BONA RESOURCES (PTY) LTD – BONA COBALT PROSPECTING PROJECT

DRAFT BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT IN SUPPORT OF THE PROPOSED PROSPECTING ACTIVITIES

NW 30/5/1/1/2/13562 PR

DECEMBER 2022

Project No.: A1349

Report No.: ZC_1416

CLIENT:

BONA RESOURCES (PTY) LTD

P.O Box 12222

Leraatsfontein, 1038

Tel: 072 336 4205

E-mail: sydney@zivuma.co.za

PROJECT DETAILS

Name of Project:	Bona Cobalt Prospecting Project
DMR Reference:	NW 30/5/1/1/2/13562 PR
Name of Applicant:	Bona Resources (Pty) Ltd
Responsible person:	Sydney Nhlapo
Physical address:	191 via Firenze Street Lombardy Estate Pretoria, 0084
Tel:	072 336 4205
E-mail:	sydney@zivuma.co.za

Environmental Consultant (EAP):	Zyntha Consulting (Pty) Ltd
Responsible person:	Jaco Kleynhans
Author of this document:	Jaco Kleynhans
Reviewed by:	Christelle Swanepoel
Physical address:	2 Walter Sisulu Street, Unit 3, Midlands Office Park, Middelburg, 1050
Postal Address:	Suite 445 MW, Private Bag X1838, Middelburg, 1050
Telephone:	(013) 243 7110
Facsimile:	(086) 665 9703
E-mail:	jaco@zyntha.co.za

Expertise of EAP:	**Jaco Kleynhans:** Professional Environmental Engineer, registered with the Engineering Council of South Africa (ECSA). Registration No: 940108. Registered Environmental Assessment Practitioner, registered with EAPASA: 2020/2255. Refer to Appendix 3 for the Expertise and Curriculum Vitae of Jaco Kleynhans**.**

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: Bona Resources (Pty) Ltd

TELL No: 072 336 4205

POSTAL ADDRESS: P.O Box 12222, Leraatsfontein, 1038

PHYSICAL ADDRESS: 191 via Firenze Street, Lombardy Estate, Pretoria, 0084

FILE REFERENCE NUMBER SAMRAD: NW 30/5/1/1/2/13562 PR

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IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVES OF THE BASIC ASSESSMENT PROCESS

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

1. 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;
2. identify the alternatives considered, including the activity, location, and technology alternatives;
3. describe the need and desirability of the proposed alternatives,
4. through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:
    - **(i)** the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
    - **(ii)** the degree to which these impacts—
        (aa) can be reversed;
        (bb) may cause irreplaceable loss of resources; and
        (cc) can be managed, avoided or mitigated;
5. through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
    - **(i)** identify and motivate a preferred site, activity and technology alternative;
    - **(ii)** identify suitable measures to manage, avoid or mitigate identified impacts; and
    - **(iii)** identify residual risks that need to be managed and monitored.

PART A
SCOPE OF ASSESMENT AND BASIC ASSESMENT REPORT

1 OBJECTIVES OF THE BASIC ASSESSMENT PROCESS

1.1 Details of EAP

Name of Practitioner: Jaco Kleynhans (Zyntha Consulting (Pty) Ltd)

Tel No: (013) 243 7110

Fax No: (086) 665 9703

E-mail address: jaco@zyntha.co.za

1.2 Expertise of the EAP

1.3 The qualifications of the EAP

A full CV is attached as **Appendix 3**.

(a) Location of the overall Activity

Refer to **Table 1.**

Table 1: Description of location

Farm Name	Portion 13 (Marais Hoop), Portion 14 (Du Toit) and Portion 19 (Fouche) of the Farm Main Section Block B 251 IM
Application area (Ha)	4 380.76 ha
Magisterial District	Kagisano/Molopo Local Municipality in the Dr Ruth Segomotsi-Mompati District Municipality. Magisterial District of Bloemhof.
Distance and Direction from nearest town	The application area is located approximately 126 km north-west of Vryburg in the North West Province of South Africa. The project is situated in the Kagisano/Molopo Local Municipality in the Dr Ruth Segomotsi-Mompati District Municipality.

21 digit Surveyor General Code for Each Farm Portion	Portion 13 (Marais Hoop) of Main Section Block B - T0IM00000000025100013 Portion 14 (Du Toit) of Main Section Block B - T0IM00000000025100013 Portion 19 (Fouche) of Main Section Block B - T0IM00000000025100013

(b) Locality Map

Refer to **Figure 1**Error! Reference source not found. below.

Figure 1: Locality Map

(c) Description of the scope of the proposed overall activity

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

Refer to Figure 2 – Local and Municipal District Boundaries

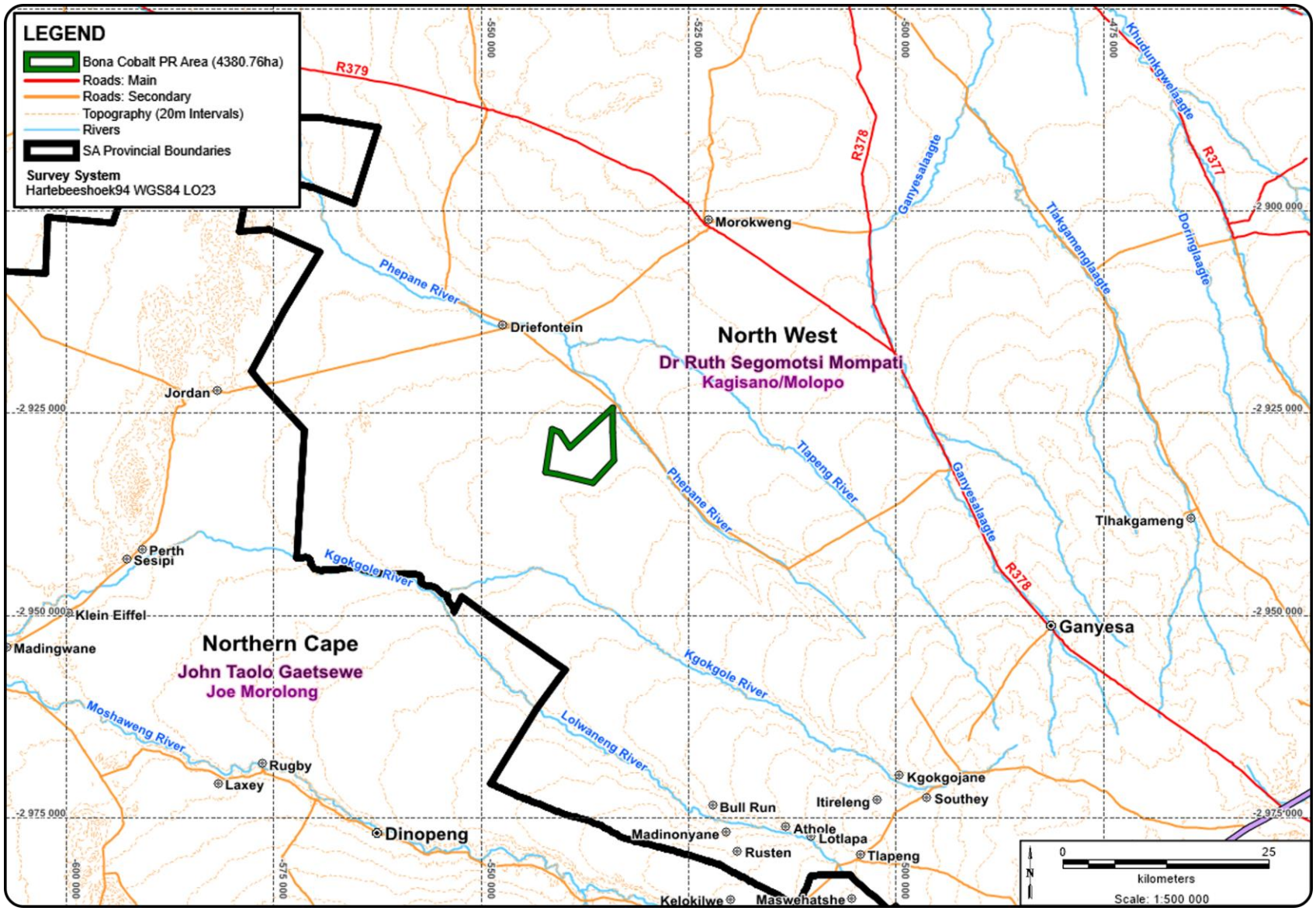

Figure 2: Local and District Municipal Boundaries

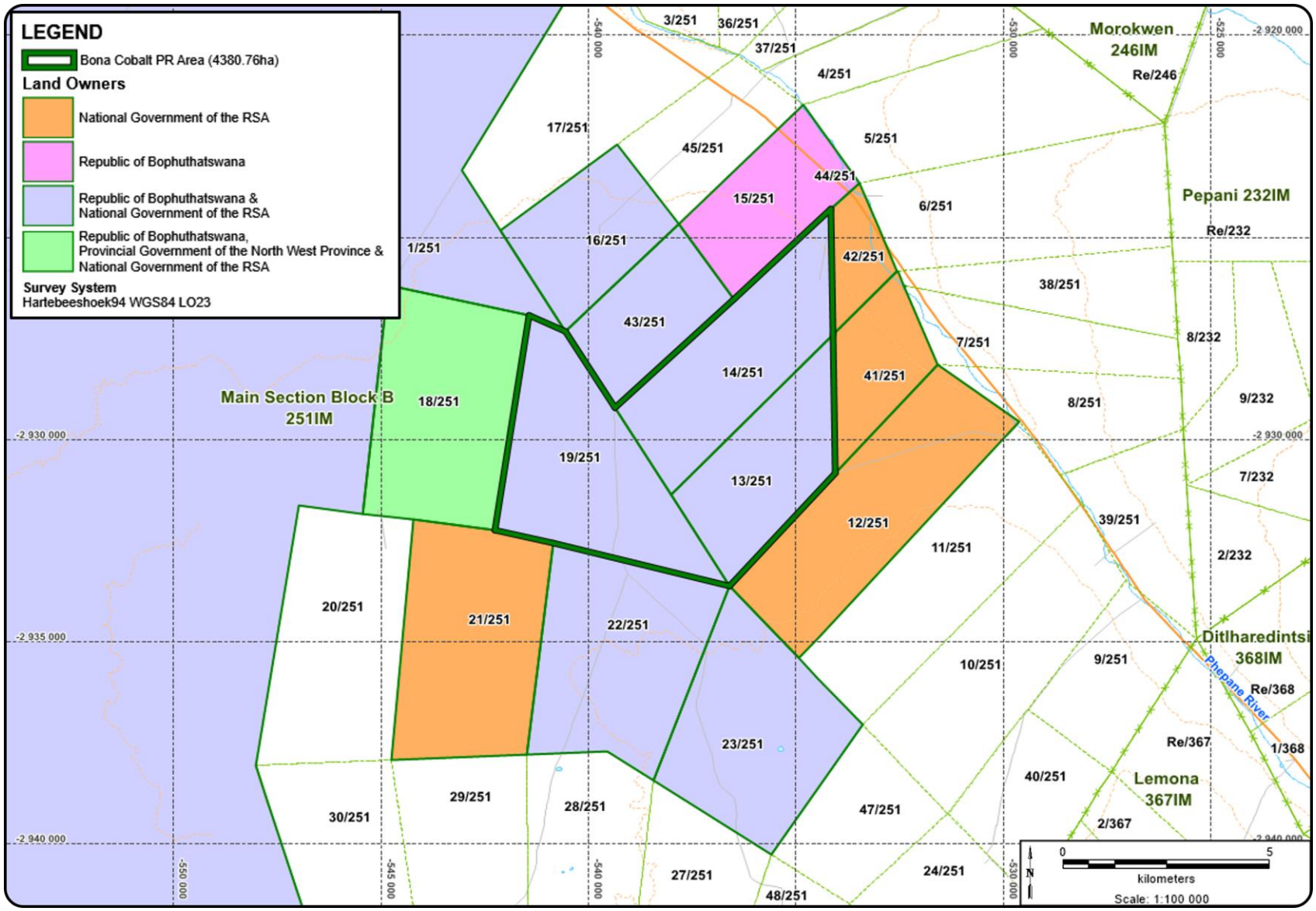

Figure 3: Landowners

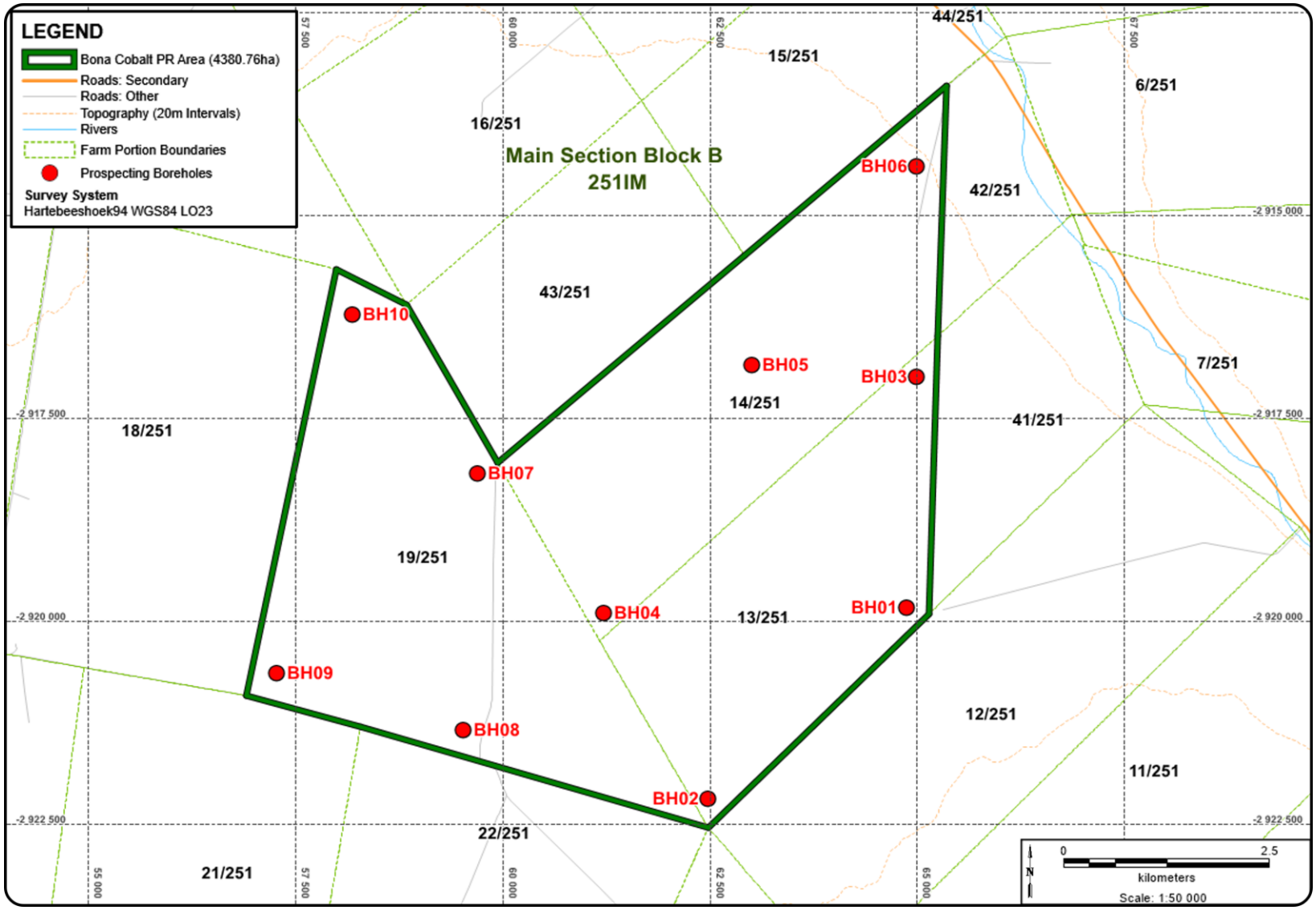

Figure 4: Location of prospecting boreholes

i. Listed and specified activities

Table 2: Listed and specified activities

Name of Activity	Areal Extent of the Activity (m^2)	Listed Activity (Mark with X where applicable or affected)	Applicable Listing Notice (GNR 983, GNR 984 or GNR 985)
Conducting prospecting activities within the proposed Bona Cobalt prospecting right area for the exploration of Zinc Ore, Zirconium Ore, Amazonite (Gemstone), Antimony Ore, Beryllium Ore, Bismuth Ore, Chrome Ore, Clay (General), Cobalt, Copper Ore, Diamond (General), Diamond, Diamond (Alluvial), Diamond (in Kimberlite), Gold Ore, Graphite, Iron Ore, Lead, Manganese Ore, Nickel Ore, Platinum Group Metals, Pyrite, Tin Ore, Uranium Ore, Vanadium Ore, Zeolite using a diamond core drilling prospecting method together with all associated infrastructure and activities. These include site establishment (access to site and a campsite), pegging of drilling sites, drilling of exploration boreholes with associated sumps, logging and sampling of drilled cores and site rehabilitation.	1 290m^2	X	Listing Notice 1 (GNR 983), Activity: 20 Listing Notice 3 (GNR 985), Activities: 12 (h) (iv) 12 (h) (v)

ii. Description of the activities to be undertaken

Describe Methodology or technology to be employed, including the type of commodity to be prospected / mined and for a linear activity, a description of the route of the activity

The application is for prospecting activities for Zinc Ore, Zirconium Ore, Amazonite (Gemstone), Antimony Ore, Beryllium Ore, Bismuth Ore, Chrome Ore, Clay (General), Cobalt, Copper Ore, Diamond (General), Diamond, Diamond (Alluvial), Diamond (in Kimberlite), Gold Ore, Graphite, Iron Ore, Lead, Manganese Ore, Nickel Ore, Platinum Group Metals, Pyrite, Tin Ore, Uranium Ore, Vanadium Ore,

Zeolite on Portion 13 (Marais Hoop), Portion 14 (Du Toit) and Portion 19 (Fouche) of the Farm Main Section Block B 251 IM. The prospecting activities can be summarised as:

- Initial desktop investigation of the study area including compilation of geological data, geological mapping, geophysical survey and programme planning. This is phase 1 of the project and will take approximately 6 months.
- Phase 2 of the project entails the drilling of 5 prospecting holes, 500 m in total. Borehole cores will be logged, samples taken from the seams and dispatched for analyses. Rehabilitation of the holes will be done immediately after holes were drilled and samples collected. When results are available geological modelling will be done. This phase is planned to be conducted over a period of 18 months. Note that the position of the holes will be confirmed after Phase 1.
- Pending the outcome of the initial assessment in Phase 2, Phase 3 will commence and will also be conducted over a period of 18 months. It will entail drilling of 5 additional boreholes, drill depth also 500 m in total. Borehole cores will be logged, samples taken from the seams and dispatched for analyses. Rehabilitation of the holes will be done immediately after holes were drilled and samples collected. When results are available geological modelling will be done. The position of the holes will be confirmed after Phase 2.

Further note the following aspects:

- The contractor will utilise a drill rig capable of drilling 50 m per day and work 5 days per week.
- With drill site establishment, relocation and breakdowns five days per hole is anticipated.
- This implies that the first phase of drilling (phase 2) will take approximately 25 working days.
- All drill sites will be rehabilitated by replacing the unused cores in the boreholes and replacing the softs from at least 2 m below ground level.
- The programme will require a crew of approximately 4 people to operate the rig and log the cores. It is envisioned that they will be housed offsite; however a contractor yard will be maintained within 100 m of the drilling activities. There will be a small campsite for security for 1 or 2 people. These campsites will move appropriately during each phase.
- Contractor yards and campsites will be rehabilitated immediately once they are vacated.
- Once all information is available the final geological report will be compiled.
- Only after the Prospecting BAR is approved and the prospecting right issued may prospecting be undertaken within the prospecting application area.

Site infrastructure will include

- Drilling campsite

The drill crew will require a crew of 4 people. Most of the crew will be housed off site. There will be a small demarcated campsite with one or two people to act as security for equipment stored onsite in the

yard. The site will be moved in accordance with the drilling program. The campsite will consist of a caravan and chemical toilet.

- Equipment and sample storage area

A small fenced in, demarcated and locked area will be maintained for storage of equipment and core samples. No hazardous chemicals or greases will be stored on site.

The site will be relocated in accordance with the drilling programme. Once vacated, the site will be immediately rehabilitated.

- Fuel storage

Fuel will be stored in a diesel cart only; the cart will be locked at night with appropriate spillage control measures (i.e. tarpaulin or drip trays placed underneath). No fuel will be stored on site in drums or any other containers. The volume of diesel contained in the diesel cart will be less than 80 m^3, most probably a diesel cart with a capacity of 1 m^3 will be used.

- Access routes or tracks

Every opportunity will be made to access drill and campsite locations using existing farm tracks. Access will have to be approved by the landowner. All new access tracks will be rehabilitated. Areas for prospecting activities will be demarcated to ensure that vegetation clearing, and vehicle movement occurs strictly within these demarcated areas. Freshwater resources beyond the study area are off-limits to prospecting vehicles and personnel. No drilling will take place within 500 m of a wetland.

Prospecting activities described above are grouped into phases which are discussed below.

- Construction phase
  - Site access and access tracks;
  - Site laydown;
  - Fuel and equipment storage area;
  - Access routes and track;
  - Drilling operations;
  - Refuelling;
  - Use of access tracks and roads;
  - The use of camp area; and
  - Usage of equipment store and sample areas.
- Closure activities
  - Rehabilitation of drilling footprints;
  - Breakdown and rehabilitation of camp and equipment store footprint;

- Rehabilitation of access routes; and
- Rehabilitation monitoring and final sign off by land owner.

(d) Policy and Legislative Context

Table 3: Policy and Legislative Context

National Environmental Management Act, 1998 (No 107 of 1998) (NEMA)	NEMA and the EIA Regulation, 2014 as amended, states that prior to any prospecting an EA process needs to be followed. This could follow either the Basic Assessment Report (BAR) process or the EIA process depending on the scale of the impact. Provincial regulations must also be considered.
National Water Act, 1998 (No 36 of 1998) (NWA)	The NWA recognises that the entire ecosystem and not just the water itself in any given water resource constitutes the resource and as such needs to be conserved. No activity may, therefore, take place within a watercourse unless it is authorised by the Department of Water and Sanitation (DWS). Any area within a wetland, associated buffers or riparian zone is therefore excluded from development unless authorisation is obtained from the DWS in terms of Section 21 (c) & (i).
Government Notice 509 as published in the Government Gazette 40229 of 2016 as it relates to the NWA	In accordance with Regulation GN509 of 2016, a regulated area of a watercourse for section 21(c) and 21(i) of the NWA is defined as: a) The outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; b) In the absence of a determined 1 in 100 year flood line or riparian area the area within 100 m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench; or c) A 500 m radius from the delineated boundary (extent) of any wetland or pan. This notice replaces GN1199 and may be exercised as follows: i) Exercise the water use activities in terms of Section 21(c) and (i) of the Act as set out in the table below, subject to the conditions of this authorisation; ii) Use water in terms of section 21(c) or (i) of the Act if it has a low risk class as determines through the Risk Matrix; iii) Do maintenance with their existing lawful water use in terms of section 21(c) or (i) of the Act that has a LOW risk class as determined through the Risk Matrix; iv) Conduct river and stormwater management activities as contained in a river management plan; v) Conduct rehabilitation of wetlands or rivers where such rehabilitation activities have a LOW risk class as determined through the Risk

	Matrix; and vi) Conduct emergency work arising from an emergency situation or incident associated with the persons' existing lawful water use, provided that all work is executed and reported in the manner prescribed in the Emergency protocol. A General Authorisation (GA) issued as per this notice will require the proponent to adhere to specific conditions, rehabilitation criteria and monitoring and reporting programme. Furthermore, the water user must ensure that there is a sufficient budget to complete, rehabilitate and maintain the water use as set out in this GA. Upon completion of the registration, the responsible authority will provide a certificate of registration to the water user within 30 working days of the submission. On written receipt of a registration certificate from the Department, the person will be regarded as a registered water user and can commence within the water use as contemplated in the GA.
Mineral and Petroleum Resources Development, 2002 (Act, No 28 of 2002) (MPRDA)	The obtaining of a prospecting right is governed by the MPRDA. The MPRDA requires the applicant to apply to the DMR for a prospecting right which triggers a process of compliance with the various applicable sections of the MPRDA. The process requires environmental authorisation in terms of the MPRDA Regulations and specifically requires the preparation of a Basic Assessment Report (BAR), an Environmental Management Programme (EMP), and a Public Participation Process (PPP).
NWA GN 704 – Regulations on the use of water for mining and related activities aimed at the protection of water resources, 1999	These Regulations were put in place in order to prevent the pollution of water resources and protect water resources in areas where mining activity is taking place from impacts generally associated with mining. It is recommended that the proposed project complies with Regulation GN 704 of the NWA which contains regulations on the use of water for mining and related activities aimed at the protection of water resources. GN 704 states that: *No person in control of a mine or activity may:* *(b) locate or place any residue deposit, dam, reservoir, together with any associated structure or any other facility within the 1:100 year floodline or within a horizontal distance of 100 metres from any watercourse or estuary, borehole or well, excluding boreholes or wells drilled specifically to monitor the pollution of groundwater, or on waterlogged ground, or on ground likely to become waterlogged, undermined, unstable or cracked;* According to the above, the activity footprint must fall outside of the 1:100 year floodline of the aquatic resource or 500 m from the edge of the resource, whichever distance is the greatest.

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
National Environmental Management Act, 1998 (No 107 of 1998) (NEMA)	All listed activities in terms of Listing notices 1, 2 and 3.	• No prospecting to be conducted unless an environmental authorisation is obtained for the planned prospecting activities.
National Water Act (1998)	S21 water uses and groundwater abstraction	• Water volumes required for drilling will not exceed General Authorisation for the area. • No drilling within 500 m of any water courses unless authorised. Should the need arise to drill within that buffer area an application for a general authorisation will be submitted to the Department of Water and Sanitation for consideration.
National Heritage Resources Act (1999)	S18 permission to remove or alter heritage resources	• A field investigation will be undertaken to establish the presence of graves or any heritage structures that could be on the proposed site, which will not be impacted on by the proposed development.
Mineral and Petroleum Resources Development Act (2002)	Application for Prospecting in terms of Section 16	Application for Prospecting Right was accepted by DMR on 19 October 2022 (Ref No.: NW 30/5/1/1/2/13562 PR).
National Forests Act, 1998	S12, removal of protected tree species	Only required should protected species be found and need to be removed. This will be avoided as much as possible.
National Environmental Management: Waste Act	Waste licenses	No waste licenses will be required as no waste listed activities were identified.

(e) 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

Boan Resources (Pty) Ltd wish to conduct prospecting activities to determine the presence of various elements including Cobalt. Cobalt (Co) is a metal used in numerous diverse commercial, industrial, and military applications, many of which are strategic and critical. On a global basis, the leading use of cobalt is in rechargeable battery electrodes. Superalloys, which are used to make parts for gas turbine engines, are another major use for cobalt. Cobalt is also used to make airbags in automobiles; catalysts for the petroleum and chemical industries; cemented carbides (also called hardmetals) and diamond tools; corrosion- and wear-resistant alloys; drying agents for paints, varnishes, and inks; dyes and pigments; ground coats for porcelain enamels; high-speed steels; magnetic recording media; magnets; and steel-belted radial tires.

The project area covers a total of 4 380.76 ha. The proposed prospecting holes are depicted in **Figure 4**.

The project is currently situated on modified agricultural land. Prospecting is planned to be conducted on various portions of the Main Block B 251 IM farm, which is owned by the Republic of Bophuthatswana and Republic of South Africa and is comprised of grazing that support livestock and game farming.

Should the proposed prospecting activity be successful, the potential benefits of the proposed project will be:

- Long-term, national benefits of supply of Cobalt and possible other metals to commercial industries and the resultant socio- economic benefits.
- Needed job creation and other local, provincial and national socio-economic benefits.
- Local growth in the economy of the surrounding towns of Ganyesa, Algiers, Mmagabue, Morokweng, Bona Bona and Vryburg, and for local businesses including those in transportation, supply etc.
- Economic benefits for contractors and other suppliers of goods and services.

A desktop study of the topography and a brief on-site assessment did not reveal any major rivers and/or streams within the project area. The area is used for livestock farming. The North West biodiversity sector plan (2015) categories the majority of the project area as Category 1 ESA.

ESA1s ecosystems are still in a natural, near-natural state or semi-natural state, and have not been previously developed. These ecosystems are moderately to significantly disturbed but are still able to maintain basic functionality within the landscape. Individual species or other biodiversity indicators may

be severely disturbed or reduced. These are areas with low irreplaceability with respect to biodiversity pattern targets only. According to NWBSP (READ, 2015) these areas these areas are considered an ESA1 because they are still in a natural, near-natural state or semi-natural state, and have not been previously developed and have been identified as part of IBA, and because they function as critical corridor linkages for biodiversity.

Preliminary mitigation measures from a terrestrial biodiversity perspective include, but are not limited to the following:

- No dumping of litter, rubble or cleared vegetation on site should be allowed. No temporary dump sites should be allowed in areas with natural vegetation. Vegetation cuttings must be carefully collected and disposed of at a separate waste facility; and
- Upon completion of construction activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed areas.

The proposed prospecting operation will be carried out by a contractor, employing 4 people. Bona Resource (Pty) Ltd will specify that the contractor should use local labour as far as possible.

(f) Motivation for the overall preferred site, activities and technology alternative

Site:

The proposed prospecting project is situated in the North West province of South Africa, **(Figure 1**) which is governed locally by the Kagisano/Molopo Local Municipality in the Dr Ruth Segomotsi-Mompati District Municipality. The prospecting right application covers Portion 13 (Marais Hoop), Portion 14 (Du Toit) and Portion 19 (Fouche) of the Farm Main Section Block B 251 IM, which is owned by the Republic of Bophuthatswana and Republic of South Africa and is comprised of grazing that support livestock and game farming.

The closest major town to the project is Vryburg with other smaller (Ganyesa, Algiers, Mmagabue, Morokweng and Bona Bona) and there are a number of transport infrastructure within proximity that provide access to these towns, including the R378 that joins the N14 National Road. The adjacent properties to the project currently support agricultural activities, mainly livestock and game farming.

The proposed prospecting site has been identified to hold cobalt and all other unspecified metals through previous assessments that were conducted. Minerals can only be mined where identified and verified, therefore it was not practical to select any other sites. The site is therefore regarded as the preferred site and alternative sites are not considered.

Prospecting activities within these areas will not have a significant impact on watercourses, the floral and faunal ecology and SCC of the area. Only 10 holes are planned over the total area of 4 380.76 ha. Prospecting activities will last a maximum of 5 years.

In addition, according to GN 704 of the National Water Act (Act 36 of 1998), the activity footprint must fall outside of the 1:100 year flood line of the freshwater resource or 500 m from the edge of the feature, whichever distance is the greatest. All prospecting relating activities to remain at a minimum outside of the 500 m GN 509 Zone of regulation. No major water resources were identified.

Activities:

Prospecting activities will include:

- Phase 1 (6 months) – desktop study.
- Phase 2(18 months)
    - Drilling of 5 boreholes;
    - Drilling campsite;
    - Equipment and sample storage area;
    - Fuel storage in a diesel cart; and
    - Access tracks.
- Phase 3 (18 months)
    - Drilling of 5 boreholes;
    - Drilling campsite;
    - Equipment and sample storage area;
    - Fuel storage in a diesel cart; and
    - Access tracks.
- Phase 4 (12 months) – Feasibility study
- Phase 5 (6 months) – Geological report

The above activities are standard drilling activities being undertaken for similar prospecting operations. All mitigation measures will be adhered to. Drilling related footprint disturbance will be rehabilitated after completion of each hole and site and storage disturbance will be rehabilitated annually when the camp is moved to the next location.

Technology Alternatives:

The Triple-cube Core drilling depths are expected to be 500 m deep estimated from regional data. The drilling programme is expected not to exceed the use of 5 m^3 of water over the life of the drilling programme. This water can be sourced from boreholes on the farm (with the farm owner's permission)

or can be bought in privately in water carts. On completion of each drilled holes will be rehabilitated, the sump will also be closed and rehabilitated at the same time by means of filling the hole with the original excavated material.

(g) Full description of the process followed to reach the proposed preferred alternatives within the site

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

The position of the initial site camp will depend on the results of the initial geological field survey which will be undertaken when the project commences. All prospecting holes will be located outside the 500 m zone of watercourses. The final positions of the planned prospecting holes will be concluded after Phase 1 but taking cognisance of the requirement not to drill any holes within 500 m of any watercourse.

(i) Details of the development footprint alternatives considered

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:
(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

(a) Property location

The proposed prospecting project is situated in the North West province of South Africa, (**Figure 1**) which is governed locally by the Kagisano/Molopo Local Municipality in the Dr Ruth Segomotsi-Mompati District Municipality. The prospecting right application covers Portion 13 (Marais Hoop), Portion 14 (Du Toit) and Portion 19 (Fouche) of the Farm Main Section Block B 251 IM, which is owned by the Republic of Bophuthatswana and Republic of South Africa and is comprised of grazing that support livestock and game farming.

The closest major town to the project is Vryburg with other smaller (Ganyesa, Algiers, Mmagabue, Morokweng and Bona Bona) and there are several transport infrastructure within proximity that provide access to these towns, including the R378 that joins the N14 National Road.

(b) Type of activity to be undertaken

Prospecting through geological surveys and limited geological drilling will be used to map the resource present and determine the feasibility for future mining.

(c) Design of layout activity

Final target and planned activity locations will be approved by the landowner and an Environmental Control Officer (ECO).

(d) Technology used

The principal prospecting activity will be TNW diamond core drilling where a 75 mm size drilling core will be utilised. This core size provides sufficient sample mass for core lengths from approximately 0.30 m upwards for at least raw cobalt and other metal analysis on thin samples. It provides sufficient sample mass for standard analysis and analytical work on normal sample widths.

The borehole depths are expected to be in the order of 100 m, estimated from regional data. The drilling technology used is standard industry practice and no other technology was considered.

(e) Construction aspects

All planned site disturbances will be checked by an ECO and approved by the landowner before activities can commence. Continuous communication with the landowners will take place to ensure minimal impact on current farming practises.

Reducing the disturbance footprint impact is critical. Existing access tracks and roads onsite will be maximised. No activities will take place within 500 m of a watercourse.

All staff will be accommodated privately off site to reduce environmental impacts; there will be no cooking or making fires etc. onsite. Chemical toilets will be rented onsite to ensure sewage is managed correctly. Vehicles, drill rigs and associated equipment will be parked in the laydown area, as demarcated and approved by the landowner.

Rehabilitation will remain a focus area. Prospecting drill hole areas will be stripped, and topsoil stockpiled. As soon as work has completed and the drill rig moves to the next site, the holes will be backfilled, and topsoil replaced immediately.

(f) Option of not implementing the activity

Should the no-go option be pursued, no prospecting will take place and the presence of cobalt and other metals and possibility of mining will not be possible. This will mean that potential reserves will be lost including any potential benefit of employment.

(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).

Overview

The engagement process was undertaken through:

- Some one-on-one meetings and telephonic conversations were held, a report on Public Participation is attached as **Appendix 1**.
- Notifications were submitted to the Department of Land Affairs and the Commission on Restitution of Land Rights, refer to **Annexure 7** of **Appendix 1**.
- Fixing of site notices at the proposed prospecting site.
- Advertising the process in the Daily Sun newspaper to invite public to participate.

Interested and affected parties identified to date is depicted in **Table 4**. A copy of the BID document used to provide details of the proposed prospecting activity is attached as **Annexure 3** of **Appendix 1.** The copy of the newspaper advertisement placed in the Daily Sun is provided in **Annexure 2** of **Appendix 1** and photographs taken of the site notices are provided in **Annexure 1** of **Appendix 1.**

An I&AP's personal information (name, organisation, contact numbers, email address, etc.) is collected for communication purposes to fulfil the public participation requirements of the NEMA. Personal information, with the exclusion of their names and comments recorded, will not be made available during the Public Participation Process. This is done in order to protect all I&APs personal information in accordance with the requirements set out in the Protection of Personal Information Act 4 of 2013, (as amended). The I&APs personal information will only be made available to the Competent Authority on their request but will never be included in any documents that will be in the public domain.

Table 4: Registered I&APs

Stakeholder Group	Organisation / Registered Land Owner	Position	Stakeholder Contact	Property	Physical Address (if any)
Provincial Government	Department of Agriculture, Land Reform and Rural Development		Moduku Khwene		Cnr Dr James Moroka Drive & Sekame Drive, West Gallery, Megacity Complex Mmabatho
Provincial Government	Department of Agriculture and Rural Development	Head of Department	Thupi Mokhatla		
Land Owner	Republic of Bophuthatswana and Republic of South Africa	Regional Land Claims Commisioner	Ms Agnes Montwedi	Main Section Block B Portion 13 of 251 IM, Main Section Block B Portion 14 of 251 IM, Main Section Block B Portion 19 of 251 IM	Cnr Dr James Moroka Drive & Sekame Drive, West Gallery, Megacity Complex Mmabatho
Direct Neighbour	Republic of Bophuthatswana and Republic of South Africa	Regional Land Claims Commisioner	Ms Keabetswe Mothupi	Main Section Block B Ptn 1, Ptn 16, Ptn 22, Ptn 23 and Ptn 43 of 251 IM	Cnr Dr James Moroka Drive & Sekame Drive, West Gallery, Megacity Complex Mmabatho
Direct Neighbour	Republic of Bophuthatswana	Regional Land Claims Commisioner	Ms Keabetswe Mothupi	Main Section Block B Ptn 15 and Ptn 44 of 251 IM	Cnr Dr James Moroka Drive & Sekame Drive, West Gallery, Megacity Complex Mmabatho
Direct Neighbour	National Government of RSA	Regional Land Claims Commisioner	Ms Keabetswe Mothupi	Main Section Block B Ptn 12, Ptn 21, Ptn 41 and Ptn 42 of 251 IM	Cnr Dr James Moroka Drive & Sekame Drive, West Gallery, Megacity Complex Mmabatho
Direct Neighbour	Republic of Bophuthatswana, Provincial Government of the North West Province &	Regional Land Claims Commisioner	Ms Keabetswe Mothupi	Main Section Block B Ptn 18 of 251 IM	Cnr Dr James Moroka Drive & Sekame Drive, West Gallery, Megacity Complex Mmabatho

Stakeholder Group	Organisation / Registered Land Owner	Position	Stakeholder Contact	Property	Physical Address (if any)
	National Government of the RSA				
Provincial Government	Department of Mineral Resources and Energy (NW)	Regional Manager	Mr Pumudzo Nethwadzi		Vaal University of Technology Building, c/o Voortrekker & Margaretha Prinsloo Streets, KLERKSDORP, 2570
Provincial Government	Department Economic Development, Environment, Conservation and Tourism	Head of Department	Lufuno Tshikovhi		NWDC Building, 1st Floor, Cnr Provident Street & University Drive, Mmabatho
Provincial Government	Department Economic Development, Environment, Conservation and Tourism	Chief Director: Environmental Services	Ms Q Imasiku		80 Kerk Street, Rustenburg, 0299
Provincial Government	Department of Water and Sanitation	Crocodile (West) Marico WRM	Ms. Cornia Theunissen		Old Rustenburg Road, Hartbeespoort Dam
Provincial Government	Department of Agriculture	Land Use Management	Mr Wally Mutle		
Local Government	Dr Ruth Segomotsi Mompati District Municipality	Mayor	Cllr M Maje		34 Church Street, Vryburg, 8601
Local Government	Dr Ruth Segomotsi Mompati District Municipality	Manager Office of the Municipal Manager	Phenyo Chwene		35 Church Street, Vryburg, 8601
Local Government	Dr Ruth Segomotsi Mompati District Municipality	Municipal Manager	Johnny Shai		35 Church Street, Vryburg, 8601
	North West Provincial Heritage Resources Authority		Mr Mosiane Mothlabane		1st Floor Gaabomotho Building 760 Dr.James Moroka Drive Mmabatho
Provincial Government	SAHRA	Heritage Officer	Mr. Elijah Dumisani Kaketse		

Stakeholder Group	Organisation / Registered Land Owner	Position	Stakeholder Contact	Property	Physical Address (if any)
Land Occupant	Kroonbelt Community	Local Farmer	Mr Matibako		
Local Government	Kagisano/Molopo Local Municipality	Mayor	M Marabutse		New Municipal Building Tlakgamaneng Road , (Next to Ganyesa Clinic), Ganyesa 8612
Local Government	Kagisano/Molopo Local Municipality	Municipal Manager	Kagisano Morapedi		New Municipal Building Tlakgamaneng Road , (Next to Ganyesa Clinic), Ganyesa 8612
Local Government	Kagisano/Molopo Local Municipality	Ward 9: Councillor	Cll Pona Mereyabone		New Municipal Building Tlakgamaneng Road , (Next to Ganyesa Clinic), Ganyesa 8613
Local Government	Victor Tong Thusong Service Center (Morokweng)	Center Admin Officer	Mr Motseokae Duncan Cwaile		Next to Morokweng tribal Office Gamokgopa Section, Morokweng 8614
State-owned Enterprise	ESKOM	Transmission Communication	Camille Shah		
State-owned Enterprise	ESKOM	Grid Planning	Makoanyane Theku		

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

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

No issues have been received at the time of preparing the draft BAR, the final BAR will include issues raised by I&AP's should they be reported.

(iv) The Environmental attributes associated with the alternatives

The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspect.

The initial site camp will depend on the results of the initial geological field survey which will be undertaken when the project commences.

The prospecting rights application area is surrounded mainly by government owned farms, and the dominant land use is agriculture (livestock farming).

Rehabilitation will be undertaken concurrently and the holes will be closed as soon as possible to ensure no more one drill hole is open (un-rehabilitated) at any one time. Access to the site and location of activities will be communicated with the land owner on a daily basis to minimise disruption of land use activities.

The invasive drilling programme (core drilling) is standard practice in determining mineral feasibility, and no alternatives to this technology were considered. Given the limited extent disturbance (less than 0.002% of the site) no other alternatives were considered.

(1) Baseline Environment

(a) Type of environment affected by the proposed activity

Its current geographical, physical, biological, socio-economic, and cultural character

1. Climate

The summers are long, hot, and mostly clear and the winters are short, cold, dry, and clear. The average rainfall obtained from the rainfall station at Morokweng (0467487) is 321 mm for the period 1911 to 2000. Average monthly rainfall is shown below in **Figure 5**.

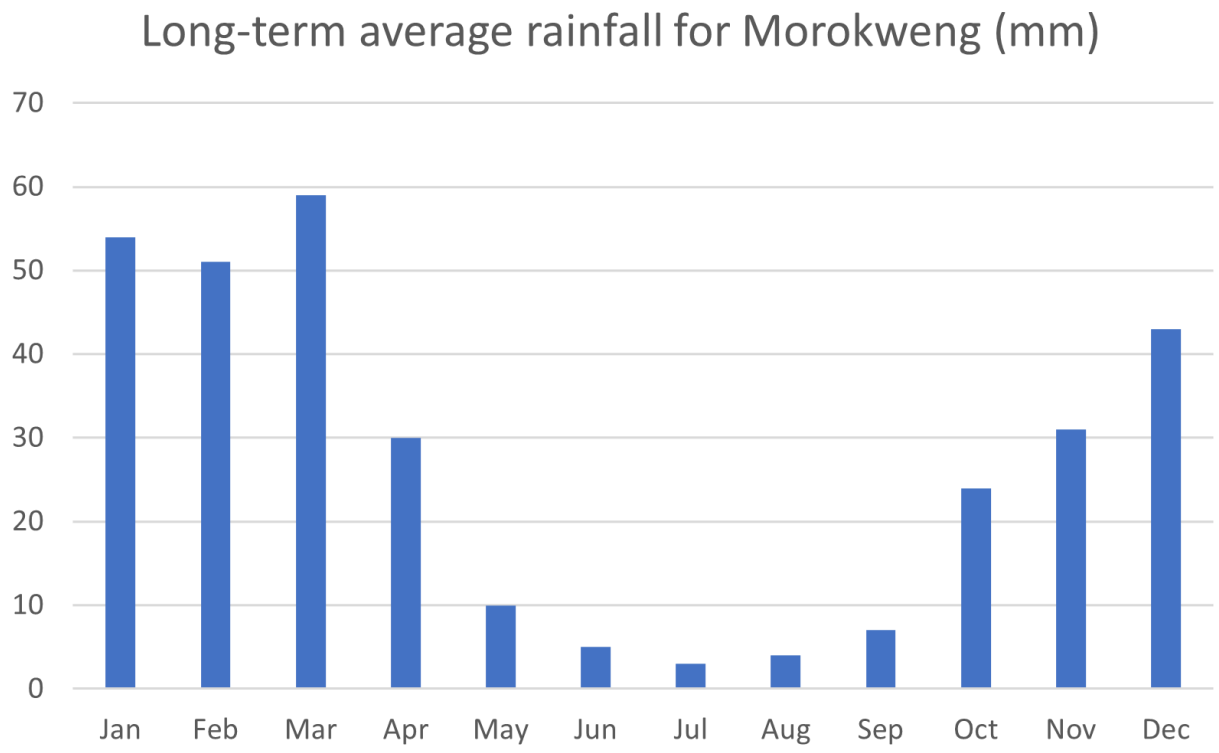

Figure 5: Average rainfall in Morokweng

The average maximum temperature for January, the warmest month, is 32,9 °C (**Table 5**) and the average minimum for July, the coldest month, is 3,1 °C (**Table 5**).

Table 5: Average monthly minimum and maximum temperatures

	Year Ave.	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Min	11,8	19,0	18,3	16,3	12,2	7,3	3,6	3,1	5,3	9,7	13,2	16,0	17,8
Max	26,7	32,9	31,4	29,4	25,7	22,3	19,0	19,6	22,0	26,0	28,5	30,7	32,4

2. ***Topography***

The general topography of the area can be characterised as relatively flat landscapes. No hills and ridges occur in the proposed area. Altitude varies between 1000 and 1300 m above sea level.

3. ***Roads***

The site can be accessed via the R378 road from Vryburg on the way to Morokweng and provincial gravel roads. A Google Earth image below show the road to the project area (shown in green), refer to **Figure 6**.

Figure 6: Roads to the site

4. ***Heritage Resources***

A field investigation will be undertaken to establish the presence of graves or any heritage structures that could be on the proposed site, which will not be impacted on by the proposed development.

It should be noted that the sub-surface archaeological and/or historical deposits and graves are always a possibility. Care should be taken during any work in the entire area and if any of the above is discovered, an archaeologist/heritage practitioner should be commissioned to investigate.

5. ***Biological***

The study area is in the Savanna Biome, and the Eastern Kalahari Bushveld Bioregion and the Molopo Bushveld is the main vegetation type. Vegetation and landscape features include

- Open woodland to a closed shrubland with the trees *Vachellia erioloba* and *Boscia albitrunca* and shrubs *Lycium cinereum, L.hirsutum* and *Rhigozum trichotomum*.
- Grass layer is well developed in parts of the northeast, but usually fairly open.

The vegetation conservation status is least threatened, refer to **Appendix 2**. According to the 2018 Final Vegetation Map of South Africa, Lesotho and Swaziland, the target is 16% but only 1% statutorily conserved in the Molopo Nature Reserve and more than 1% already transformed. In the Morokweng, Konke and Ewbank regions, intense utilisation has led to encroachment of *Geigeria ornativa*, *Tribulus terrestris* and *Vachellia mellifera*, while much *V. erioloba* has been destroyed by fire-wood collection. Erosion is very low.

According to the National Web-based Environmental Screening tool, the majority of the study area is deemed of low sensitivity for plants. Sensitive species include Sensitive species 12524; Sensitive species 691; *Pachycarpus suaveolens* (VU); and *Brachycorythis conica* subsp. *Transvaalensis* (CR).

The tool indicated a medium sensitivity for animal species. The Aves - *Sagittarius serpentarius* (Secretary Bird, EN) triggering the medium sensitivity.

However, the results for terrestrial biodiversity for the majority of the area is of very high sensitivity, refer to Figure 4 attached in **Appendix 2**. The triggered features include:

- Ecological Support Areas (ESAs) Category 1 and 2 and FEPA sub catchments. Conservation details pertaining to this project area is defined in more detail in the table below (**Table 6**).

Table 6: Conservations details

Database	Description
National Biodiversity Assessment (2018)	The majority of the study area is located within the remaining extent of the Molopo Bushveld, which is currently **LC** and is **poorly protected**. The NBA is the primary tool for monitoring and reporting on the state of biodiversity in South Africa. Two headline indicators that are applied to both ecosystems and species are used in the NBA: threat status and protection level: i. Ecosystem threat status tells us about the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function, and composition, on which their ability to provide ecosystem services ultimately depends. Ecosystem types are categorised as CR, EN, VU or LC, based on the proportion of each ecosystem type that remains in good ecological condition relative to a series of thresholds; and ii. Ecosystem protection level tells us whether ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Not Protected, Poorly Protected, Moderately Protected or Well Protected, based on the proportion of each ecosystem type that occurs within a protected area recognised in the NEMPAA.
Red List of Ecosystems (2021)	The 2021 Red List of Ecosystems identified one threatened ecosystems present within the study area, namely, the **LC Molopo Bushveld ecosystem**. The revised list (known as the Red List of Ecosystems 2021) is based on assessments that followed the International Union for Conservation of Nature (IUCN) Red List of Ecosystems Framework (version 1.1) and covers all 456 terrestrial ecosystem types described in South Africa (Mucina and Rutherford 2006; with updates described in Dayaram et al., 2019). The revised list identifies 120 threatened terrestrial ecosystem types (55 Critically Endangered, 51 Endangered and 14 Vulnerable types). Following a series of consultations with national, provincial, and metropolitan conservation authorities in 2020/1 the Red List of Ecosystem 2021 was approved by the Minister for public comment in June 2021 and is now officially legislated. The Red List of Ecosystem 2021 therefore replaces the current 2011 National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004): National List of Ecosystems Threatened or in Need of Protection.
IBA (2015)	The IBA (2015) database indicates that there are no IBAs located within the study area or within 10 km thereof.
Strategic Water Source Areas for Surface Water (2017)	No SWSA are associated with the study area, nor were any identified within 10 km of the study area. Surface water SWSAs are defined as areas of land that supply a disproportionate (i.e., relatively large) quantity of mean annual surface water runoff in relation to their size. They include transboundary areas that extend into Lesotho and Swaziland. The sub-national Water Source Areas (WSAs) are not nationally strategic as defined in the report but were included to provide a complete coverage.
SAPAD (2022, Q2); SACAD (2022, Q2); & NPAES (2018)	The SAPAD5 (2022, Q2) and SACAD (2022, Q2) databases did not identify any areas of conservation importance located within the study area boundary or within 10 km of the study area. The NPAES (2018) database did not identify any priority focus areas within the study area.
North West Biodiversity Sector Plan (2015): ESA Category 1	The majority of the study area is located within an area categorised as a Category 1 ESA. ESA1s ecosystems that are still in a natural, near-natural state or semi-natural state, and have not been previously developed. These ecosystems are moderately to significantly disturbed but are still able to maintain basic functionality within the landscape. Individual species or other biodiversity indicators may be severely disturbed or reduced. These are areas with low

Database	Description
	irreplaceability with respect to biodiversity pattern targets only. According to NWBSP (READ, 2015) these areas these areas are considered an ESA1 because they are still in a natural, near-natural state or semi-natural state, and have not been previously developed and have been identified as part of IBA, and ii) because they function as critical corridor linkages for biodiversity
North West Biodiversity Sector Plan (2015): ESA Category 2	Two small southern portions of the study area occurs within ESA2 areas. ESA2s ecosystems are not in a natural or near-natural state, and has been previously developed (e.g., ploughed). These ecosystems are significantly disturbed but still able to maintain some ecological functionality within the landscape. Individual species or other biodiversity indicators are severely disturbed or reduced and these are areas that have low irreplaceability with respect to biodiversity pattern targets only. These are areas with low irreplaceability with respect to biodiversity pattern targets only. These areas are required to maintain ecological processes especially landscape connectivity. According to NWBSP (READ, 2015) these areas are considered an ESA2 because they are not in a natural or near-natural state, and has been previously developed and have been identified as i) part of an IBA, and ii) because they function as critical corridor linkages for biodiversity.
Mining and biodiversity Guidelines: Highest Biodiversity Importance	small north eastern section of the study area is located within an area that is considered to be of Highest Biodiversity Importance. These areas are regarded to pose Highest risk for mining. Implications for mining: Environmental screening, EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, and to provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision making for mining, water use licences, and environmental authorisations. If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high because of the significance of the biodiversity features.
Mining and biodiversity Guidelines: High Biodiversity Importance	The majority of the study area is located within an area that are considered to be of High Biodiversity Importance. These areas are regarded to pose High risk for mining. Implications for mining: An EIA should include an assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity. Mining options may be limited in these areas, and red flags for mining projects are possible. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.

Based on digital satellite imagery, agricultural activities have taken place within the study area, especially in the south-western corner of the study area. With the study area located within a vegetation type that is of least concern (Molopo Bushveld) and almost the entire study area categorized as an ESA1, the risk associated with the proposed prospecting activities is expected to be moderately low for the terrestrial biodiversity associated with the study area.

Risks associated with the prospecting activities include the following, but are not limited to;

- Trampling and disturbance of indigenous vegetation and faunal species;
- Direct impacts on habitat due to movement of prospecting equipment, i.e. vegetation trampling and clearing;
- Potential spread of Alien invasive Plants (AIP) within more natural vegetation communities, as AIPs are abundant within the study area; and
- Harvesting of Floral SCC and hunting of Faunal SCC, leading to a potential loss in floral and faunal diversity and possible SCC abundance.

All the above-mentioned risks can be well mitigated and impacts can be limited to small footprints directly associated with the proposed prospecting activities. Provided that impacts are mitigated with specific mention of appropriate rehabilitation following prospecting, the proposed prospecting activities can be considered acceptable, from a terrestrial biodiversity resource management point of view.

6. Air Quality

The predominant wind direction is from the north-northwest to west with frequent winds also occurring from the north and south. During the summer month, the wind is from the north to north-northwest. This changes dramatically during autumn (April to May) when the winds blow more frequently from the west. Winter months and springtime reflect similar patterns with the predominant airflow from the north - North-Westerly to westerly sector. During the spring months of August and September an increase in wind speed is evident, otherwise wind speed is considered to be relatively consistent throughout the year.

The impacts from dust fallout and particulate matter can be reduced by implementing dust control measures. Sumps will be located next to the drill sites to ensure that water is available for dust suppression during drilling. Water will be recycled via the sumps to ensure re-use of water.

The mitigation and management measures for prospecting operation should be sufficient to ensure prospecting operation can be conducted with minimal impact on the receiving environment and therefore not have a detrimental effect.

7. Noise

Potential noise impact on the surrounding environment have been considered due to prospecting activities. The potential noise impact would be of low significance. Mitigation is however proposed to ensure that potential operational noises are mitigated, these are addressed in the EMP.

8. Description of current land uses

(i) Description of specific environmental features and infrastructure on site

This has been described under baseline environment above.

(ii) Environmental and current land use map

Show all environmental and current land use features

Refer to **Figure 4,** no infrastructure is planned on the site.

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

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

The activities identified are grouped per phase as described in **Table 7**.

Table 7: Construction impacts identified

Activities	Impacts	Mitigation possible	Degree of reversibility	Resource loss
Access to and on site	Vegetation and habitat disturbance	Yes	Partial	Yes
	Soil compaction or erosion	Yes	Full	Yes
	Dust generation	Yes	Full	No
	Displacement of Fauna and Flora	Limited	Partial	No
	Noise impacts	Yes	Partial	No
	Heritage impacts	Yes	Yes	Yes

Activities	Impacts	Mitigation possible	Degree of reversibility	Resource loss
	Security risks and crime	Yes	Partial	No
Site lay down with fuel and equipment storage area	Vegetation and habitat disturbance	Yes	Partial	No
	Soil compaction or erosion	Yes	Full	Yes
	Dust generation	Yes	Full	No
	Displacement of Fauna and Flora	Yes	Partial	No
	Noise impacts	Yes	Partial	No
Drilling	Vegetation and habitat disturbance	Yes	Partial	Yes
	Soil compaction or erosion	Yes	Full	Yes
	Dust generation	Yes	Full	No
	Displacement of Fauna and Flora	Limited	Partial	No
	Noise impacts	Yes	Full	No
	Visual impacts	Yes	Partial	No
	Damage to farm infrastructure	Yes	Full	No
	Security risks and crime	Yes	Partial	No
	Heritage impacts	Yes	No	Yes
	Pollution due to spillage of oils and fuels	Yes	Partial	No
	Pollution due to incorrect waste disposal	Yes	Partial	No
	Pollution due to drill sludge and drip chip accumulation	Yes	Partial	No
	Consumption of water for drilling	Yes	Partial	Yes
	Alien and invasive species proliferation	Yes	Full	No

Activities	Impacts	Mitigation possible	Degree of reversibility	Resource loss
	Water pollution and health risks due to improper sewage and sanitation practices	Yes	Full	No
Use of site laydown, equipment storage and chemical toilets	Pollution due to incorrect waste disposal	Yes	Partial	No
	Vegetation and habitat disturbance	Yes	Partial	No
	Soil compaction or erosion	Yes	Partial	No
	Water pollution and health risks due to improper sewage and sanitation practices	Yes	Full	No

Table 8: Closure impacts identified

Activities	Impacts	Mitigation possible	Degree of reversibility	Resource loss
Rehabilitation and closure of drill holes, camp laydown and fuel storage area	Vegetation and habitat disturbance	Yes	Partial	Yes
	Soil compaction or erosion	Yes	Full	Yes
	Displacement of Fauna and Flora	Limited	Partial	No
	Alien and invasive species proliferation	Yes	Full	No
	Visual impacts	Yes	Partial	No
	Safety risk from unclosed drill holes	Yes	Partial	No
	Safety and environmental risk from abandoned infrastructure	Yes	No	Yes

(iii) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks

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

Standard evaluation methods are applied as defined below.

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need. Assessment of impacts will be based on DEAT's (1998) Guideline Document: EIA Regulations. The significance of the aspects/impacts of the process will be rated by using a matrix as indicated overleaf.

The determination of the significance of a particular impact is crucial in the assessment of the overall effect that a project will have on the biophysical and socio-economic environment. A number of criteria were considered to determine the significance of an impact. These criteria were then combined to determine their impact significance. Numerical rankings have been assigned to each environmental or socio-economic impact under the following criteria:

- Extent of the impact;
- Duration of the impact;
- Reversibility of the impact;
- Magnitude of the impact; and
- Probability of the impact's occurrence.

The above criteria rankings were then used in the following equation to determine the significance of the environmental impact:

Impact significance score = (magnitude + extent + reversibility + duration) x probability.

Numerical rankings ranging from 1 to 5 are assigned to each criterion and describe different terms depending on the criteria, refer to **Table 9.** The description of the numerical ranking for each criterion is summarised in **Table 10.** The assignment of rankings is based on the professional opinion of the environmental assessment practitioner (EAP).

Once the significance score of the environmental impact has been determined a corresponding significance rating can be determined, ranging from very low to very high.

Table 10 provides a description of the significance ratings and their corresponding rankings for the various phases as well as cumulative impacts.

Where there are environmental or socio-economic benefits from project activities, the positive impacts have not been assessed, but were assigned as a 'positive impact' for simplicity and discussed. Where appropriate, relevant management measures have been identified to enhance the positive benefits of the impact.

This method is used in a pre-mitigation or post-mitigation scenario. It is important that environmental impacts be rated in both scenarios, as for example, a very significant environmental impact may be very easy to mitigate, in which case it should no longer have a significant influence on the environmental feasibility of the project.

Table 9: Impact criteria ranking

Criterion	Description	Possible Results		
		Term	Description	Ranking
Extent	The geographical extent of the impact on a given environmental receptor: typically site (only); local (within specific activity area); regional (outside activity area but localised); national (within national scope) or international (across international boundaries/borders).	Site only	The impact is limited to the tenement/mine site	1
		Local	The impact will extend beyond the immediate boundaries of the prospecting tenement, affecting the environment/one or more of the communities in surrounding areas.	2
		Regional	The impact will affect the Mpumalanga Region.	3
		National	The impact will affect South Africa	4
		International	The impact will have an international affect, i.e. trans-boundary.	5
Magnitude	The degree of alteration of the affected environmental receptor: typically very low; low; medium; high or very high.	Very Low	The impact has no effect on natural, cultural and social functions and processes beyond that of nuisance value.	1
		Low-moderate	Natural processes and cultural and social functions continue, but in a slightly modified way.	2
		Moderate	Natural processes and cultural and social functions continue, but in a modified way.	3
		High	Natural processes or cultural or social functions are altered to the extent that they temporarily or permanently cease, resulting in severe deterioration of the impacted environment.	4
		Very High	Environmental processes cease completely or societies are completely disrupted.	5
Reversibility	The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change: typically reversible (recovery without the application of rehabilitation means); recoverable (recovery resulting from specific	Very high	Intensity of the impact is low and the receiving environment has the capacity, resources and mechanisms to mitigate or optimize the impact.	1
		High	Intensity of the impact is low to moderate and the receiving environment has the capacity, resources and mechanisms to mitigate or optimize the impact.	2

Criterion	Description	Possible Results		
		Term	Description	Ranking
	mitigation or action); and irreversible (recovery is not possible, despite action).	Moderate	Impact is moderate, and the receiving environment has some mechanisms to mitigate or optimize the impact, as well as resources that can be called upon.	3
		Moderate – low	Potential for mitigation/optimisation is limited because of the severity of the impact and a lack of capacity/resources and coping mechanisms in the receiving environment.	4
		Low	Potential for mitigation/optimisation is highly / severely limited because of the severity of the impact and a lack of capacity/resources and coping mechanisms in the receiving environment.	5
Duration	The length of permanence of the impact on the environmental receptor: typically short-term (0-5 yrs.); medium-term (5-15 yrs.); long-term (ceases after construction life) and permanent.	Temporary	During construction only (can have temporary effects during operation as well)	1
		Short term	0-5 years, the effects can be reversed in a short time	2
		Medium term	5-15 years, the effects could be reversed over a medium time period, possibly coinciding with the life of mine.	3
		Long term	The impact will only cease after the life of the project.	4
		Permanent	The impact on the receiving environment will effectively be irreversible.	5
Probability of Occurrence	The likelihood of an impact occurring.	Uncertain	Where insufficient information is available to determine probability.	1
		Low	Where the possibility of the impact materialising is low to unlikely.	2
		Probable	Where there is a distinct possibility that the impact will occur.	3
		Highly probable	Where it is most likely that the impact will occur.	4
		Definite	Where the impact will occur regardless of any preventative measures.	5

Table 10: Significance rating

Impact Significance Score	Significance Rating	Description
-	Positive	The impact is expected to have a positive impact, but measures may be implemented to enhance any positive outcomes.
4 to 20	Very low	The impact will not affect the decision to proceed with the project and will not need to be considered in the project design.
21 to 40	Low	This impact will be avoided with general mitigation measures
41 to 60	Moderate	This impact will not be avoided unless mitigation measures are put in place and could require modification of the project design.
61 to 80	High	For negative impacts, should the decision be to proceed with the project, stringent mitigation measures must be applied.
81 to 100	Very high	For negative impacts, the decision should be not to proceed with the project.

(iv) 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

Identified impacts can be managed successfully and no significant risks are present as long the management conditions recommended in Part B are implemented. For the Terrestrial Biodiversity the screening tool identified the study area to the very high sensitivity area and therefore the final site layout plan for all activities must be approved by an ecologist before any activities may commence. Sensitive aspects found will be avoided as much as possible. Should they need to be disturbed, this will only be done once the relevant permit has been obtained. To protect the integrity of the watercourses, no activities encroach within the 500 m buffer of any of the possible watercourses found on site. Further, liaise daily with the landowners as to drilling activities.

The prospecting activities will provide small economic benefits to the surrounding community as all staff will be housed off site in private accommodation. The major positive socio-economic benefits can only be realised should the mine prove feasible, and a mining right is granted. This can only be realised if prospecting takes place to map the resource which will inform the mine feasibility studies.

(v) 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

Significant impact, those that have a minimum initial rating (values between 21 and 40), as identified during the life of the project and a summary of the proposed mitigation measures is provided in table below**:**

Table 11: Mitigation measure summary

Significant impact	Summary of mitigation measures
Vegetation and habitat disturbance	- Maximise use of existing access tracks. - No trees to be removed. - Removal of other vegetation be limited as far as possible. - Activities located at least 500 m away from identified watercourses. - Site layout plan to be approved by ecologist and landowner prior to commencement. - Stripped topsoil to be used on disturbed footprint as soon as possible to encourage regrowth. - All disturbed footprint must be regarded or levelled according prior to topsoil placement. - Revegetation to be inspected to ensure suitable cover occurs. - No collection of firewood or making of fires allowed
Soil compaction or erosion	- Limit vegetation clearance and soil handling to selected area(s) at a time and progressively clear the required areas, in order to minimise the exposure duration and cumulative loss of soil from disturbed areas through erosion and dust emission. - Ideally, the top 30 cm of the topsoil should be placed separately as this horizon is the most fertile and carries the seedbank. This soil layer should preferably be reinstated and rehabilitated as soon as practically possible to improve the chances of success of natural revegetation. - Ideally, each sump should be backfilled immediately at each individual location prior to moving on to the next location in order to minimise loss of valuable soil through wind and water erosion, and also to maintain the viable seedbank in the topsoil to enable natural revegetation. - Compacted soils can be lightly ripped to at least 25 cm below ground surface to alleviate compaction prior to the ploughing of the fields.

Significant impact	Summary of mitigation measures
Freshwater and aquatic pollution	Prospecting activities taking place within the freshwater resources and applicable zones of regulation may result in: ➢ Loss of freshwater resource habitat and ecological structure; ➢ Changes to the sociocultural and service provision; ➢ Impacts on the hydrology and sediment balance of the freshwater resources; and ➢ Impacts on water quality. The impact significance on freshwater resources prior to mitigation taking place is considered to be "low" significance, based on the existing layout where prospecting drill holes are situated outside of the 500 m GN 509 Zone of Regulation. With all mitigation fully implemented, the anticipated impact significance is likely to be reduced to "very low" significance. - It is essential that the ecologist visits the area prior to finalising the final drill positions once a prospecting right is issued. This will ensure that no activities take place within 500 m of such water courses. - Where prospecting activities of excavation sites are unavoidable near watercourse, the 500 m Zone of Regulation, an application for an authorisation in terms of the National Water Act first be obtained prior to conducting that activities. - Prospecting vehicles must remain on demarcated roads and should not encroach into the watercourse areas or their respective zones of regulation, where possible.
Displacement of fauna and Floral	- Prohibit the collection of plant material for firewood or medicinal uses; - No trapping or hunting of fauna is to take place; - It is recommended that a speed limit of 40 km/h be implemented on all roads running through the study area during the prospecting phase in order to minimise risk to faunal from vehicles; and - All informal fires in the vicinity of the development footprint should be prohibited.
Noise impacts	- Activities to occur during daylight hours only. - Equipment used to be properly maintained. - Background noise not to exceed 5 dB.
Visual impacts	- Site layout plan to be approved by landowner. - Infrastructure used should make use of neutral colouring where possible.

Significant impact	Summary of mitigation measures
	- All disturbance to be rehabilitated as per rehabilitation plan.
Security risks and crime	- Access agreement approved with landowner. - All drillers to wear identification. - Access and activities to be communicated with the landowner daily. - All staff to be accommodated off site.
Damage to farm infrastructure	- No activities within 500 m of farm infrastructure. - Site plan and activities to be approved by landowner. - No fences or other infrastructure to be moved or interfered with without permission. - Access to the site to be undertaken in accordance with access agreement.
Heritage impacts	- No drilling within 500 m of existing farm structures. - Should any heritage resources accidentally encountered, activities at the site in question will cease until heritage specialist can detail an appropriate course of action.
Pollution due to spillage of oils and fuels	- Chemicals stored in a bunded chemicals facility. - Spill response kits to be available encase of hydraulic hose breakages etc. All equipment inspected daily for leaks and repaired or replaced immediately. - No servicing of machines in the field. - Drip trays used at all times when refuelling or undertaking emergency repairs.
Pollution due to incorrect waste disposal	- Ensure proper waste management and disposal practices at all times. - No littering. - Waste to be collected and separated at source into hazardous and non-hazardous wastes. - Waste to be disposed at licensed facility by authorised contractor. All waste to be removed from site.
Pollution due to drill sludge and drip chip accumulation	- Drill sumps will be lined. - Environmentally responsible lubricants will be used. - Sludge removed from site and disposed as per waste procedure.
Consumption of water for drilling	- Drill sumps will be lined and water recycled as far as possible. - Water will be provided by water cart. - Water will be sourced from the landowner by agreement or authorised vendor off site. - Water usage should not exceed the general authorisation volume for the area.

Significant impact	Summary of mitigation measures
	- No water may be abstracted from boreholes or rivers without authorisation.
Alien and invasive species proliferation	- Alien and invasive vegetation control should take place throughout the duration of the prospecting activities; - Proliferation of alien and invasive species is expected within any disturbed area. These species should be eradicated and controlled to prevent their spread beyond the footprint area. Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, must be controlled; and - Removal of the alien and weed species encountered within the footprint area must take place in order to comply with existing legislation with specific mention of Category 1b species in line with the NEMBA Alien and Invasive Species Regulations (2016).
Water pollution and health risks due to improper sewage and sanitation practice	- Chemical toilets to be used onsite. No more than 12 people per chemical toilet. - Toilet to be provided within 10 m of drilling location. Chemical toilets to be serviced weekly and wastes to be disposed by licensed contractor.
Safety risk from unclosed drill holes	- Drill holes should be capped to and marked. Where strike water is intersected, these boreholes may be handed over to the landowner. This must be discussed and approved with the landowner.
Safety and environmental risk from abandoned infrastructure	- All infrastructure brought onto site must be demolished and removed from site. - Any waste materials or rubble must be disposed of at licensed facility as per waste management plan.
Vehicle access	- All vehicles must be regularly inspected for leaks. Refuelling of vehicles must take place off site; - Any operational vehicles that are parked overnight on site are to have drip trays placed beneath them in order to limit the possible ingress of hydrocarbons into the soil; - In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss; and - All spills should be immediately cleaned up and treated accordingly.

(vi) Motivation where no alternative sites were considered

As stated previously, an initial desktop geological review has indicated the possible presence of cobalt and the other metals indicated previously. Neighbouring farms were not deemed suitable based on local geology. The site is considered the preferred site and no other alternative sites are considered.

(vii) Statement motivating the alternative development location within the overall site

Provide a statement motivating the final site layout that is proposed

The access routes used and location of the site laydown area (fuel and equipment storage) will be assessed by an ecologist and the landowner prior to access to the site. This is to ensure activities do not interfere with site infrastructure, nor occur within the 500 m buffer area of possible watercourses or pose a threat to sensitive terrestrial biodiversity. Refer to **Figure 4** showing the initial planned prospecting holes.

(j) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity

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

Initial issue identification was achieved through:

- consultation of landowners and interested and affected parties as documented; and
- conducting specialist study; desktop terrestrial biodiversity assessment of the area.

These risk and mitigation measures identified were then included in the impact rating system as described in **Table 9** and **Table 10.** Pre and post mitigation ratings were then determined to ensure the mitigation measures provided an acceptable final risk/impact rating. These management measures are generally summarised in **Table 11** and further detailed in **Part B**.

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

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

Refer to **Table 12** and **Table 13** and **Table 14** below.

Table 12: Construction impact assessment

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
Access to and on site	Construction access tracks and or dirt roads	Vegetation and habitat disturbance	Magnitude	4	44	Ecologist to confirm drill plan layout prior to access to the project area. Activities to be located outside 500 m buffer from possible water courses. Site layout plan to be approved by ecologist and landowner. Use of existing dirt roads and access tracks to be maximised. Do not remove any trees and limit removal of vegetation.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	3			Duration	2	
			Probability	4			Probability	2	
		Soil compaction or erosion	Magnitude	2	24	Use of existing dirt roads and access tracks to be maximised. Activities to be located outside 500 m buffer from water courses. Site layout plan to be approved by ecologist and landowner.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Dust generation	Magnitude	2	12	No mitigation required.	Magnitude	2	12
			Extent	1			Extent	1	
			Reversibility	1			Reversibility	1	
			Duration	2			Duration	2	
			Probability	2			Probability	2	
		Displacement of Fauna	Magnitude	2	21	Maximise use of existing farmers track only. Ecological survey of new routes and landowner approval before new access track is used.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Noise impacts	Magnitude	2	21	Site layout to be approved by landowner. Working hours will be during daylight hours only.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Heritage impacts	Magnitude	2	26	No heritage assessments were conducted. No drilling will be conducted	Magnitude	2	22
			Extent	1			Extent	1	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
			Reversibility	5		within 500 m of existing site infrastructure (farm houses etc.). Drill plan to be approved by landowner. If heritage resources encountered, activities must cease in the vicinity and reported to SAHRA. Approval sought to continue by heritage expert.	Reversibility	3	
			Duration	5			Duration	5	
			Probability	2			Probability	2	
		Visual impacts	Magnitude	2	24	New access tracks will either be handed back to farmer or site will be ripped to allow for revegetation. Rehabilitation progress to be monitored.	Magnitude	2	21
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	3	
	Access to the farm	Security risks and crime	Magnitude	4	45	All drillers to carry company identification. Site access and working arrangements to be communicated/confirmed with landowner continuously. Access agreement to be drawn up prior to site establishment. All staff is to be accommodated off site.	Magnitude	3	32
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	5			Probability	4	
Site lay down with fuel and equipment storage area	Construction of site lay down and fuel and equipment storage area	Vegetation and habitat disturbance	Magnitude	2	44	Ecologist to confirm drill plan layout prior to access to the project area. Activities to be located outside 500 m buffer from possible water courses. Site layout plan to be approved by ecologist and landowner. Diesel bowser used for fuel storage. All chemicals kept in a bunded area.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Soil compaction or erosion	Magnitude	2	24	Area used to be fenced in to prevent footprint creep. Topsoil to be stripped and stored for rehabilitation of the site.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
			Magnitude	2	12	No mitigation required.	Magnitude	2	12

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
		Dust generation	Extent	1			Extent	1	
			Reversibility	1			Reversibility	1	
			Duration	2			Duration	2	
			Probability	2			Probability	2	
		Displacement of Fauna	Magnitude	2	21	Maximise use of existing farmers track only. Ecological survey of sites and landowner approval before new disturbance footprint is allowed.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Noise impacts	Magnitude	2	21	Site layout to be approved by landowner. Working hours will be during daylight hours only.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Visual impacts	Magnitude	2	24	Where possible, infrastructure used will make use of neutral colours (browns etc.) to blend in. All infrastructure brought onto site will be removed from site during closure. Disturbed footprints will be rehabilitated during closure.	Magnitude	2	21
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	3	
Drilling	Access track usage	Vegetation and habitat disturbance	Magnitude	4	44	Ecologist to confirm drill plan layout prior to access to the project area. Activities to be located outside 500 m buffer from possible water courses. Site layout plan to be approved by ecologist and landowner. Use of existing dirt roads and access tracks to be maximised. Do not remove any trees and limit removal of vegetation. Staff trained on access routes to ensure drivers stick to existing track only. No firewood collected and no fires allowed. No trees to be removed.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	3			Duration	2	
			Probability	4			Probability	2	
			Magnitude	2	32	Use of existing dirt roads and access tracks to be maximised. Activities to be	Magnitude	2	14
			Extent	1			Extent	1	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
		Soil compaction or erosion	Reversibility	3		located outside 500 m from water courses. Site layout plan to be approved by ecologist and landowner. Staff trained on access routes to ensure drivers stick to existing track only	Reversibility	2	
			Duration	2			Duration	2	
			Probability	4			Probability	2	
		Dust generation	Magnitude	3	21	Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used.	Magnitude	2	12
			Extent	1			Extent	1	
			Reversibility	1			Reversibility	1	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Displacement of Fauna	Magnitude	2	21	Use of existing dirt roads and access tracks to be maximised. Activities to be located outside 500 m from water courses. Site layout plan to be approved by ecologist and landowner. Staff trained on access routes to ensure drivers stick to existing track only. No hunting allowed.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Noise impacts	Magnitude	2	21	Working hours will be during daylight hours only. Equipment to be maintained to ensure noise levels are not excessive (5 dB above ambient)	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Visual impacts	Magnitude	2	24	Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used. Staff trained on access routes to ensure drivers stick to existing track only	Magnitude	2	21
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	3	
	Interaction with farm infrastructure	Damage to farm infrastructure	Magnitude	2	21	No activities within 500 m of farm infrastructure. Site plan and activities to be approved by landowners. No fences or other infrastructure to be moved or interfered with without permission.	Magnitude	0.3	4.5
			Extent	1			Extent	0.6	
			Reversibility	1			Reversibility	0.9	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
			Duration	3		Access to the site to be undertaken in accordance with access agreement.	Duration	1.2	
			Probability	3			Probability	1.5	
	Access to the farm	Security risks and crime	Magnitude	4	45	All drillers to carry company identification. Site access and working arrangements to be communicated/confirmed with landowner daily. Access agreement to be drawn up prior to site establishment. All staff is to be accommodated off site.	Magnitude	3	32
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	5			Probability	4	
	Drilling site disturbance	Vegetation and habitat disturbance	Magnitude	3	44	Ecologist to confirm drill plan layout prior to access to the project area. Activities to be located outside 500 m buffer from possible water courses. Site layout plan to be approved by ecologist and landowner. Use of existing dirt roads and access tracks to be maximised. Do not remove any trees and limit removal of vegetation. Staff trained on access routes to ensure drivers stick to existing track only. No firewood collected and no fires allowed. No trees to be removed. Footprint areas to be demarcated to reduce footprint creep. Rehabilitation to take place ASAP, with only one hole left un-rehabilitated at any one time. Once drilling or excavating is complete, site to be rehabilitated within 2 weeks. Protected areas of the study area should be avoided as far as possible.	Magnitude	3	44
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	4			Duration	4	
			Probability	4			Probability	4	
		Soil compaction or erosion	Magnitude	3	44	Area used to be fenced in to prevent footprint creep. Topsoil to be stripped and stored for rehabilitation of the site. Footprint areas to be demarcated to	Magnitude	3	44
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	4			Duration	4	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
			Probability	4		reduce footprint creep. All topsoil to be removed and stored next to the disturbance prior to drilling.	Probability	4	
		Dust generation	Magnitude	2	12	Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used.	Magnitude	2	12
			Extent	1			Extent	1	
			Reversibility	1			Reversibility	1	
			Duration	2			Duration	2	
			Probability	2			Probability	2	
		Displacement of Fauna	Magnitude	2	27	Hunting not allowed on site. Rehabilitation to take place ASAP, with only one hole left un-rehabilitated at any one time. Once drilling or excavating is complete, site to be rehabilitated within 2 weeks.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	2	
		Noise impacts	Magnitude	2	21	Site layout to be approved by landowners. Working hours will be during daylight hours only. Equipment to be maintained to ensure noise levels are not excessive (5 dB above ambient)	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Visual impacts	Magnitude	2	24	Where possible, infrastructure used will make use of neutral colours (browns etc.) to blend in. All infrastructure brought onto site will be removed from site during closure. Disturbed footprints will be rehabilitated during closure.	Magnitude	2	21
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	3	
		Heritage impacts	Magnitude	4	28	Site layout to be approved by landowners to avoid existing infrastructure. Any heritage resources found must be immediately reported and drilling suspended at that site till heritage specialist can detail an appropriate course of action.	Magnitude	3	12
			Extent	1			Extent	1	
			Reversibility	4			Reversibility	3	
			Duration	5			Duration	5	
			Probability	2			Probability	1	
			Magnitude	3	44	No chemicals stored with the drill rigs, should be kept in the chemicals facility.	Magnitude	2	16
			Extent	1			Extent	1	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
		Pollution due to spillage of oils and fuels	Reversibility	3		Spill response kits to be available encase of hydraulic hose breakages etc. All equipment inspected daily for leaks and repaired or replaced immediately. No servicing of machines in the field. Drip trays used at all times when refuelling or undertaking emergency repairs.	Reversibility	2	
			Duration	4			Duration	3	
			Probability	4			Probability	2	
		Pollution due to incorrect waste disposal	Magnitude	4	39	Ensure proper waste management and disposal practices at all times. No littering, Waste to be collected and separated at source into hazardous a non-hazardous wastes. Waste to be disposed at licensed facility by authorised contractor. All waste to be removed from site.	Magnitude	4	20
			Extent	1			Extent	1	
			Reversibility	4			Reversibility	2	
			Duration	4			Duration	3	
			Probability	3			Probability	2	
		Pollution due to drill sludge and drip chip accumulation	Magnitude	3	44	Drill sumps will be lined. Environmentally responsible lubricants will be used. Sludge removed from site and disposed as per waste procedure.	Magnitude	3	22
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	4			Duration	4	
			Probability	4			Probability	2	
		Consumption of water for drilling	Magnitude	2	28	Drill sumps will be lined and water recycled as far as possible. Water will be provided by water cart. Water will be sourced from the landowners by agreement or authorised vendor off site. Water usage should not exceed the general authorisation volume for the area. No water may be abstracted from boreholes or rivers without authorisation.	Magnitude	2	18
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	1			Duration	1	
			Probability	4			Probability	3	
		Alien and invasive species proliferation	Magnitude	3	48	Ensure concurrent rehabilitation as per rehabilitation strategy. All rehabilitation to be inspected and signed off by Environmental Control Officer (ECO)	Magnitude	3	22
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	5			Duration	4	
			Probability	4			Probability	2	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
				2		and landowner. Alien species found are to be controlled accordingly.			
			Reversibility	3					
			Duration	3					
			Probability	4					
		Heritage impacts	Magnitude	2	26	No drilling within 500 m of existing site infrastructure (farm houses etc.). Drill plan to be approved by landowners. If heritage resources encountered, activities must cease in the vicinity and reported to SAHRA. Approval sought to continue by heritage expert.	Magnitude	2	22
			Extent	1			Extent	1	
			Reversibility	5			Reversibility	3	
			Duration	5			Duration	5	
			Probability	2			Probability	2	
	Sewage and sanitation	Water pollution and health risks due to improper sewage and sanitation practices	Magnitude	2	24	Chemical toilets to be used onsite. No more than 12 people per chemical toilet. Toilet to be provided within 10 m of drilling location. Chemical toilets to be serviced weekly and wastes to be disposed by licensed contractor.	Magnitude	1	12
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
Use of site laydown, equipment storage and chemical toilets	Waste disposal	Pollution due to incorrect waste disposal	Magnitude	4	39	Ensure proper waste management and disposal practices at all times. No littering, Waste to be collected and separated at source into hazardous and non-hazardous wastes. Waste to be disposed at licensed facility by authorised contractor. All waste to be removed from site.	Magnitude	4	20
			Extent	1			Extent	1	
			Reversibility	4			Reversibility	2	
			Duration	4			Duration	3	
			Probability	3			Probability	2	
	Storage of vehicles and equipment	Vegetation and habitat disturbance	Magnitude	2	32	Ecologist to confirm laydown layout prior to access to the project area. Activities to be located outside 500 m buffer from possible water courses. Site layout plan to be approved by ecologist and landowner. No firewood collected and no fires allowed. No trees to be removed	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	4			Probability	2	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
						Diesel bowser used for fuel storage. All chemicals kept in a bunded facility.			
	Usage and storage of vehicles and machinery	Soil compaction or erosion	Magnitude	2	32	Area used to be fenced in to prevent footprint creep. Topsoil to be stripped and stored for rehabilitation of the site.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	4			Probability	2	
	Sewage and sanitation	Water pollution and health risks due to improper sewage and sanitation practices	Magnitude	2	24	Chemical toilets to be used onsite. No more than 12 people per chemical toilet. Toilet to be provided within 10 m of drilling location. Chemical toilets to be serviced weekly and wastes to be disposed by licensed contractor.	Magnitude	1	12
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	

Table 13: Operational phase impact assessment

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
Drilling	Access track usage	Vegetation and habitat disturbance	Magnitude	4	44	Drill as per the approved layout. Should amendments be required, the ecologist and landowner first need to approve it. Use of existing dirt roads and access tracks to be maximised. Activities to be located outside 500 m buffer from water courses. Staff trained on access routes to ensure drivers stick to existing track only.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	3			Duration	2	
			Probability	4			Probability	2	
		Soil compaction or erosion	Magnitude	2	32	Use of existing dirt roads and access tracks to be maximised. Activities to be located outside 500 m buffer from water	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
			Duration	2		courses. Staff trained on access routes to ensure drivers stick to existing track only.	Duration	2	
			Probability	4			Probability	2	
		Dust generation	Magnitude	3	21	Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used.	Magnitude	2	12
			Extent	1			Extent	1	
			Reversibility	1			Reversibility	1	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Displacement of Fauna	Magnitude	2	21	Use of existing dirt roads and access tracks to be maximised. Activities to be located outside 500 m buffer from water courses. Staff trained on access routes to ensure drivers stick to existing track only.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Noise impacts	Magnitude	2	21	Working hours will be during daylight hours only. Equipment to be maintained to ensure noise levels are not excessive (5 dB above ambient).	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Visual impacts	Magnitude	2	24	Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used. Staff trained on access routes to ensure drivers stick to existing track only.	Magnitude	2	21
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	3	
	Access to the farm	Security risks and crime	Magnitude	4	45	All drillers to carry company identification. Site access and working arrangements to be communicated/confirmed with landowner daily. Access agreement to be drawn up prior to site establishment. All staff is to be accommodated off site.	Magnitude	3	32
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	5			Probability	4	
	Drilling site disturbance		Magnitude	3	44	Activities to be located outside 500 m buffer from water courses. Implement	Magnitude	3	44
			Extent	1			Extent	1	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
		Vegetation and habitat disturbance	Reversibility	3		the approved plan. Should an amendment be required, it must first be approved by the ecologist and landowner. Footprint areas to be demarcated to reduce footprint creep. Rehabilitation to take place ASAP, with only one hole left un-rehabilitated at any one time. Once drilling or excavating is complete, site to be rehabilitated within 2 weeks.	Reversibility	3	
			Duration	4			Duration	4	
			Probability	4			Probability	4	
		Soil compaction or erosion	Magnitude	3	44	Area used to be fenced in to prevent footprint creep. Topsoil to be stripped and stored for rehabilitation of the site. Footprint areas to be demarcated to reduce footprint creep. All topsoil to be removed and stored next to the disturbance prior to drilling.	Magnitude	3	44
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	4			Duration	4	
			Probability	4			Probability	4	
		Dust generation	Magnitude	2	12	Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used.	Magnitude	2	12
			Extent	1			Extent	1	
			Reversibility	1			Reversibility	1	
			Duration	2			Duration	2	
			Probability	2			Probability	2	
		Displacement of Fauna	Magnitude	2	27	Hunting not allowed on site. Rehabilitation to take place ASAP, with only one hole left un-rehabilitated at any one time. Once drilling or excavating is complete, site to be rehabilitated within 2 weeks.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	2	
		Noise impacts	Magnitude	2	21	Site layout to be approved by landowner. Working hours will be during daylight hours only. Equipment to be maintained to ensure noise levels are not excessive (5 dB above ambient).	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
			Magnitude	2	24		Magnitude	2	21

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
		Visual impacts	Extent	1		Where possible, infrastructure used will make use of neutral colours (browns etc.) to blend in. All infrastructure brought onto site will be removed from site during closure. Disturbed footprints will be rehabilitated during closure.	Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	3			Duration	2	
			Probability	3			Probability	3	
		Heritage impacts	Magnitude	4	28	According to available information, no heritage resources present on site. Site layout to be approved by landowner to avoid existing infrastructure. Any heritage resources found must be immediately reported and drilling suspended at that site till heritage specialist can detail an appropriate course of action.	Magnitude	3	12
			Extent	1			Extent	1	
			Reversibility	4			Reversibility	3	
			Duration	5			Duration	5	
			Probability	2			Probability	1	
		Pollution due to spillage of oils and fuels	Magnitude	3	44	No chemicals stored with the drill rigs, should be kept in the chemical's facility. Spill response kits to be available encase of hydraulic hose breakages etc. All equipment inspected daily for leaks and repaired or replaced immediately. No servicing of machines in the field. Drip trays used at all times when refuelling or undertaking emergency repairs.	Magnitude	2	16
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	4			Duration	3	
			Probability	4			Probability	2	
		Pollution due to incorrect waste disposal	Magnitude	4	39	Ensure proper waste management and disposal practices at all times. No littering, Waste to be collected and separated at source into hazardous and non-hazardous wastes. Waste to be disposed at licensed facility by authorised contractor. All waste to be removed from site.	Magnitude	4	20
			Extent	1			Extent	1	
			Reversibility	4			Reversibility	2	
			Duration	4			Duration	3	
			Probability	3			Probability	2	
		Pollution due to drill sludge	Magnitude	3	44	Drill sumps will be lined. Environmentally responsible lubricants	Magnitude	3	22
			Extent	1			Extent	1	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
		and drip chip accumulation	Reversibility	3		will be used. Sludge removed from site and disposed as per waste procedure.	Reversibility	3	
			Duration	4			Duration	4	
			Probability	4			Probability	2	
		Consumption of water for drilling	Magnitude	2	28	Drill sumps will be lined and water recycled as far as possible. Water will be provided by water cart. Water will be sourced from the landowners by reaching an agreement or authorised vendor off site. Water usage should not exceed the general authorisation volume for the area. No water may be abstracted from boreholes or rivers without authorisation.	Magnitude	2	18
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	1			Duration	1	
			Probability	4			Probability	3	
		Alien and invasive species proliferation	Magnitude	3	48	Ensure concurrent rehabilitation as per rehabilitation strategy. All rehabilitation to be inspected and signed off by ECO and landowners.	Magnitude	3	22
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	5			Duration	4	
			Probability	4			Probability	2	
			Extent	2			Extent	2	
			Reversibility	3			Reversibility	3	
			Duration	3			Duration	3	
			Probability	4			Probability	1	
		Heritage impacts	Magnitude	2	26	No drilling within 500 m of existing site infrastructure (farm houses etc.). Drill plan to be approved by landowners. If heritage resources encountered, activities must cease in the vicinity and reported to SAHRA. Approval sought to continue by heritage expert.	Magnitude	2	22
			Extent	1			Extent	1	
			Reversibility	5			Reversibility	3	
			Duration	5			Duration	5	
			Probability	2			Probability	2	
	Sewage and sanitation	Water pollution and health risks due to	Magnitude	2	24	Chemical toilets to be used onsite. No more than 12 people per chemical toilet. Toilet to be provided within 10 m of drilling location. Chemical toilets to be	Magnitude	1	12
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	

Activities	Aspect	Potential impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
		improper sewage and sanitation practices	Probability	3		serviced weekly and wastes to be disposed by licensed contractor.	Probability	2	
Use of site laydown, equipment storage and chemical toilets	Waste disposal	Pollution due to incorrect waste disposal	Magnitude	4	39	Ensure proper waste management and disposal practices at all times. No littering, Waste to be collected and separated at source into hazardous and non-hazardous wastes. Waste to be disposed at licensed facility by authorised contractor. All waste to be removed from site.	Magnitude	4	20
			Extent	1			Extent	1	
			Reversibility	4			Reversibility	2	
			Duration	4			Duration	3	
			Probability	3			Probability	2	
	Storage of vehicles and equipment	Vegetation and habitat disturbance	Magnitude	2	32	Activities to be located outside 500 m buffer from water courses. Site layout plan to be approved by ecologist and landowner. Diesel bowser used for fuel storage. All chemicals kept in a roofed and bunded areas.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	4			Probability	2	
	Usage and storage of vehicles and machinery	Soil compaction or erosion	Magnitude	2	32	Area used to be fenced in to prevent footprint creep. Topsoil to be stripped and stored for rehabilitation of the site.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	4			Probability	2	
	Sewage and sanitation	Water pollution and health risks due to improper sewage and sanitation practices	Magnitude	2	24	Chemical toilets to be used onsite. No more than 12 people per chemical toilet. Toilet to be provided within 10 m of drilling location. Chemical toilets to be serviced weekly and wastes to be disposed by licensed contractor.	Magnitude	1	12
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	

Table 14: Closure phase impact assessment

Activities	Aspect	Initial impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
Rehabilitation of drill sites, camp laydown etc	Rehabilitation and closure of drill holes, camp laydown and fuel storage areas	Vegetation and habitat disturbance	Magnitude	2	32	Stripped topsoil to be used on disturbed footprint as soon as possible to encourage regrowth. All disturbed footprint must be regarded or levelled according prior to topsoil placement. Revegetation growth to be inspected to ensure suitable cover occurs. Vegetate bare areas with indigenous vegetation.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	2			Duration	2	
			Probability	4			Probability	2	
		Soil loss due to erosion	Magnitude	3	44	Stripped topsoil to be placed back on disturbed areas. Concurrent rehabilitation of all drill hole sites. Access track to be ripped to encourage plant regrowth. Rehabilitation done in accordance with rehabilitation plan and to be inspected by ECO and signed off by landowner.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	4			Duration	2	
			Probability	4			Probability	2	
		Displacement of Fauna	Magnitude	2	21	Use of existing dirt roads and access tracks to be maximised. Activities to be located outside 500 m buffer from water courses. Site layout plan to be approved by ecologist and landowner. Staff trained on access routes to ensure drivers stick to existing track only.	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	2			Duration	2	
			Probability	3			Probability	2	
		Alien and invasive species proliferation	Magnitude	3	48	Ensure concurrent rehabilitation as per rehabilitation strategy. All rehabilitation to be inspected and signed off by ECO and landowner. Where alien invasive species are found on rehab areas or disturbed footprints these must be eradicated.	Magnitude	3	22
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	5			Duration	4	
			Probability	4			Probability	2	
		Visual impacts	Magnitude	2	30	Ensure concurrent rehabilitation as per rehab strategy. All rehab to be inspected and signed off by ECO and landowners. All infrastructure brought onto site must	Magnitude	2	14
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	2	
			Duration	4			Duration	2	

Activities	Aspect	Initial impact	Initial rating		Significance without mitigation	Summary of mitigation measures	Post mitigation rating		Significance with mitigation
			Probability	3		be removed and disposed of in legally compliant manner.	Probability	2	
	Closure of drill holes	Safety risk from unclosed drill holes	Magnitude	3	44	Drill holes should be capped to and marked. Where strike water is intersected, these boreholes may be handed over, this must be discussed and approved with the farmer.	Magnitude	2	21
			Extent	1			Extent	1	
			Reversibility	2			Reversibility	2	
			Duration	5			Duration	2	
			Probability	4			Probability	3	
	Camp lay down and associated infrastructure	Safety and environmental risk from abandoned infrastructure	Magnitude	3	48	All infrastructure brought onto site must be demolished and removed from site. Any waste materials or rubble must be disposed of at licensed facility as per waste management plan.	Magnitude	3	22
			Extent	1			Extent	1	
			Reversibility	3			Reversibility	3	
			Duration	5			Duration	4	
			Probability	4			Probability	2	

(l) 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

A summary of the specialist reports in included in **Table 15.**

Table 15: Summary of the specialist reports

List of studies undertaken	Recommendations of specialist reports	Specialist recommendations that have been included in the BA report (mark with an x where Applicable)	Reference to applicable section of report where specialist recommendations have been included
Terrestrial Biodiversity Assessment:	Removal of vegetation must be restricted to what is absolutely necessary and should remain within the provided study area boundary;	X	**Section (g)(iv)**
	Access roads should be kept to existing roads, as far as possible, so as to reduce fragmentation of remaining natural habitat and spread of AIPs;	X	**Section (1)(7)and (8)** **Table 14**
	No dumping of litter, rubble or cleared vegetation on site should be allowed. No temporary dump sites should be allowed in areas with natural vegetation. Vegetation cuttings must be carefully collected and disposed of at a separate waste facility; and	X	
	Upon completion of prospecting activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed areas.	X	

(m) Environmental impact statement

1) Summary of the key findings of the environmental impact assessment

The table below summarizes the findings of the impact assessment, indicating the significance of the impacts before management takes place and the likely impact if management and mitigation takes place. From the table it is evident that the prospecting activities, based on the current layout, will have low impacts on the freshwater resource ecology, prior to mitigation being implemented. However, with the strict implementation of well-developed, cogent, mitigation measures appropriate to the proposed activity, all impact significance can be reduced to low and very low significance. It is strongly recommended that the mitigations include the following:

- All prospecting relating activities to remain at a minimum outside of the 500 m GN 509 Zone of Regulation;
- An ecologist to approve the final and drill plan prior to access to the project area due to the terrestrial biodiversity importance; and
- Backfilling of soils is to take place in the same order in which soils were removed.

Based on the findings of the terrestrial biodiversity assessment, several recommended mitigation measures are made to minimise the impact on the terrestrial biodiversity ecology:

- Removal of vegetation must be restricted to what is absolutely necessary and should remain within the provided study area boundary;
- Access roads should be kept to existing roads, as far as possible, so as to reduce fragmentation of remaining natural habitat and spread of AIPs;
- No dumping of litter, rubble or cleared vegetation on site should be allowed. No temporary dump sites should be allowed in areas with natural vegetation. Vegetation cuttings must be carefully collected and disposed of at a separate waste facility; and
- Upon completion of prospecting activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed areas.

2) Final site map,

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

Refer to **Figure 4,** Error! Reference source not found. **and** Error! Reference source not found..

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

This application is for prospecting activities, without prospecting the resource cannot be assessed and possibility of mining cannot be determined and the feasibility further enhanced. Should prospecting not take place, potential reserves will be lost including any potential benefit of employment. The major positive socio-economic benefits can only be realised following the approval of the prospecting application.

(n) 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 authorization

Management objectives are developed to minimise negative social and environmental impacts whilst maximising the socio-economic benefits. The EMPr will seek to:

- Provide information to guide and plan the development, operation and closure of prospecting activities to reduce negative impacts;
- Provide and practical, effective and implementable management plan; and
- Entails a holistic approach to provide confidence in the EMPr and ensure operator remains legally compliant.

Implementation of the management measures should result in:

- Vegetation and habitat disturbance is properly planned, disturbance footprints reduced and then appropriately rehabilitated;
- No trees to be removed;
- Soils compaction and erosion is reduced through proper soils handling and rehabilitation;
- Displaced fauna returns to disturbed areas as a result of good rehabilitation practices;
- Noise impacts are managed appropriately and are not a nuisance to the landowners;
- Visual impacts are reduced to site returns to pre-disturbance visual aspects with proper rehabilitation;
- Security risks is properly managed during operation to ensure safety of landowners and their staff;
- Damage to farm infrastructure is negated through proper planning and communication;
- Heritage impacts, although unlikely are reported when found to limit any damage;
- Potential for pollution from oil and chemical spillage and waste management is reduced through proper management;

- Water consumption for the drill is managed to reduce wastage, pollution and ensure compliance with the requirements of the National Water Act;
- Alien and invasive species are managed so they do not encroach or establish on any disturbed areas or rehabilitated footprints;
- Proper sanitation is provided to drillers during the project to reduce health and water pollution risk; and
- Safety risk from incorrectly closed drill holes is eliminated through proper closure and rehabilitation practices.

(o) Aspects for inclusion as conditions of Authorisation

Any aspects which must be made conditions of the Environmental Authorisation

The following conditions should be included as conditions for authorisation:

- Site access agreement to be drafted and approved by landowners prior to commencement of activities.
- No activities may take place within 500 m of any watercourse.
- A map or plan detailing activity locations (drilling, site laydown etc.) must be drawn up and approved by ecologist and landowner. Ecologist must ground truth the site to check for the presence of protected species and sensitive terrestrial biodiversity aspects. If found these should be avoided or the necessary permit obtained to move or destroy them.

(p) Description of any assumptions, uncertainties and gaps in knowledge

Which relate to the assessment and mitigation measures proposed

The following assumptions and knowledge gaps must be noted:

- No Heritage Impact Assessment was conducted.
- No Freshwater Study was undertaken.
- No Geotechnical Study was undertaken.
- No Groundwater Assessment was conducted.

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

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

Prospecting is to be undertaken to determine the extent of cobalt and other metal deposits on the farm. Core drilling is standard prospecting practice and no other alternatives were considered.

For the protection and care of water resources and terrestrial biodiversity, no drilling will be conducted within 500 m of a water course. The impact assessment undertaken demonstrates that impacts can all be mitigated and reduced to a **LOW** impact ranking.

Prospecting thus will not have a significant environmental impact if managed accordingly. Prospecting is required to validate the resource providing valuable information for a future mining operation.

ii. Conditions that must be included in the authorisation

The following conditions should be included as conditions for authorisation:

- Site access agreement to be drafted and approved by landowners prior to commencement of activities.
- No activities may take place within 500 m of any watercourse.
- Ecologist must ground truth the site to check for the presence of protected species. If found these should be avoided or the necessary permit obtained to move or destroy them.

(r) Period for which the Environmental Authorisation is required

The prospecting programme is scheduled for a maximum 5 years (60 month) period.

(s) 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.

Refer to **Section 2** of the EMP for an undertaking by the EAP.

(t) Financial provision

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

Bona Resource (Pty) Ltd has made provision for rehabilitation for the amount of R 23 110.91 including VAT. Refer to Table below.

	Bona Colbalt prospecting			Location:		Bona Cobalt
	Evaluators: J Kleynhans			Date:		8-Dec-22
No.	Description	Unit	A	B	C	E=A*B*C
			Quantity	Escalated Master rate	Factor	Amount (rands)
1	Dismantling of **processing plant and related structures** (including overland conveyors and powerlines)	m3		R 18.89	1.00	R 0.00
2(A)	Demolition of **steel buildings and structures**	m2		R 263.19	1.00	R 0.00
2(B)	Demolition of **reinforced concrete buildings and structures**	m2		R 387.85	1.00	R 0.00
3	Rehabilitation of **access roads**	m2	500	R 21.67	1.00	R 10 835.00
4(A)	Demolition and rehabilitation of **electrified railway lines**	m	0	R 457.11	1.00	R 0.00
4(B)	Demolition and rehabilitation of **non-electrified railway lines**	m	0	R 249.33	1.00	R 0.00
5	Demolition of **housing and/or administration facilities**	m2		R 526.37	0.52	R 0.00
6	**Opencast rehabilitation** including final voids and ramps	ha		R 275 929.79	1.00	R 0.00
7	Sealing of **shafts, adits and inclines**	m3		R 141.29	1.00	R 0.00
8(A)	Rehabilitation of **overburden and spoils**	ha		R 183 953.20	1.00	R 0.00
8(B)	Rehabilitation of processing waste **deposits and evaporation ponds (basic, salt-producing waste)**	ha		R 229 110.38	1.00	R 0.00
8(C)	Rehabilitation of processing waste **deposits and evaporation ponds (acidic, metal-rich waste)**	ha		R 665 445.15	0.80	R 0.00
9	Rehabilitation of **subsided areas**	ha		R 154 033.10	1.00	R 0.00
10a	**General surface rehabilitation**	m3	7.50	R 80.00	1.00	R 600.00
10b	**General surface rehabilitation (seeding)**	ha	0.129	R 19 657.67	1.00	R 2 535.84
11	**River diversions**	ha		R 145 444.92	1.00	R 0.00
12	**Fencing**	m		R 166.22	1.00	R 0.00
13	**Water management**	ha		R 55 407.59	0.67	R 0.00
14	3 years of **maintenance and aftercare**	ha	0.129	R 19 392.66	1.00	R 2 501.65
15A	Specialist study	Sum		R 118 014.00	1.00	R 0.00
			(Sum of items 1 to 15 above)		SubTotal 1	**R 16 472.49**
1	Preliminary and General	12.0%	of Subtotal 1			R 1 976.70
2	Contingency	10.0%	of Subtotal 1			R 1 647.25
	Total excluding VAT					**R 20 096.44**
	Add Vat (15%)					R 3 014.47
	GRAND TOTAL					**R 23 110.91**

i. Explain how the aforesaid amount was derived

The following section details the methodologies adopted to calculate the quantities, associated rehabilitation (clean closure) rates and eventually the final (clean) closure cost estimate

An accurate initial determination of the Quantum of Financial Provision for the decommissioning and final closure is required, as contemplated in the Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations (GNR 1147 of 2015).

The cost estimate approached is based on the understanding that actual rates are applied to calculate the most accurate cost estimate for closure of the project and the required DMRE guideline weighting factors are incorporated in line with the guideline assessment process. This is done on the premise that the quantum comply with legislation, incorporate certain aspects of the guideline where practical and is accurate. The guideline document provides a generic approach to the determination of the quantum for financial provision by the DMRE and the master rate items exclude many items relevant to prospecting and do not define certain items according to the description relevant in the case of prospecting.

The calculation of the rehabilitation liability is based on the fact that the rehabilitation will progress concurrently with the exploration being done. Not more than 1 borehole and its particular sump will be left un-rehabilitated at any one particular time. The campsites will be rehabilitated immediately after the laydown areas and associated structures are moved to the new position.

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.

The financial investigation considers the cost to develop, operate and close the operations, what long-term risks the company will be exposed to. If it becomes clear at an early stage that the project will not be financially feasible, perhaps because it is technically highly difficult and costly to mine, or because of long-term environmental costs, then the company will discontinue its investigations.

(u) Specific Information required by the competent Authority

i. Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the:-

(1) Impact on the socio-economic conditions of any directly affected person

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

No specific socio-economic impacts report was generated given the limited socio-economic impact of the prospecting phase. Anticipated impacts are provided in **Table 12, Table 13** and **Table 14**.

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

Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein.

No Heritage impact studies have been undertaken.

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

The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub regulation 22(2)(h), exist. The EAP must attach such motivation as ***Appendix 6***

A desktop geological review has indicated the possible presence of cobalt and other metal reserves. Neighbouring farms were not deemed suitable based on local geology.

Prospecting activities will have a direct footprint impact of less than 0.003% of the total surface area of the project area. Prospecting activities will last a maximum of 5 years. Hence this site is considered the preferred site and no alternatives were considered.

The geological field survey will detail the final drill hole locations. These along with the access routes used and location of the site laydown area (fuel and equipment storage) will be assessed by an ecologist and the landowner prior to approval. This is to ensure activities do not interfere with site infrastructure, occur within the 500 m buffer area of watercourses, or pose a threat to terrestrial biodiversity.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

(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.

Details of the EAP are included in **Part A, Section 1(a).**

(b) Description of the aspects of the activity

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

Refer to **Part A, Section 1(h)**.

(c) Composite map

Provide a map (Attached as an Appendix 3) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers.

A detailed site layout showing drilling positions is indicated in **Figure 4**.

The final layout plan must be approved by the ECO and verified by an ecologist to ensure sensitive terrestrial biodiversity aspects are not affected. A composite map of site environmental sensitivities is included in **Appendix 4**.

(d) Description of closure objectives

i. Determination of closure objectives

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

The closure objectives for the project are:

- To secure the effective and sustainable transfer of re-usable infrastructure to the relevant landowners after prospecting.
- To ensure that the biodiversity and environment on the prospected sites are protected.
- To ensure sites are made safe for both humans and animals.
- To rehabilitate sites to promote agreed upon land-use or return to pre disturbance ecological functioning.
- To manage residual impacts to acceptable levels.

- To provide sufficient funds to properly implement the closure plan.

ii. Volumes and rate of water use required for the operation

The water demand estimated for the drilling of 10 core boreholes x 100 m deep, drilled over a period of 5 years @ 0.5 m^3 per borehole. The drilling programme is expected not to exceed the use of 5 m^3 over the life of the drilling programme. This water can be sourced from boreholes on the farm (with the farm owner's permission) or can be bought in privately in water carts and hence is not seen as an obstacle. On completion of each drilled holes will be rehabilitated, the sump will also be closed and rehabilitated at the same time by means of filling the hole with the original excavated material.

iii. Has a water use licence been applied for?

No application for a water use licence will be done. No water uses in terms of Section 21 of the National Water Act will be triggered by the planned prospecting activities. The only possible use will be if activities are undertaken within 500 m of a water course. During the ground truth exercise planned by the ecologist, all activities will be confirmed outside of the regulatory area. Should that regulatory area not be avoided, an application will be submitted to Department of Water and Sanitation and no activities will be undertaken prior to obtaining authorisation.

Impacts to be mitigated in their respective phases

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

Activities	Phase	Size and Scale Disturbance	Mitigation measures	Compliance with standards	Time period for implementation
Site access tracks	Construction	500 m^2	- Maximise use of existing roads and tracks. - Do not remove any trees to establish roads if roads are needed. - Draft site plan showing areas for disturbance, to be approved by ecologist and landowner. - Routes clearly demarcated to ensure personal only use approved routes. - No site access tracks allowed with 500 m buffer of a watercourse. - New access tracks disturbance must be rehabilitated. This will include ripping to encourage revegetation with indigenous vegetation. - Where there is a significant erosion risk, additional mechanical control measures must be put in place as directed by the ECO. - Rehabilitation success to be monitored by ECO and signed off by landowner. - Work only to be conducted during daylight hours. - Any heritage resources must be reported and operations at the local site must cease until approval is sought from a Heritage expert on appropriate course of action. - All workers to wear identification on site. Activities and location to be reported daily to the landowner.	- Landowners and ecologist to sign off on plan. - Financial guarantee to include all site disturbances. - Compliance to measures audited as part of EMP performance assessment. - Access agreement in place with the land owner and managed accordingly.	- Continuously over the life of the prospecting project.

Activities	Phase	Size and Scale Disturbance	Mitigation measures	Compliance with standards	Time period for implementation
Site laydown, storage areas and chemical toilets	Construction	1 325 m^2	- No trees to be removed to establish the laydown and storage areas. - Draft site plan showing areas for disturbance, to be approved by ecologist and landowner. - Area to be clearly demarcated to minimise encroachment. - No site laydown and storage areas allowed with 500 m buffer of a watercourse. - Disturbance footprint to be stripped of topsoil, and the topsoil stockpiled for use in rehabilitation. - Area to be located on level ground as far as possible to reduce erosion. - Rehabilitation success to be monitored by ECO and signed off by landowner. - Work only to be conducted during daylight hours. - Any heritage resources must be reported and operations at the local site must cease until approval is sought from a Heritage expert on appropriate course of action. - Where possible, infrastructure used will make use of neutral colours. - All personal to be housed off site.	- Landowner and ecologist to sign off on plan. - Financial guarantee to include all site disturbances. - Compliance to measures audited as part of EMP performance assessment. - Access agreement in place with the landowner and managed accordingly.	To be implemented during construction
Drilling	All phases	1 150 m^2	- No trees to be removed as part of drilling. - Draft site plan showing areas for disturbance, to be approved by ecologist and landowner. - Routes and disturbance footprints should clearly be demarcated to reduce disturbance creep. - No activities allowed within 500 m buffer of a watercourse	- Landowner and ecologist to sign off on plan. - Financial guarantee to include all site disturbances.	Ongoing through the life of the project

Activities	Phase	Size and Scale Disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			- A spill prevention and emergency spill response plan should be compiled to guide the construction works. - An emergency response contingency plan should be put in place to address clean-up measures should a spill and/or a leak occur. - Disturbance footprints to be stripped and topsoil stockpiled separately. - Where there is a significant erosion risk, additional mechanical control measures must be put in place as directed by the ECO. - Work only to be conducted during daylight hours. - Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used. - Speed limits of 40 km/h on site. - No fences or other infrastructure to be moved or interfered with without permission. - No hunting, collecting of firewood or fire allowed onsite. - Any heritage resources must be reported and operations at the local site must cease until approval is sought form a Heritage expert on appropriate course of action. - All workers to wear identification on site. Activities and location to be reported daily to the landowner. - No chemicals to be stored at the drill sites. - All drill sumps to be lined.	- Compliance to measures audited as part of EMP performance assessment. - Access agreement in place with the landowner and managed accordingly.	

Activities	Phase	Size and Scale Disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			- Water must be obtained through approved water source (i.e. the farmer or municipal source). No abstraction from rivers or boreholes allowed without legal authorisation. - No littering allowed. - Proper waste management to be implemented, waste removed to registered waste disposal site. - Drill sludge to be removed and disposed at registered waste disposal site. - Spill kits to be made available. - No maintenance repairs allowed on site. - Drip trays to be used when refuelling. - All machinery to be inspected daily for leaks and repaired. - Invasive species close to or in the disturbance footprint to be removed. - Chemical toilets to be supplied onsite, no more than 12 people per toilet. Toilets to be serviced weekly by approved waste contractor. - Water consumption records, monitoring of affected boreholes if in close proximity.		
Use of site laydown, equipment storage and chemical toilets	Operational		- Maximise use of existing roads and tracks. - Routes and disturbance footprints clearly demarcated to ensure reduce disturbance creep. - Disturbance footprints to be stripped and topsoil stockpiled separately.	- Financial guarantee to include all site disturbances. - Compliance to measures audited as part of EMP	Ongoing through the life of the project

Activities	Phase	Size and Scale Disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			- Where there is a significant erosion risk, additional mechanical control measures must be put in place as directed by the ECO. - Work only to be conducted during daylight hours. - No fences or other infrastructure to be moved or interfered with without permission. - No hunting, collecting of firewood or fire allowed onsite. - All workers to wear identification on site. Activities and location to be reported daily to the landowner. - No chemicals to be stored at the drill sites. - No littering allowed. - Proper waste management to be implemented with bins, waste removed to registered waste disposal site. - Spill kits to be made available. - No maintenance repairs allowed on site. - Vehicles to be parked in designated areas at night. Diesel to be supplied onsite via a diesel bowser/cart only. - Drip trays to be used when refuelling. - All machinery to be inspected daily for leaks and repaired. - Invasive species close to or in the disturbance footprint to be removed. - Chemical toilets to be supplied onsite, no more than 12 people per toilet. Toilets to be serviced weekly by approved waste contractor. - Chemical used onsite to be stored in bunded chemical facility.	performance assessment. - Access agreement in place with the land owner and managed accordingly.	

Activities	Phase	Size and Scale Disturbance	Mitigation measures	Compliance with standards	Time period for implementation
			- All temporary infrastructures used should make use of neutral colouring. - Access to area to be appropriately controlled.		
Rehabilitation of all site disturbances	Decommissioning		- All infrastructure brought onto site must be removed. - No trees to be removed as part of the rehabilitation process. - All sumps to be backfilled to original ground level before grading and topsoiling. - Drill holes must be appropriately capped and demarcated. - Rehabilitation of drill holes to be undertaken concurrently, with no more than one drill left open at any one time. Drill holes should be closed within 2 weeks of completion of activities. - Site laydown footprints must be levelled accordingly, and topsoil stockpiled replaced. - Rehabilitation progress must be driven by site manager to reduce topsoil erosion and improve revegetation success. - Access tracks should be ripped to reduce compaction. - Revegetation success to be monitored by ECO, reseeding of footprint areas with local indigenous seed to be undertaken where revegetation efforts are not deemed successful by the ECO. - Before and after photo to be kept of all disturbance footprints. - ECO and landowner to sign off on rehabilitation compliance and hand over.	- Landowner and ecologist to sign off rehabilitation hand over. - Financial guarantee to include all site disturbances. - Compliance to measures audited as part of EMP performance assessment. - Photographic records to be maintained. - Access agreement in place with the landowner and managed accordingly.	Ongoing through the life of the project as rehabilitation activities are undertaken concurrently

(e) Impacts to be mitigated in their respective phases

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

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
Site access tracks	- Vegetation and habitat disturbance	Construction of access tracks	Construction	- Control through management or monitoring - Modify route accordingly	- Avoid impact where possible through use of exiting access track - Not within 500 m of watercourse - Design track to minimise footprint and impact of sensitive species - Ecologist has approved site layout plan. - Obtain permission to remove or destroy sensitive species where required
	- Soil compaction or erosion			- Control through management or monitoring - Modify layout accordingly	- Use of existing dirt roads and access tracks to be maximised. - Activities to be located outside 500 m buffer from water courses. - Site layout plan to be approved by ecologist and landowner. - Avoid ground disturbance during rainy season. - Additional mechanical erosion control measures where required.
	- Dust generation			- Control through management or monitoring	- Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used - Speed limits of 40 km/h on site

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
	Displacement of fauna			- Control through management or monitoring	- Avoid impact where possible through use of exiting access track - Not within 500 m of watercourse. - Design track to minimise footprint and impact of sensitive species - Ecologist has approved site layout plan. - No hunting on site - Noise level not to exceed 5 dB higher than background - Work during daylight hours.
	Noise impacts			Control through management or monitoring	- Noise level not to exceed 5 dB higher than background - Work during daylight hours - Equipment maintained
	Heritage impacts			Control through management or monitoring If encountered modify activity accordingly	- Site layout plan approved and sites inspected by ECO. - No activities within 500 m of farm infrastructure - If heritage resource encountered during, access track to be rerouted, and heritage site reported.
	Visual impacts			Control through management or monitoring	- Avoid impact where possible through use of exiting access track - Not within 500 m of watercourse - Design track to minimise footprint

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
					- Ecologist and landowner has approved site layout plan
	Security risks and crime	Access to the farm		Control through management or monitoring	- Access agreement in place with landowner before activities commence - All workers to wear identification on site. Activities and location to be reported daily to the landowner
Site laydown with fuel and equipment storage	- Vegetation and habitat disturbance	Access to the farm	Construction	- Control through management or monitoring - Modify route accordingly	- Not within 500 m of watercourse - Ecologist has approved site layout plan - Footprint areas to demarcated - Topsoil to be stripped and stored - Bunded chemical store to used
Construct laydown and fuel equipment storage area	- Soil compaction or erosion	Construction of site lay down and fuel and equipment storage area	Construction	- Control through management or monitoring	- Use of existing dirt roads and access tracks to be maximised. - Activities to be located outside 500 m buffer from water courses. - Site layout plan to be approved by ecologist and landowner. - Avoid ground disturbance during rainy season. - Additional mechanical erosion control measures where required.
	- Dust generation			- Control through management or monitoring	- Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used. - Speed limits of 40 km/h on site.

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
	- Displacement of fauna			- Control through management or monitoring - Modify layout accordingly	- Avoid impact where possible through use of exiting access track - Not within 500 m of watercourse - Ecologist has approved site layout plan - No hunting on site - Noise level not to exceed 5 dB higher than background - Work during daylight hours
	- Noise impacts			- Control through management or monitoring -	- Site layout plan to be approved by ecologist and landowner. - Equipment and storage area inspected daily - Noise level not to exceed 5 dB higher than background - Work during daylight hours
	- Visual impacts			- Control through management or monitoring - Modify layout accordingly	- Not within 500 m of watercourse - Design to minimise footprint and area demarcated - Ecologist and landowner has approved site layout plan - Use neutral colours as much as possible
Drilling	- Vegetation and habitat disturbance	Access track usage	Construction	- Control through management or monitoring	- Not within 500 m of watercourse - Ecologist has approved site layout plan - No trees to be removed

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
				- Modify route accordingly	- Obtain permission to remove or destroy sensitive species where required - Topsoil to be striped and stockpiled
	- Soil compaction or erosion			- Control through management or monitoring - Modify layout accordingly	- Activities to be located outside 500 m buffer from water courses. - Site layout plan to be approved by ecologist and landowner. - Avoid ground disturbance during rainy season. - Additional mechanical erosion control measures where required. - Demarcate footprint extent
	- Dust generation			- Control through management or monitoring	- Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used - Speed limits of 40 km/h on site
	- Displacement of fauna			- Control through management or monitoring	- Not within 500 m of watercourse - Design track to minimise footprint and impact of sensitive species - Ecologist has approved site layout plan - No hunting on site - Noise level not to exceed 5 dB higher than background - Work during daylight hours

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
	- Noise impacts			Control through management or monitoring	- Noise level not to exceed 5 dB higher than background - Work during daylight hours - Equipment maintained
	- Heritage impacts			Control through management or monitoring If encountered modify activity accordingly	- Site layout plan approved and sites inspected by ECO. - No activities within 500 m of farm infrastructure - If heritage resource encountered during, access track to be rerouted, and heritage site reported.
	- Visual impacts			Control through management or monitoring	- Avoid impact where possible through use of exiting access track - Not within 500 m of watercourse - Design track to minimise footprint - Ecologist and landowner has approved site layout plan
	- Damage to farm infrastructure	Interaction with farm infrastructure		Control through management or monitoring	- No activities within 500 m of farm infrastructure. - Site plan and activities to be approved by landowner. - No fences or other infrastructure to be moved or interfered with without permission. Access to the site to be undertaken in accordance with access agreement
	- Security risks and crime	Access to the farm		Control through management or monitoring	All drillers to carry company identification. Site access and working arrangements to be communicated/ confirmed with landowner daily. Access agreement to

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
					be drawn up prior to site establishment. All staff is to be accommodated off site.
	- Vegetation and habitat disturbance	Drilling site disturbance		- Control through management or monitoring - Modify position accordingly	- Not within 500 m of watercourse - Ecologist has approved site layout plan - Obtain permission to remove or destroy sensitive species where required - Topsoil to be striped and stockpiled - Demarcate footprint boundary
	- Soil compaction or erosion			- Control through management or monitoring - Modify layout accordingly	- Activities to be located outside 500 m buffer from watercourses. - Site layout plan to be approved by ecologist and landowner. - Avoid ground disturbance during rainy season. - Additional mechanical erosion control measures where required. - Demarcate footprint extent
	- Dust generation			- Control through management or monitoring	- Dust levels to be visually monitored. Where levels are excessive (above 600 mg/m^2/day) water carts should be used - Speed limits of 40 km/h on site
	- Displacement of fauna			- Control through management or monitoring	- Not within 500 m of watercourse - Design track to minimise footprint and impact of sensitive species - Ecologist has approved site layout plan

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
					- No hunting on site - Noise level not to exceed 5 dB higher than background - Work during daylight hours
	- Noise impacts			Control through management or monitoring	- Noise level not to exceed 5 dB higher than background - Work during daylight hours - Equipment maintained
	- Visual impacts			Control through management or monitoring	- Avoid impact where possible through use of exiting access track - Not within 500 m of watercourse - Design track to minimise footprint - Ecologist and landowners have approved site layout plan
	- Heritage impacts			Control through management or monitoring If encountered modify activity accordingly	- Site layout plan approved and sites inspected by ECO. - No activities within 500 m of farm infrastructure - If heritage resource encountered during, access track to be rerouted, and heritage site reported.
	- Pollution due to spillage of oils and fuels			Control through management or monitoring Remedy through rehabilitation	- No chemicals stored with the drill rigs, should be kept in the chemicals facility. - Spill response kits to be available - All equipment inspected daily for - No servicing of machines in the field.

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
					- Drip trays used at all times when refuelling or undertaking emergency repairs. - All spills to be reported to ECO - Contaminated areas to be cleaned and contaminated soils disposed of as hazardous waste
	- Pollution due to incorrect waste disposal			Control through management or monitoring	- Ensure proper waste management and disposal practices - No littering, - Waste to be disposed at licensed facility by authorised contractor. All waste to be removed from site.
	- Pollution due to drill sludge and drip chip accumulation			Control through management or monitoring	- Drill sumps will be lined. - Environmentally friendly lubricants will be used. - Sludge removed from site and disposed as per waste procedure
	- Consumption of water for drilling			Control through management or monitoring	- Drill sumps will be lined - Water will be sourced from the landowner by agreement or authorised vendor off site. - Water usage should not exceed the general authorisation volume for the area. - No water may be abstracted from boreholes or rivers without authorisation. - Where drilling in close proximity to landowners boreholes, water quality of these holes are to be monitored quarterly

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
	- Alien and invasive species proliferation			Control through management or monitoring Modify or remedy	- Ensure concurrent rehabilitation as per rehab strategy. - All rehab to be inspected and signed off by ECO and landowner. - Alien species found are to be controlled accordingly
	- Heritage impacts				- Site layout plan approved and sites inspected by ECO. - No activities within 500 m of farm infrastructure - If heritage resource encountered during, access track to be rerouted, and heritage site reported.
	- Water pollution and health risks due to improper sewage and sanitation practices	Sewage and sanitation		Control through management or monitoring	- Chemical toilets to be used onsite. No more than 12 people per chemical toilet. - Toilet to be provided within 500 m of drilling location but outside to 500 m of wetlands. - Chemical toilets to be serviced weekly and wastes to be disposed by licensed contractor.
Use of site laydown, equipment storage	- Pollution due to incorrect waste disposal	Waste disposal		Control through management or monitoring	- Ensure proper waste management and disposal practices at all times. - No littering, - Waste to be collected and separated at source into hazardous and non-hazardous wastes. - Waste to be disposed at licensed facility by authorised contractor. All waste to be removed from site.

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
	- Vegetation and habitat disturbance	Storage of vehicles and equipment		Control through management or monitoring	- Activities to be located outside 500m buffer from water courses. - Site layout plan to be approved by ecologist and landowner. - Diesel bowser used for fuel storage. - All chemicals kept in a roofed and bunded areas
	- Soil compaction or erosion	Usage and storage of vehicles and machinery		Control through management or monitoring	- Area used to be fenced in to prevent footprint creep. - Topsoil to be stripped and stored for rehabilitation of the site.
	- Water pollution and health risks due to improper sewage and sanitation practices	Sewage and sanitation		Control through management or monitoring	- Chemical toilets to be used onsite. No more than 12 people per chemical toilet. - Toilet to be provided within 500 m of drilling location, but outside of 500 m of wetlands. - Chemical toilets to be serviced weekly and wastes to be disposed by licensed contractor.
Rehabilitation of drill sites, camp laydown, access tracks etc	- Vegetation and habitat disturbance	Rehabilitation and closure of drill holes, camp laydown and fuel storage areas		Control through management or monitoring Remedy through rehabilitation	- Stripped topsoil to be used on disturbed footprint as soon as possible to encourage regrowth. - All disturbed footprint must be regarded or levelled according prior to topsoil placement. - Rehabilitation of drill holes to be undertaken concurrently, with no more than one drill hole left open at any one time. Drill holes should be closed within 2 weeks of completion of activities.

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
					- Revegetation growth to be inspected to ensure suitable cover occurs. - Access tracks should be ripped to reduce compaction - Revegetation success to be monitored by ECO, reseeding of footprint areas with local indigenous seed to be undertaken where revegetation efforts are not deemed successful by the ECO - Before and after photo to be kept of all disturbance footprints - ECO and landowner to sign off on rehabilitation compliance and hand over
	- Soil compaction or erosion			Control through management or monitoring Remedy through rehabilitation	- Stripped topsoil to be placed back on disturbed areas. - Concurrent rehabilitation of all drill holes. - Access track to be ripped to encourage plant regrowth. - Rehabilitation done in accordance with rehab plan and to be inspected by ECO and signed off by landowner. - Ripping to occur on compacted areas (access tracks) to encourage regrowth
	- Displacement of Fauna			Remedy through rehabilitation	- Revegetation success to be monitored by ECO, reseeding of footprint areas with local indigenous seed to be undertaken where revegetation efforts are not deemed successful by the ECO - Before and after photo to be kept of all disturbance footprints

Activities	Potential impact	Aspects identified	Phase	Mitigation type	Standard to be achieved
					- ECO and landowner to sign off on rehabilitation compliance and hand over
	- Visual impacts			Control through management or monitoring Remedy through rehabilitation	- Ensure concurrent rehabilitation as per rehab strategy. - All rehab to be inspected and signed off by ECO and landowner. - All infrastructure brought onto site must be removed and disposed of in legally compliant manner.
	- Safety risk from unclosed drill holes	Closure of drill holes		Control through management or monitoring Remedy through rehabilitation	- Drill sumps to be backfilled and levelled before top soiling. - Drill holes should be capped to and marked. - Where strike water is intersected, these boreholes may be handed over to the over, this must be discussed and approved with the farmer. - ECO and landowner to sign off on rehabilitation compliance and hand over.
	- Safety and environmental risk from abandoned infrastructure	Camp lay down and associated infrastructure		Control through management or monitoring Remedy through rehabilitation	All infrastructure brought onto site must be demolished and removed from site. Any waste materials or rubble must be disposed of at licensed facility as per waste management plan.

(f) Impact management actions

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

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
Site access tracks	- Vegetation and habitat disturbance	Construction	- Control through management or monitoring - Modify route accordingly	- Implemented during planning phase and monitored during construction	- Section 2 of the National Environmental Management Act 107 of 1998 - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Heritage Resources Act 25 of 1999 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 - National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008 - Noise Regulation Standards for Rural Areas - -National Environmental Management: Air Quality Act, 2004 Dust Regulation guidelines for rural communities
	- Soil compaction or erosion		- Control through management or monitoring - Modify layout accordingly	- Implemented during planning phase and monitored during construction	
	- Dust generation		- Control through management or monitoring	- Implemented during planning phase and monitored during construction	
	Displacement of fauna		- Control through management or monitoring	- Implemented during planning phase and monitored	

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
				during construction	
	Noise impacts		Control through management or monitoring	- Implemented and monitored during construction	
	Heritage impacts		Control through management or monitoring If encountered modify activity accordingly	- Implemented and monitored during construction	
	Visual impacts		Control through management or monitoring	- Implemented during planning phase and monitored during construction	
	Security risks and crime		Control through management or monitoring	- Implemented during planning phase and monitored during construction	

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
Site laydown with fuel and equipment storage	- Vegetation and habitat disturbance	Construction	- Control through management or monitoring - Modify route accordingly	- Implemented during planning phase and monitored during construction	- Section 2 of the National Environmental Management Act 107 of 1998 - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Heritage Resources Act 25 of 1999 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 - Regulations for Hazardous Chemical Substances (Regulation 1179, 1995) - National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008 - Noise Regulation Standards for Rural Areas - -National Environmental Management: Air Quality Act, 2004 Dust Regulation guidelines for rural communities
Construct laydown and fuel equipment storage area	- Soil compaction or erosion	Construction	- Control through management or monitoring	- Implemented during planning phase and monitored during construction	
Drilling	- Vegetation and habitat disturbance	Construction	- Control through management or monitoring - Modify route accordingly	- Monitored and managed during project phase	- Section 2 of the National Environmental Management Act 107 of 1998 - The conditions of the Environmental Authorisation and approved Environmental Management Programme - Section 21 of the National Water Act 36 of 1998 - Heritage Resources Act 25 of 1999 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 - Regulations for Hazardous Chemical Substances (Regulation 1179, 1995) - National Environmental Management Act 107 of 1998 as it relates to any listed activities.
	- Soil compaction or erosion		- Control through management or monitoring - Modify layout accordingly	- Monitored and managed during project phase	

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
	- Dust generation		- Control through management or monitoring	- Monitored and managed during project phase	- National Environmental Management Waste Act 59 of 2008 - Noise Regulation Standards for Rural Areas - National Environmental Management: Air Quality Act, 2004 Dust Regulation guidelines for rural communities
	- Displacement of fauna		- Control through management or monitoring	- Monitored and managed during project phase	
	- Noise impacts		Control through management or monitoring	- Monitored and managed during project phase	
	- Heritage impacts		Control through management or monitoring If encountered modify activity accordingly	- Monitored and managed during project phase	
	- Visual impacts		Control through management or monitoring	- Monitored and managed during project phase	
	- Damage to farm infrastructure		Control through management or monitoring	- Monitored and managed during project phase	
	- Security risks and crime		Control through management or monitoring	Monitored and managed during project phase	

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
	- Heritage impacts		Control through management or monitoring If encountered modify activity accordingly	- Monitored and managed during project phase	
	- Pollution due to spillage of oils and fuels		Control through management or monitoring Remedy through rehabilitation	- Monitored and managed during project phase	
	- Pollution due to incorrect waste disposal		Control through management or monitoring	Monitored and managed during project phase	
	- Pollution due to drill sludge and drip chip accumulation		Control through management or monitoring	Monitored and managed during project phase	
	- Consumption of water for drilling		Control through management or monitoring	Monitored and managed during project phase	

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
	- Alien and invasive species proliferation		Control through management or monitoring Modify or remedy	- Monitored and managed during project phase	
	- Water pollution and health risks due to improper sewage and sanitation practices		Control through management or monitoring	Monitored and managed during project phase	
Use of site laydown, equipment storage	- Pollution due to incorrect waste disposal		Control through management or monitoring	Monitored and managed during project phase	
	- Vegetation and habitat disturbance		Control through management or monitoring	Monitored and managed during project phase	
	- Water pollution and health risks due to improper sewage and sanitation practices		Control through management or monitoring	Monitored and managed during project phase	

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
Rehabilitation of drill sites, camp laydown, access tracks etc.	- Vegetation and habitat disturbance	Closure	Control through management or monitoring Remedy through rehabilitation	- Implemented concurrently during operation phase and managed accordingly	- Section 2 of the National Environmental Management Act 107 of 1998 - - The conditions of the Environmental Authorisation and approved Environmental Management Programme specifically achieving the rehabilitation objectives - Section 21 of the National Water Act 36 of 1998 - - Heritage Resources Act 25 of 1999 - Mine Health and Safety Act 29 of 1996 - Occupational Health and Safety Act 85 - Regulations for Hazardous Chemical Substances (Regulation 1179, 1995) - National Environmental Management Act 107 of 1998 as it relates to any listed activities. - National Environmental Management Waste Act 59 of 2008 - Noise Regulation Standards for Rural Areas - -National Environmental Management: Air Quality Act, 2004 Dust Regulation guidelines for rural communities -
	- Soil compaction or erosion		Control through management or monitoring Remedy through rehabilitation	Implemented concurrently during operation phase and managed accordingly	
	- Displacement of Fauna		Remedy through rehabilitation	Implemented concurrently during operation phase and managed accordingly	
	- Visual impacts		Control through management or monitoring Remedy through rehabilitation	Implemented concurrently during operation phase and managed accordingly	

Activities	Potential impact	Phase	Mitigation type	Time period for implementation	Compliance with standards
	- Safety risk from unclosed drill holes		Control through management or monitoring Remedy through rehabilitation	Implemented concurrently during operation phase and managed accordingly	
	- Safety and environmental risk from abandoned infrastructure		Control through management or monitoring Remedy through rehabilitation	Implemented concurrently during operation phase and managed accordingly	

(g) Financial Provision

(1) Determination of the amount of Financial Provision

In terms of the MRPDA, any mining company has to indicate operating funds in order to ensure that sufficient funding will be available. This forms part of Bona Resources's financial feasibility investigations, in other words whether the cost of operating and rehabilitation would be affordable given the size and duration of the operation.

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The prospecting rights area is surrounded mainly by government owned farms, and the dominant land use is agriculture. Post closure, land use will not be altered; hence rehabilitation will aim to restore natural veld conditions.

Closure objectives include:

- Vegetation and habitat disturbance is properly planned, disturbance footprints reduced and then appropriately rehabilitated back to veld condition.
- Displaced fauna returns to disturbed areas as a result of good rehabilitation practices.
- Visual impacts are reduced to site returns to pre-disturbance visual aspects with proper rehabilitation.
- Alien and invasive are managed so they do not encroach or establish on any disturbed areas or rehabilitated footprints.
- Safety risk from incorrectly closed drill holes is eliminated through proper closure and rehabilitation practices.

To achieve this, sufficient closure funds to implement closure will be made available as the project progresses as rehabilitation will be undertaken concurrently.

All rehabilitated areas will be monitored and rehabilitation documented. Final handover back to landowner will only occur if both the landowner and ECO are satisfied with the success and sustainability of the rehabilitation.

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

Rehabilitation requirements will be outlined to the landowners once the BAR and EMP are approved and they will be made available for reference purposes as prospecting continues.

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

As stated previously, the final location of drill holes can only be determined once the initial non-invasive field investigation has taken place. The final layout has thus not been drafted yet; the current layout is shown in **Figure 4**. Once results of the initial desktop investigation and non - invasive field assessment have been assessed, a proposed site plan can be drafted. This however will be approved by the ecologist and landowner prior to commencement of any activities.

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

As stated above the position of the drill holes and other site activities will be in accordance with the site plan. This will be approved by the ecologist. In order to reduce the impact and return the sites to veld conditions rehabilitation measures include:

- No trees will be removed.
- Restriction on locality to reduce impact on sensitive areas and species.
- Concurrent rehabilitation with only one hole left open at any one time.
- Rehabilitation success to be monitored and recorded.

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

The quantum amounts to R 23 110.91 including VAT, refer to **Table 16** overleaf.

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

Bona Resources (Pty) Ltd will be funding all associated cost with the Bona Cobalt Prospecting Project. The financial investigation will consider the cost to develop, operate and close the operation, what long-term risks the company will be exposed to. If it becomes clear at an early stage that the project will not be financially feasible, perhaps because it is technically highly

difficult and costly to operate, or because of long-term environmental costs, then the company will discontinue its investigations. The financial provision is shown in **Table 16.**

Table 16: Bona Cobalt Quantum

	Bona Colbalt prospecting			**Location:**		**Bona Cobalt**
	Evaluators: J Kleynhans			**Date:**		**8-Dec-22**
No.	**Description**	**Unit**	**A**	**B**	**C**	**E=A*B*C**
			Quantity	**Escalated Master rate**	**Factor**	**Amount (rands)**
1	Dismantling of **processing plant and related structures** (including overland conveyors and powerlines)	m3		R 18.89	1.00	R 0.00
2(A)	Demolition of **steel buildings and structures**	m2		R 263.19	1.00	R 0.00
2(B)	Demolition of **reinforced concrete buildings and structures**	m2		R 387.85	1.00	R 0.00
3	Rehabilitation of **access roads**	m2	500	R 21.67	1.00	R 10 835.00
4(A)	Demolition and rehabilitation of **electrified railway lines**	m	0	R 457.11	1.00	R 0.00
4(B)	Demolition and rehabilitation of **non-electrified railway lines**	m	0	R 249.33	1.00	R 0.00
5	Demolition of **housing and/or administration facilities**	m2		R 526.37	0.52	R 0.00
6	**Opencast rehabilitation** including final voids and ramps	ha		R 275 929.79	1.00	R 0.00
7	Sealing of **shafts, adits and inclines**	m3		R 141.29	1.00	R 0.00
8(A)	Rehabilitation of **overburden and spoils**	ha		R 183 953.20	1.00	R 0.00
8(B)	Rehabilitation of processing waste **deposits and evaporation ponds (basic, salt-producing waste)**	ha		R 229 110.38	1.00	R 0.00
8(C)	Rehabilitation of processing waste **deposits and evaporation ponds (acidic, metal-rich waste)**	ha		R 665 445.15	0.80	R 0.00
9	Rehabilitation of **subsided areas**	ha		R 154 033.10	1.00	R 0.00
10a	**General surface rehabilitation**	m3	7.50	R 80.00	1.00	R 600.00
10b	**General surface rehabilitation (seeding)**	ha	0.129	R 19 657.67	1.00	R 2 535.84
11	**River diversions**	ha		R 145 444.92	1.00	R 0.00
12	**Fencing**	m		R 166.22	1.00	R 0.00
13	**Water management**	ha		R 55 407.59	0.67	R 0.00
14	3 years of **maintenance and aftercare**	ha	0.129	R 19 392.66	1.00	R 2 501.65
15A	Specialist study	Sum		R 118 014.00	1.00	R 0.00
			(Sum of items 1 to 15 above)		SubTotal 1	**R 16 472.49**
1	Preliminary and General	12.0%	of Subtotal 1			R 1 976.70
2	Contingency	10.0%	of Subtotal 1			R 1 647.25
	Total excluding VAT					**R 20 096.44**
	Add Vat (15%)					R 3 014.47
	GRAND TOTAL					**R 23 110.91**

Monitoring and reporting are detailed in **Table 17** overleaf.

Table 17: Monitoring and Reporting

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
Site access/roads Drill sites Site laydown sites	Land will be disturbed by prospecting.	Measure concurrent rehabilitation in terms of: - Number of holes drilled - Number of holes rehabilitated	Manager	Monitoring: Monthly Reporting: Monthly
		Remove all foreign matter from site and disposed at designated site.	Manager	Monitoring: Monthly Reporting: Monthly
		Cap and mark all boreholes.	Manager	Monitoring: At completion of every hole Reporting: Monthly
		Take photographs prior and after drilling as records.	Manager	Monitoring: Prior to land disturbance, during and after rehabilitation Reporting: Monthly
Site access/roads Drill sites Site laydown sites	Soils erosion / loss	Topsoil placement at rehabilitated areas.	Manager	Monitoring: Daily when topsoil is being stripped or placed Reporting: Monthly
		Prevent hydrocarbons spills by using drip pans or PVC linings.	Manager	Monitoring: Daily

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
		Remove content of drip pan and disposed at a designate site.		Reporting: Monthly
		Clean up spills and remove contaminated material to licensed facility.		Monitoring: Daily Reporting: Monthly
	Fauna and flora will be affected by prospecting activities	Prohibit the collection of plant material for firewood or medicinal uses. No trapping or hunting of fauna is to take place. A speed limit of 40km/h will be implemented on all roads running through the study area during the prospecting phase in order to minimise risk to faunal SCC and other fauna from vehicles. All informal fires in the vicinity of the development footprint should	Manager	Monitoring: Daily Reporting: Monthly

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
		be prohibited. Fence off laydown areas and demarcate drill site boundaries. Approved site plan available.		
		Avoid damaging endangered or protected plants.	Manager Environmental Specialist	Monitoring: Planned prior to activity taking place Reporting: Monthly
		Translocate plants, obtain permits, where necessary.	Manager Environmental Specialist	Monitoring: Panned prior to activity taking place Reporting: Annually with performance assessment
		Prevention of damage to fauna and flora, monitoring damage as indicated.	Manager Environmental specialist	Monitoring: Planned prior to activity taking place, monitored throughout life of disturbance Reporting: Annually with performance assessment
Water management		Volume and source of water used.	Manager	Monitoring: Daily Reporting: Monthly

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
		Sump lined with PVC to prevent ingress.	Manager	Monitoring: Daily Reporting: Monthly
		Clean hydrocarbon spills.	Manager	Monitoring: Daily Reporting: Monthly
Ablution facilities Waste management	Waste generated	Maintain records of volume or tonnage of all waste disposed and where it was disposed.	Manager	Monitoring: Daily Reporting: Monthly

(h) Indicate the frequency of the submission of the performance assessment / environmental audit report

It is recommended that ECO audits are done on a quarterly basis to ensure compliance. These reports should be collated and submitted 6 monthly to the DMRE.

(i) 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

All employees and subcontractor staff involved with the project will undergo Safety-Health-Environmental Induction that is updated on a regular basis to adhere to changes in compliance requirements. Training will address measures and actions required for emergency situations. The principle is to prevent impacts, identify if an impact is likely to occur and to report the possibility of risk or impact as to ensure immediate response. The most likely environmental emergencies in this proposed prospecting activity are fires, explosions, etc. In cases of environmental emergencies, remedial measures should be documented and adhered to, which should list actions in the Emergency Response Plan/Procedure and the incident must be reported to the relevant authorities.

In cases of fire and explosions during drilling and or resulting from other sources, special precautionary measures must be taken into account to avoid, prevent and minimise such actions:

- Fire extinguishers must be available on site;
- Contact the relevant authorities, farm owners and neighbouring farms; and
- Staff to receive training in response to fire emergency on site and an evacuation plan.

A Safety-Health-Environmental (SHE) representative is appointed for the working teams to assist in highlighting project SHE issues while drilling takes place.

The reporting hierarchy for project performance is also used to ensure environmental communication and awareness. Competent contractors are appointed with supervisors that can translate SHE risks to foremen and operating staff. This takes place through morning meetings before drilling commences (toolbox meetings) and SHE meetings held specifically for this purpose.

ECO will, through quarterly audits also check that training and environmental awareness is sufficient, and help SHE representatives address any short coming found.

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

Bona Resources (Pty) Ltd will aim to apply a risk management system where risks are identified and rated. Site inspections in terms of EMP compliance will take place and will serve as a training opportunity.

Training –

- employees and contractors must attend environmental awareness programmes through inductions.
- Identify training needs
- document training and competency
- Maintain training records
- Review and update training manual.

Environmental awareness topics – Environmental education material will be made available on site which will include but not limited to;

- Understanding what the Environment is
- Plants and animal awareness
- Risk of fire
- Driving hazards
- Petrol, oil, diesel
- Soil Erosion
- Water management and pollution
- Noise pollution
- Air pollution
- Waste management.

Records – record keeping must be maintained for the duration of the project and at least for a further 12 months period after the life of the project. Emergency procedures of risks will be practiced at least annually and improvements made to ensure emergency preparedness and response is adequate to address environmental incidents.

Recommendations and Incident reporting of events takes place during site inspections and are addressed to ensure continual improvement of the environmental management on site.

(j) Specific information required by the Competent Authority

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

None.

2. UNDERTAKING

The EAP herewith confirms

(a) the correctness of the information provided in the reports
(b) the inclusion of interactions with landowners
(c) the inclusion of comments and inputs from stakeholders and I&APs following the receipt of comments ;
(d) the inclusion of inputs and recommendations from the specialist reports where relevant; and
(e) that the information to be provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties will be correctly reflected herein

Signature of the environmental assessment practitioner

Zyntha Consulting (Pty) Ltd

Name of company

_____

Date

- End -