits and inclines	m3	0.00	114.62	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	0.000	144 739.49	1	1	0.00
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	185 868.87	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	539 851.31	0.66	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	124 961.42	1	1	0.00
10	General surface rehabilitation	ha	1.50	118 218.90	1	1	177 328.35
11	River diversions	ha	0.00	118 218.90	1	1	0.00
12	Fencing	m	0.00	134.85	1	1	0.00
13	Water management	ha	0.00	44 950.15	0.25	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	0.00	15 732.55	1	1	0.00
15 (A)	Specialist study	Sum				1	0.00
15 (B)	Specialist study	Sum				1	0.00
Total of 1 - 15 above							291 951.23

weighting factor 2

1.05

Subtotal 1 **306 548.79**

1	Preliminary and General	17 517.07	17 517.07
2	Contingencies	29 195.12	29 195.12
Subtotal 2			353 260.99

VAT (14%) 49 456.54

Grand Total **402 717.53**

(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.)

Provision has been made in table 9.1 of the Prospecting Work Programme for rehabilitation.

**(t) Specific information required by the competent Authority
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.)

- Impact on landowner:
Positive: Compensation of land lost to prospecting.
Negative: Temporary loss of grazing land.
- Impact on other I&AP:
 - 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.

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

There are no known heritage resources within the application area, thus no impact on any national estate in terms of Section 3(2) of the National Heritage Resources Act is foreseen.

(u) 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 alternatives were found.

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 M and S Consulting (Pty) Ltd.

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.)

Xhariep's prospecting activities for Iron Ore and Manganese Ore shall be conducted in nine phases over a period of five years.

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc)
1	Non-invasive Prospecting Reconnaissance visit	Geologist	Month 1	Memorandum to address any problems	Month 2	Geologist
2	Non-invasive Prospecting Review of historical activities; Desktop study; and Geological Mapping	Geologist	Month 2 - 12	Map & Report	Month 13	Geologist
3	Invasive Prospecting Phase 1 Percussion drilling	Geologist & Drilling contractor	Month 13 - 24	Drill logs	Month 24	Geologist
4	Non-invasive Prospecting Analysis of drill samples	Laboratory	Month 13 – 24 (Concurrent with drilling)	<ul style="list-style-type: none"> • Analyses sheets • Laboratory report • Map • Report 	Month 24	Laboratory & Geologist
5	Invasive Prospecting Phase 2 Percussion drilling	Geologist & Drilling contractor	Month 25 – 36	Drill logs	Month 36	Geologist
6	Non-invasive Prospecting Analysis of drill samples	Laboratory	Month 25 – 36 (Concurrent with drilling)	<ul style="list-style-type: none"> • Analyses sheets • Laboratory report • Map • Report 	Month 36	Laboratory & Geologist
7	Invasive Prospecting Phase 3 Percussion drilling	Geologist & Drilling contractor	Month 37 - 48	Drill logs	Month 48	Geologist
8	Non-invasive Prospecting Analysis of drill samples	Laboratory	Month 37 - 48 (Concurrent with drilling)	<ul style="list-style-type: none"> • Analyses sheets • Laboratory report • Map • Report 	Month 48	Laboratory & Geologist
9	Non-Invasive Prospecting Consolidation and interpretation of results / data	Geologist	Month 49 - 60	Feasibility Report	Month 60	Geologist & CEO

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.)

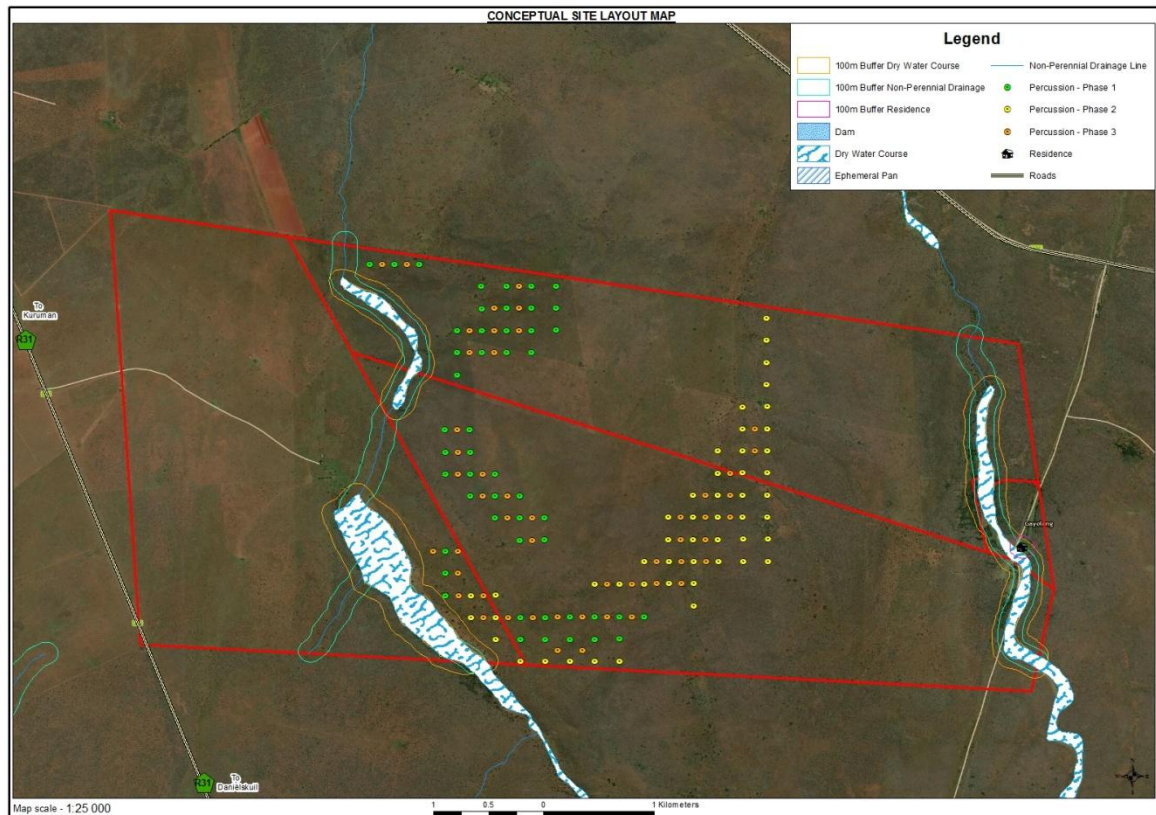


Figure 18 – Conceptual site layout (See Appendix '4')

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 objective of Xhariep's planned prospecting operation is to restore the site to its current 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) Volumes and rate of water use required for the operation.

The only water use at the site will be for domestic use (drinking water):

The drilling team, consisting of five people, will be on the site during Phases 3, 5 and 7 of the prospecting operation. Provision for 50 litres of water per day is made for drinking water.

(iii) 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 10m³ of water is taken from a groundwater resource per day on average over a year on a property.

As stated in paragraph d(ii) above, Xhariep's water use shall not exceed 10 000 litres (10m³) per day.

Accordingly, Xhariep 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.

Basic Assessment Report and Environmental Management Programme Report
 Xhariep Plant and Mining (Pty) Ltd

(iv) 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 route 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.)	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)	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.
Access Tracks	Operational Rehabilitation Closure	3 000m ²	<ul style="list-style-type: none"> • Maintenance of roads / access tracks. • Dust control and monitoring. • Groundwater quality monitoring • Noise control and monitoring. • Speed limits. 	The following must be placed at the site and is applicable to all activities: <ul style="list-style-type: none"> ○ Relevant Legislation; ○ Acts; ○ Regulations; ○ COP's; and ○ SOP's 	Ripping of access tracks upon closure of prospecting right.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

			<ul style="list-style-type: none"> • Stormwater run-off control • Erosion control • Immediately clean hydrocarbon spills • Ripping of access tracks / roads upon closure. 	<p>Management and staff must be trained to understand the contents of these documents, and to adhere to thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness Training must be provided to employees. • 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. 	
Chemical toilets	Operational Closure	6m ² each	<ul style="list-style-type: none"> • Maintenance of the toilets. • Removal of toilets upon closure. 		Removal of toilets upon closure of prospecting right.
Drilling activities	Operational Rehabilitation Closure	15 000m ²	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation. • Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth • Controlled drilling operations, preferably on wind-free days • Immediate removal of any hydrocarbon spills • Maintenance and re-fuelling to take place in dedicated area • Drip pans • Storage of hydrocarbons in dedicated area • Hearing protection • Working hours kept between sun-up and sun-down • Ripping of compacted / disturbed areas 	<p>Bi-annually Performance Assessment Reports and Quantum Calculations must be done to ensure that the operation adheres to the contents of the BAR & EMPr documents.</p>	Ripping of disturbed areas upon closure of prospecting right.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

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.)
Access tracks	<ul style="list-style-type: none"> • Dust • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from vehicles travelling on the access tracks • Compaction of soil. • Erosion 	Air quality Fauna Flora Groundwater Soil Surface water	Operational Rehabilitation Closure	<ul style="list-style-type: none"> • Maintenance of access tracks • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion 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 objectives met. • Erosion potential

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

				<ul style="list-style-type: none"> • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	minimized.
Chemical toilets	<ul style="list-style-type: none"> • Soil contamination • Groundwater contamination 	Groundwater Soil	Operational Closure	<ul style="list-style-type: none"> • Maintenance of toilets on regular basis. • Removal of toilets upon closure. 	<ul style="list-style-type: none"> • Minimize the potential for a chemical spill on soil, which could infiltrate to groundwater.
Drilling activities	<ul style="list-style-type: none"> • Nuisance dust created by drill rig • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from drill rig • Compaction and / or disturbance of soil structure • Changing of natural aesthetic view of environment by drill rig 	Air quality Fauna Flora Groundwater Soil Surface water	Operational Rehabilitation Closure	<ul style="list-style-type: none"> • Avoidance of unnecessary removal of vegetation • Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth • Controlled drilling operations, preferably on wind-free days • Immediate removal of any hydrocarbon spill • Maintenance and re-fuelling to take place in dedicated area • Drip pans • Storage of hydrocarbons in dedicated area • Hearing protection • Working hours • Ripping of compacted areas 	<ul style="list-style-type: none"> • Dust levels minimized. • Rehabilitation standards and closure objectives met. • Minimize potential for hydrocarbon spills to infiltrate into groundwater. • Erosion potential minimized. • Noise levels minimized.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs © 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 (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...)</p>	<p>MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants.)</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>Access tracks</p>	<ul style="list-style-type: none"> • Dust • Disturbance of the natural habitat of fauna • Disturbance / destruction of natural vegetation cover • Groundwater contamination from hydrocarbon spills • Noise from vehicles travelling on the access tracks • Compaction of soil. • Erosion 	<ul style="list-style-type: none"> • Maintenance of access tracks / roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion control • Immediately clean hydrocarbon spills 	<p>Ripping of access tracks 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 to thereto.</p>

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

		<ul style="list-style-type: none"> Rip disturbed areas to allow re-growth of vegetation cover 		
Chemical toilets	<ul style="list-style-type: none"> Soil contamination Groundwater contamination 	<ul style="list-style-type: none"> Maintenance of toilets on regular basis. Removal of toilets upon closure. 	Removal of toilets 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 to thereto.</p>
Drilling activities	<ul style="list-style-type: none"> Nuisance dust created by drill rig Disturbance of the natural habitat of fauna Disturbance / destruction of natural vegetation cover Groundwater contamination from hydrocarbon spills Noise from drill rig Compaction and / or disturbance of soil structure Changing of natural 	<ul style="list-style-type: none"> Avoidance of unnecessary removal of vegetation Continuous rehabilitation of disturbed areas, re-vegetation and monitoring of re-growth Controlled drilling operations, preferably on wind-free days Immediate removal of any hydrocarbon spill Maintenance and re-fuelling to take place in dedicated area 	Ripping of drilling sites 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 to thereto.</p>

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

	aesthetic view of environment by drill rig	<ul style="list-style-type: none">• Drip pans• Storage of hydrocarbons in dedicated area• Hearing protection• Working hours• Ripping of compacted areas		
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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.

- The main closure objective of Xhariep's planned prospecting operation is to restore the site to its current land capability in a sustainable manner.
- 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.

Public Participation process followed during Prospecting Right Application process:

The surface owners of the properties under application, surrounding landowners and various other identified interested and affected parties were notified of the proposed prospecting activity by means of registered post/e-mail, with a draft BAR/EMPR attached thereto.

Any other interested and / or affected party was also invited to register as such in advertisements that were placed in the 'Kimberley Gazette' (Local newspaper) and Volksblad (Regional newspaper). A notice board was also placed near the entrance road to the site. Attached as Appendix '5' find hereto proof of the notification process.

The following responses have been received to the notification letters (refer to Appendix '6'):

- Eskom:
Eskom responded per e-mail on the 10th of February 2020. Eskom raised no objection and requested that certain conditions must be accepted in writing. The conditions were signed by the Director of Xhariep Plant and Mining (Pty) Ltd and sent to Eskom per e-mail on the 17th of February 2020.

Surface owners consultation process (refer to Appendix '7'):

A meeting was held with the surface owners on the 17th of March 2020 at the offices of Duvenhage & van der Merwe Attorneys, Kuruman. The minutes of this meeting as well as the attendance register is attached under Appendix '7'.

- **Kalahari Futures Trading Trust:**
Mr. Maritz Lubbe, Trustee of Kalahari Futures Trading Trust, attended the meeting held on the 17th of March 2020. Refer to Appendix '7'.
 - **Marietha Freund Trust:**
Duvenhage & van der Merwe Attorneys responded per e-mail on the 21st of February 2020 confirming that they act on behalf of the Marietha Freund Trust. A copy of the BAR/EMPR was requested. A copy of the draft BAR/EMPR was provided per e-mail on the 24th of February 2020. Mr. Anton Freund, Trustee of Marietha Freund Trust, attended the meeting held on the 17th of March 2020. Refer to Appendix '7'.
 - **Kgalagadi Dipudi Cooperative Enterprise Ltd:**
This company has been liquidated and deregistered on CIPC. No contact details could be obtained for the directors of this company.
 - **Kylipac Property Development (Pty) Ltd:**
A notification letter was sent to the registered address of the Company; however no response has been received to date. No contact details could be obtained for the two directors, Mr. Ngwane Roux and Ms. Kelebogile Jane Nkadamang to arrange a meeting.
- c. **Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main prospecting activities, including the anticipated prospecting area at the time of closure.**

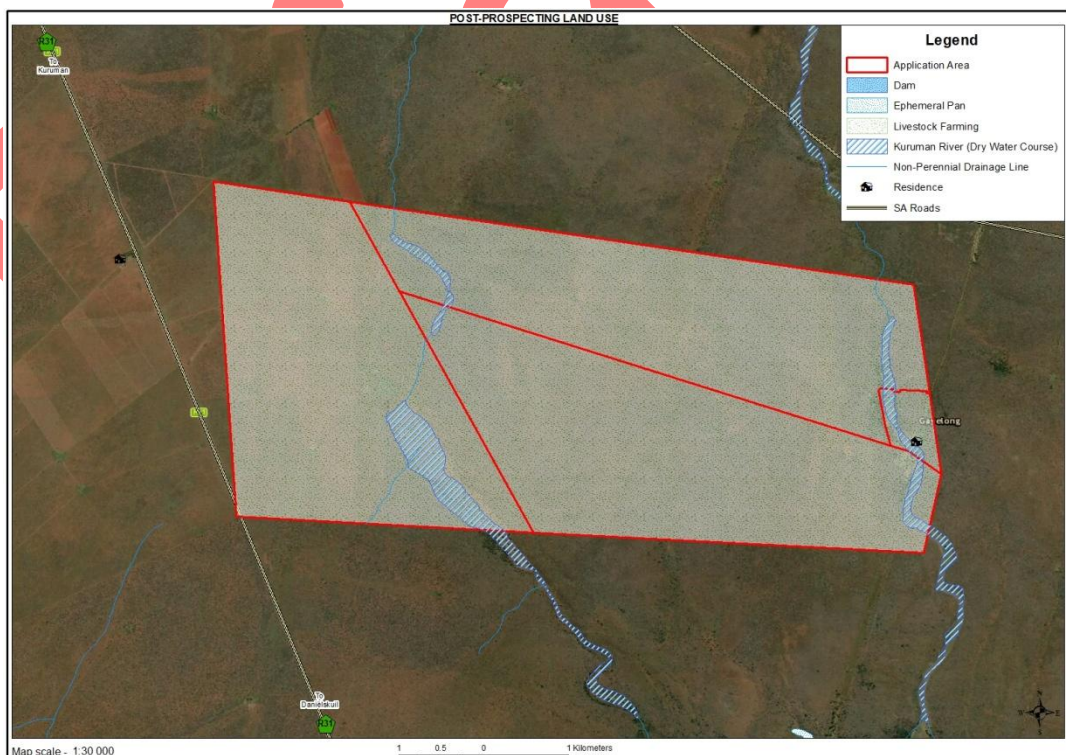


Figure 19 – Post prospecting land use map

Rehabilitation Plan:

- Rehabilitation of boreholes
 - All shallow boreholes (i.e. <10m) will be backfilled and levelled.
 - All boreholes deeper than 10m will be covered with a metal plate and 1000mm of previously stored topsoil.
- Final rehabilitation of access tracks and / roads

After rehabilitation has been completed, all roads will be ripped or ploughed, providing the landowner does not want them to remain that way and with written approval from the Director Mineral Development of the Department of Mineral Resources.
- Submission of information

Reports on rehabilitation and monitoring will be submitted biennially to the Department of Mineral Resources - Kimberley, as described in Regulation 55.
- Maintenance (Aftercare)

Maintenance after closure will mainly concern the regular inspection and monitoring and/or completion of the re-vegetation programme for a period of at least two rainy seasons.

The aim of this Environmental Management Plan 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 will be to create an acceptable post-prospecting environment and land-use. Therefore all agreed commitments will be implemented by Prospecting Management.

- After-effects following closure
 - Acid drainage
No potential for bad quality leach ate 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 will be to obtain a self-sustaining and stable end result. Xhariep's prospecting activities will not include bulk sampling which could impact on the stability of the land.

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

The main closure objective of Xhariep's planned prospecting operation is to restore the site to its current land capability in a sustainable matter. The

Basic Assessment Report and Environmental Management Programme Report
 Xhariep Plant and Mining (Pty) Ltd

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.

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	0.00	15.33	1	1	0.00
2 (A)	Demolition of steel buildings and structures	m2	0.00	213.51	1	1	0.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	0.00	314.65	1	1	0.00
3	Rehabilitation of access roads	m2	3 000.00	38.21	1	1	114 622.89
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	370.84	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	202.28	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	0.00	427.03	1	1	0.00
6	Opencast rehabilitation including final voids and ramps	ha	0.000	217 333.98	0.52	1	0.00
7	Sealing of shafts adits and inclines	m3	0.00	114.62	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	0.000	144 739.49	1	1	0.00
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	185 868.87	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	539 851.31	0.66	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	124 961.42	1	1	0.00
10	General surface rehabilitation	ha	1.50	118 218.90	1	1	177 328.35
11	River diversions	ha	0.00	118 218.90	1	1	0.00
12	Fencing	m	0.00	134.85	1	1	0.00
13	Water management	ha	0.00	44 950.15	0.25	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	0.00	15 732.55	1	1	0.00
15 (A)	Specialist study	Sum				1	0.00
15 (B)	Specialist study	Sum				1	0.00
Total of 1 - 15 above							291 951.23

weighting factor 2
1.05

Subtotal 1	306 548.79
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1	Preliminary and General	17 517.07	17 517.07
2	Contingencies	29 195.12	29 195.12
Subtotal 2		353 260.99	353 260.99

VAT (14%)	49 456.54
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Grand Total	402 717.53
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- f. Confirm that the financial provision will be provided as determined.

Xhariep shall submit to the DMR a financial guarantee upon request therefore.

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"> - Access tracks - Drilling activities 	Air quality	A single bucket monitoring system must be placed on the site during the drilling phase to measure the air quality levels and to ensure that Xhariep's operation adheres to the Management Standards as set out in the Atmospheric Pollution Prevention Act (45 of 1965), the Regulations of the MPRDA (28 of 2002) and the Mine, Health and Safety Act (29 of 1996).	Project manager Environmentalist	Monthly fall-out dust sampling and quarterly reporting to DMR during phases 3, 5 and 7.
<ul style="list-style-type: none"> - Access tracks - Drilling activities 	Flora	A registered mine surveyor must conduct measurements of disturbed and rehabilitated areas on a quarterly basis. The measurements must be plotted on plans and kept for life of operation.	Project manager Environmentalist	Annual surveys and included with performance assessment reports submitted to the DMR biennially.

Basic Assessment Report and Environmental Management Programme Report
Xhariep Plant and Mining (Pty) Ltd

<ul style="list-style-type: none"> - Access tracks - Drilling activities 	Groundwater	Water samples must be taken and analysed to ensure that they comply with the SANS 241-1:2011 drinking water quality.	Project manager Environmentalist	Biennial analysis and included with performance assessment reports and submitted to the DMR biennially.
<ul style="list-style-type: none"> - Access tracks - Drilling activities 	Noise	Noise readings must be taken at pre-determined noise monitoring points with sufficient, calibrated sound level meter.	Project manager Environmentalist	Monthly analysis and included with performance assessment reports and submitted to the DMR biennially.

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i) Indicate the frequency of the submission of the performance assessment / environmental audit report.

An Audit Report will be conducted biennially in line with Regulation 26(e) of the Environmental Impact Assessment Regulations, 2014 of the National Environmental Management Act, 1998 (Act no 107 of 1998) (NEMA) and per Regulation 55(2) of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

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.

Xhariep 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.

Xhariep 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 conducted annually as is prescribed by Regulation 54 of the MPRDA and Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations of the NEMA.

Xhariep shall provide the DMR with a progress and results report annually.

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 the Environmental Assessment Practitioner:

Name of company:

Date:

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