

Draft Environmental Management Plan (EMP)

The Proposed Prospecting and Exploration Activities on Exclusive Prospecting License (EPL) No. 7153 Located East of Karibib in the Erongo Region, Namibia



MEFT Application No.:

APP-00352

Proponent:

Dwyka Investment CC


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DOCUMENT INFORMATION

Title: Draft Environmental Management Plan (EMP) for the Proposed Prospecting and Exploration Activities on Exclusive Prospecting License (EPL) No. 7153 Located East of Karibib in the Erongo Region – An Application for Environmental Clearance Certificate (ECC)

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SERJA' STATEMENT OF INDEPENDENCE

As the Appointed Environmental Consultant to undertake the Environmental Scoping Assessment (ESA) Study and Preparation of this Draft Environmental Management Plan (EMP) for the Proposed Prospecting and Exploration Activities on EPL-7153 Located East of Karibib in the Erongo Region, Serja Hydrogeo-Environmental Consultants cc declare that we:

- do not have, to our knowledge, any information or relationship with the Proponent (Dwyka Investments), the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF) or the Competent Authority (Ministry of Mines and Energy (MME) that may reasonably have potential of influencing the outcome of this Environmental Assessment and the subsequent Environmental Clearance Certificate applied for.
- have knowledge of and experience in conducting environmental assessments, the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulation as well as other relevant national and international legislation, guidelines, policies, and standards that govern the proposed project as presented herein.
- have performed work related to the ECC application in an objective manner, even if the results in views and findings or some of these may not be favorable to the Proponent.
- have complied with the EMA and other relevant regulations, guidelines and other applicable laws as listed in this document.
- declare that we do not have and will not have any involvement or financial interest in the undertaking/implementation of the proposed project, other than remuneration (professional fees) for work performed to conduct the ESA and apply for the ECC in terms of the EIA Regulations' requirement as an Environmental Assessment Practitioner (EAP).

Disclaimer: Serja Hydrogeo-Environmental Consultants will not be held responsible for any omissions and inconsistencies that may result from information that was not available at the time this document was prepared and submitted for evaluation.



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Signature:

Fredrika N. Shagama: Principal Environmental Assessment Practitioner & Hydrogeologist

Date: July 2023

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LIST OF ABBREVIATIONS

DEAF:	Department of Environmental Affairs and Forestry
DWA:	Department of Water Affairs
ECC:	Environmental Clearance Certificate
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EMA:	Environmental Management Act
EMP:	Environmental Management Plan
EPL:	Exclusive Prospecting License
ESA:	Environmental Scoping Assessment
GG:	Government Gazette
GN:	Government Notice
I&APs:	Interested and Affected Parties
IFC:	International Finance Corporation
MAWLR:	Ministry of Agriculture, Water and Land Reform
MEFT:	Ministry of Environment, Forestry and Tourism
MME:	Ministry of Mines and Energy
PPE:	Personal Protective Equipment
SHE Officer:	Safety, Health & Environment Officer

1 INTRODUCTION

1.1 Project Background and Location

Dwyka Investment CC (The Proponent) had been granted the rights to explore on Exclusive Prospecting Licence (EPL) 7153 by the Ministry of Mines and Energy (MME) on the 15th of August 2018. The EPL rights have however expired on the 14th of August 2021. The Proponent has therefore, applied for the renewal of the EPL and commodity amendment (change). To renew the EPL rights and approval commodity change, the Proponent is required to obtain an Environmental Clearance Certificate (ECC) and submit to the MME for consideration of these applications as shown on the Namibia Mining Cadastre Map Portal ("Commodity Change pending") - Figure 1-1.

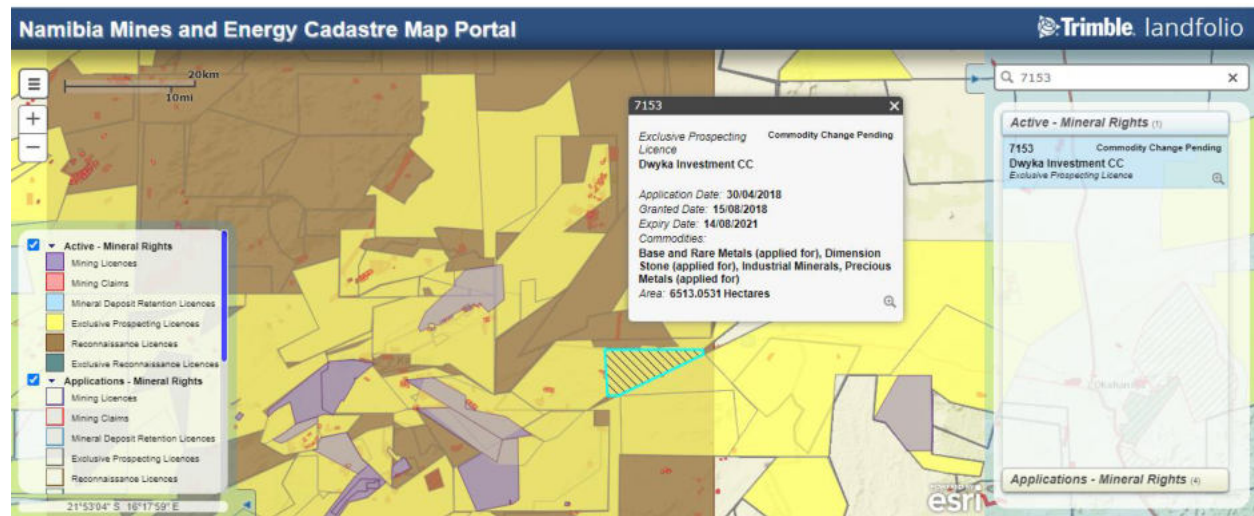


Figure 1-1: The status of EPL-7153 on the Namibia Mines and Energy Cadastre Map Portal
[\(https://portals.landfolio.com/namibia/\)](https://portals.landfolio.com/namibia/)

EPL-7153 has potential for Industrial Minerals, with the intention to add commodities such as Base & Rare Metals, Dimension Stone, and Precious Metals. Therefore, the proposed prospecting and exploration on the EPL will focus on these commodities upon ECC issuance and approval of the commodity change application. Located about 35km east of Karibib Town in the Erongo Region (Figure 1-2), EPL-7153 covers an area of 6,513.0531 hectares (Ha). The EPL covers some farms such as Kheiron Ranch No. 161, Kaliombo No. 119, Ombujomahake South No. 45, and Wilhelmstal No. 8 as shown on the map in Figure 1-3.

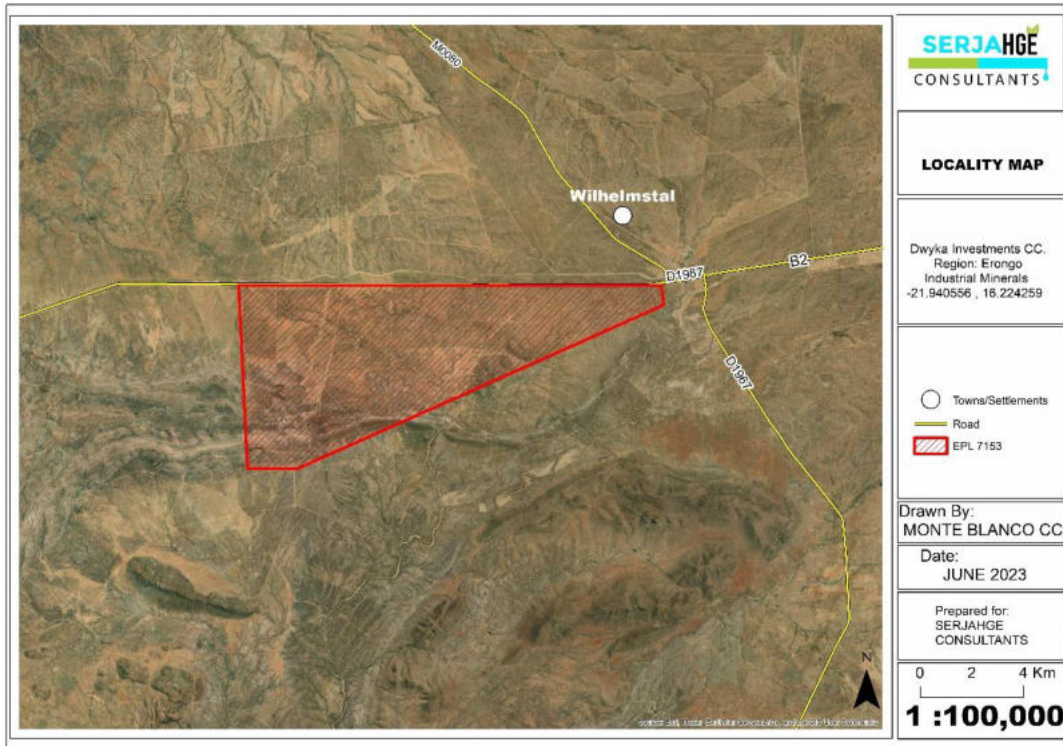


Figure 1-2: Locality Map of EPL-7153 near Wilhelmstal in the Erongo Region

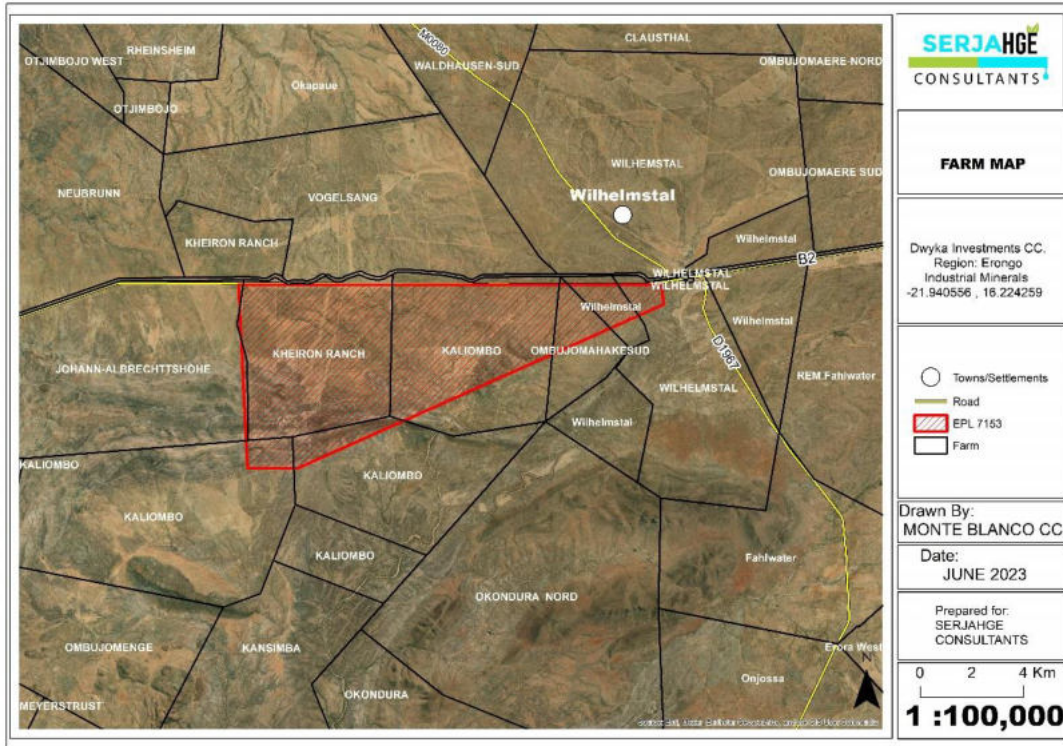


Figure 1-3: Map with farms covered by EPL-7153

The approximate coordinates of the EPL are presented in Table 1-1 below:

Table 1-1: GPS coordinates of EPL-7153

EPL Boundary Point	GPS Coordinates
Point A	21°54'56" S 16°10'01" E
Point B	21°54'55" S 16°18'51" E
Point C	21°55'20" S 16°18'54" E
Point D	21°58'46" S 16°11'14" E
Point E	21°58'47" S 16°10'11" E

1.2 Purpose of the Draft Environmental Management Plan (EMP)

The Draft EMP is developed in accordance with Regulation 8(j) of the EIA Regulations (2012) that it should be included as part of the Environmental Assessment (EA) scoping report. A '**Management Plan**' is defined as:

"...a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored."

An EMP is one of the most important outputs of the EA process as it synthesizes all the proposed management & mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the EA process and the required mitigation measures to be implemented during exploration. It is important to note that an EMP is a statutory document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and can be amended to adapt to address project changes and/or environmental conditions and feedback from compliance monitoring.

The EMP is therefore aimed at guiding environmental management throughout the different phases of the proposed exploration activities, namely: planning, prospecting & exploration, and decommissioning & rehabilitation phase:

- **Planning phase** – Preparation of all the administrative and technical requirements needed for the actual works on the ground. The planning would entail obtaining the necessary permitting and authorization from relevant national and local stakeholders (such as affected farm owners/landowners), facilitating the recruitment and procurement processes, etc.
- **Exploration phase** – The stage during which actual groundwork (activities) for the targeted commodities and associated activities are conducted within the EPL.

- **Decommissioning and Rehabilitation** – The stage during which the Proponent is rehabilitating the disturbed sites, regardless of the results of exploration activities.

2 BRIEF DESCRIPTION OF THE PROPOSED PROJECT ACTIVITIES

Prior to mobilizing to site and undertaking any groundwork for the proposed activities at the site (EPL-7153), the Proponent will be required to sign land access and use agreements with the affected landowners (farmers) according to Section 52 (1a) of the Minerals (Prospecting and Mining) Act No. 33 of 1992.

The anticipated duration of the proposed prospecting and exploration activities is between anticipated to last between (6) and twenty-four (24) months. However, should the anticipated timeframe turn out to be insufficient or depending on the exploration findings by the end of 24 months, this may be stretched longer to some more months and communicated with the relevant stakeholders and respective landowners.

2.1 Duration of Prospecting and Exploration Works

The duration for prospecting and exploration is anticipated as follows:

- Soil sampling programmes for instance may last from between one week to a month at a time over specific areas, until the explored area is fully sampled as desired.
- Drilling programmes may initially range from two weeks to a month at a time, depending on the planned programme or based on the results of the programme. The Proponent undertakes to work with all relevant stakeholders to keep them informed of exploration progress to facilitate site visits and access to ongoing field exploration programmes.

In general terms, the minerals exploration activities can take up to a maximum of seven years, with different projects at various stages of the exploration phase (Resilient Environmental Solutions, 2019).

The Proponent intends to adopt a systematic and standard prospecting and exploration approach for the 2 exploration categories of the commodities (Base & Rare Metals, Dimension Stone, Industrial Minerals, Precious Metals, Precious Stones and Semi-Precious Stones) potentially occurring on the EPL. The exploration methods are presented in the ESA Report, but also summarized below.

2.2 Planned Exploration Methods

The proposed activities will be done using both non-invasive and invasive techniques as summarized below and detailed in the ESA Report (Chapter 2):

Base& Rare Metals, Industrial Minerals, Precious Metals, Precious Stones and Semi-Precious Stones

- Desktop Study (non-invasive): Literature review, mapping and aero surveying (geophysics).
- Soil and rock sampling (invasive): collection of soils and rocks samples.
- Detailed exploration (invasive): Trenching, and drilling (Reverse Circulation (RC) and diamond drilling).

Dimension Stone Exploration

The Proponent intends to adopt a systematic prospecting approach of the following:

- Non-invasive techniques: Geological mapping, reviewing of existing geological maps and historical drilling/quarrying data, Field evaluation and sampling, and
- Invasive techniques: Detailed exploration (Down-The-Hole drilling).

2.3 Decommissioning and Rehabilitation of Disturbed Sites

Once the exploration activities on the EPL come to an end, the Proponent will need to put site rehabilitation measures in place. To ensure the project activities are ceased in an environmentally friendly manner and site is rehabilitated by carrying out the following:

- Dismantling and removal of campsites and associated infrastructures from the project site and area,
- Carrying away all exploration equipment and vehicles, and
- Clean up of site working areas and transporting the recently generated waste to the nearby approved waste management facility (as per agreement with the facility operator/owner),

Further decommissioning and rehabilitation practice onsite will include:

- Backfilling of pits and trenches used for sampling,
- Closing and capping of exploration boreholes to ensure that they do not pose a risk to both people and animals in the area, and
- Levelling of stockpiled topsoil. This will be done to ensure that the disturbed land sites are left close to their original state as much as possible.

3 LEGAL FRAMEWORK: PERMITTING AND LICENSES

The Proponent has the responsibility to ensure that the exploration activities as well as the EA process conform to the principles of the EMA and must ensure that employees act in accordance with such principles. Table 3-1 below lists the requirements of an EMP as stipulated by Section 8 (e) of the EIA Regulations, primarily on specific approvals and permits that may be required for the activities required of the EPL.

Table 3-1: List of legal requirements and permits to the activities of the EPL

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Environmental Management Act EMA (No 7 of 2007)	Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). Details principles which are to guide all EAs.	The EMA and its regulations should inform and guide this EA process. Should the ECC be issued to the Proponent, it should be renewed every 3 years, counting from the date of issue. Contact details at the Department of
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	Details requirements for public consultation within a given environmental assessment process (GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	Environmental Affairs and Forestry (DEAF), Ministry of Environment, Forestry and Tourism (MEFT), Office of the Environmental Commissioner Mr. Timoteus Mufeti Tel: +264 61 284 2701
Minerals (Prospecting and Mining) Act (No. 33 of 1992)	Section 48 (3): To enable the Minister to consider any application referred to in section 47 the Minister may (b) require the person concerned by notice in writing to (i) carry out or cause to be carried out such environmental impact studies as may be specified in the notice.	The Proponent should ensure that all necessary permits/authorization for these EPL are obtained from the Ministry of Mines and Energy (MME). Contact person and details at the MME (Mining Commissioner) Mrs. Isabella Chirchir Tel: +264 61 284 8251.
	Section 52 (1) (a) requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder.	The Proponent should timely enter into and sign access and land use agreement (consent) with the respective affected farm owners prior to undertaking any activities on the EPL (including mobilization).
Water Resources Management Act (No 11 of 2013)	Ensure that the water resources of Namibia are managed, developed, used, conserved, and protected in a manner. Therefore, a Groundwater Abstraction & Use Permit should be applied for. The Permit is required for all commercial and industrial water uses. Although, exploration is not entirely commercial, the associated activities such as drilling fall under industrial activities, thus, the need to apply for an abstraction permit.	The Water Permit should be applied from the Ministry of Agriculture, Water and Land Reform (MAWLR) Department of Water Affairs (DWA) Contact: Mr. Franciskus Witbooi Division: Water Policy and Water Law Administration Division Tel: +264 61 208 7158

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	For any project wastewater planned for discharge into the environment, a discharge permit should be applied for and obtained.	MAWLR, DWA' Water Environment Division Contact: Ms. Elise Mbandeka Tel: +264 61 208 7167
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area"	The Proponent should obtain the necessary authorisation from the MME for the storage of fuel on-site (Consumer Installation Permit). Mr. Carlo Mcleod (Ministry of Mines and Energy: Acting Director – Petroleum Affairs) Tel: +264 61 284 8291
National Heritage Act No. 76 of 1969	Call for the protection and conservation of heritage resources and artefacts.	Should any archaeological material, such as bones, unknown graves, old weapons/equipment etc. be found on the EPL site, work should stop immediately, and the National Heritage Council (NHC) of Namibia must be informed as soon as possible. The Heritage Council will then decide to clear the area or decide to conserve the site or material. Contact Details at the NHC of Namibia Mrs. Erica Ndalikokule – NHC Director Ms. Agnes Shiningayamwe (Heritage Officer) Tel: +264 61 301 903

4 EMP IMPLEMENTATION RESPONSIBILITIES

Dwyka Investment (the Proponent) and their exploration partners (if any) is ultimately responsible for the implementation of the EMP. However, the Proponent may delegate this responsibility or part of it to someone else at any time, as they deem necessary. The roles and responsibilities of all delegates/parties involved in the effective implementation of this EMP are set in Table 4-1.

Table 4-1: The EMP implementation responsibilities for prospecting and exploration

Role	Responsibilities
Dwyka Investment (Proponent) with Exploration Partners and or their Representative	<ul style="list-style-type: none"> -Managing the implementation of this EMP and updating and maintaining it when necessary. -Management and monitoring of individuals and/ or equipment on-site in terms of compliance with this EMP and issuing fines for contravening EMP provisions.
Exploration Manager	<p>This individual will be responsible to ensure that the exploration activities of the project are completed on time. The Manager's duties and responsibilities will include:</p> <ul style="list-style-type: none"> -Ensure that relevant commitments contained in the EMP are adhered to. -Ensure relevant staff is trained in procedures entailed in their duties. -Maintain records of all relevant environmental documentation for the project. -Reviewing the EMP annually and amending the document when necessary. -Issuing fines to individuals who may be in breach of the EMP provision and if necessary, removing such individuals from the site. -Cooperate with all relevant interested and affected parties/stakeholders. -Development and management of schedules for daily activities
Environmental Control Officer (ECO) / Safety, Health & Environment (SHE) Officer	<p>The Proponent may assign the responsibility of ensuring EMP compliance throughout the project life cycle to a designated member of staff or external qualified and experienced person, referred to in this EMP as the Environmental Control Officer (ECO) / SHE Officer. The ECO will have the following responsibilities:</p> <ul style="list-style-type: none"> -Management and facilitation of communication between the Proponent, PR and Interested and Affected Parties (I&APs) regarding this EMP. -Conducting site inspections of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP). -Advising the Proponent or Exploration Manager on the removal of person(s) and/or equipment not complying with the provisions of this EMP. -Making recommendations to the PR with respect to the issuing of fines for contraventions of the EMP. -Undertaking an annual review of the EMP and recommending additions and/or changes to this document. -Ensuring that the exploration activities on site are conducted in accordance with the International System organization (ISO) standard 14001: 2015.
Public Relations Officer (PRO)	<p>The PRO will be responsible for the following tasks:</p> <ul style="list-style-type: none"> -Liaising between the stakeholders, farmers (property owners), public and the Proponent.

Role	Responsibilities
	<p>-Ensure effective communication with stakeholders (farm owners), media (if necessary) and the public.</p> <p>-Organising and overseeing public relations activities, Managing public relations issues.</p> <p>-Preparing and submitting public relations reports, if required.</p> <p>-Collaborating with personnel and maintaining project-related open communication among personnel.</p>

5 ENVIRONMENTAL MANAGEMENT AND MITIGATION MEASURES

5.1 Key identified Potential negative Impacts

The key potential positive and negative impacts identified, described, and assessed in the Environmental Scoping Assessment Report and for which the management measures (action plans) have been provided are listed below:

Positive impacts:

- Local socio-economic development through temporary employment creation,
- Payment of land access and use fees, this will also include payment of rental fees for setting up structures such as campsites and storage of exploration samples onsite (if necessary),
- Improving certain services on the farms such as donation of water boreholes for exploration holes in which water is encountered during drilling (after completion of exploration works in such holes). This will also include installing new gates at utilized farm sections with small gates (to gain access to such areas) and the old gates needs to be removed (to enable easy access for heavy machinery).
- Procurement of local goods and services.

Negative:

Preliminary identified potential negative impacts:

- Physical disturbance of land / soil
- Impact on local biodiversity (fauna and flora), and habitat disturbance
- Potential illegal hunting of wildlife/poaching
- Potential impact on water resources and soils (over-abstraction and pollution)

- Air quality issue: potential dust generated from the project activities such as drilling, possibly trenching and movement of heavy trucks on unpaved access roads.
- Visual impacts due to land scars owing to exploration activities
- Vehicular traffic safety, and impact on services infrastructure such as local roads
- Noise associated with drilling activities may be a nuisance to locals
- Occupational & social/community health and safety risks (trenches and drilled holes risk to livestock, game, and people)
- Potential social nuisance and conflicts due to land use (theft, property damage, etc.)
- Environmental pollution
- Archaeological and cultural heritage impact (during trenching and drilling).

5.2 The Environmental Management Measures and Rehabilitation of Sites

The management actions are aimed at avoiding the above-listed potential negative impacts, where possible, and where it is impossible to avoid these impacts, measures are provided to reduce the impacts' significance.

The Management action plans (mitigation measures) recommended for the potential impacts rated in the ESA Study were based on the following project stages (phases):

- Planning, Prospecting and Exploration phases (Table 5-1),
- Site Rehabilitation and Decommissioning (Table 5-2), and
- Biophysical and Social Environmental Monitoring (Table 5-3).

Table 5-1: The Environmental management and mitigation measures for Planning as well as Prospecting and Exploration activities

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Planning Phase					
EMP implementation and training	Lack of EMP awareness and implications thereof	<p>-A Comprehensive Health and Safety Plan for the project activities should be compiled.</p> <p>-An EMP non-compliance penalty system should be implemented on site.</p> <p>-The Proponent should appoint an Environmental Control Officer (ECO) or SHE Officer to be responsible for managing the EMP implementation and monitoring.</p>	<p>-All required EMP implementation Plans, and Systems are compiled and in place.</p> <p>-ECO is appointed</p>	-Proponent	Pre-exploration
Authorizations	Lack of Agreements, Permits/ Licenses and planning documentation	<p>-All the required agreements and licenses or permits should be applied for and signed, respectively before commencement of work on the EPL, or as required.</p> <p>-Farmers (landowners) should be timely notified on arrivals to the farms and an open communication system should be implemented.</p> <p>-The land access agreements should clearly include the compensation of farm properties damaged by project activities, and compensation made as agreed in the agreements/contracts.</p> <p>-The permits, agreements referred to herein include:</p> <p>(a) Land access by the farm owners (landowners).</p> <p>(b) Waste management disposal permits from the relevant facility operator/owner</p> <p>(c) Water supply agreements for domestic use or groundwater abstraction & use permit (if abstracting drilling water directly from a borehole, however, this is unlikely given the low groundwater potential of the area to supply activities such as drilling)</p> <p>(d) Storage permit from MME for any fuel stored onsite (in container of 600 litres or more).</p>	<p>-Applicable permits and licenses to obtained from relevant authorities.</p> <p>-Agreements/permits signed and obtained from on time, <u>minimum of 2 months (or as per agreements with the individual farm owners) prior to the planned commencement date of works.</u></p>	-Proponent	Pre-exploration

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Communication between the Proponent and landowners	Lack of communication (proper liaison) between landowners and Proponent with regards to land use/access	<p>-A Public Relation Officer (PRO) to liaise with farmers should be appointed.</p> <p>-Individual farmers' engagement for farm access agreements should be done prior to mobilizing to site.</p> <p>-A clear communication procedure/plan which should include a grievance mechanism should be developed.</p> <p>-Farmers should be kept posted on any changes, progress or delays on the project activities communicated or agreed upon.</p> <p>-The issues or complaints raised by the landowners should be effectively attended to timely, and resolved amicably.</p>	<p>-Individual Farmers engagement meetings with the Proponent are made</p> <p>-Ongoing Consultation with farmers throughout the project, when and as required.</p> <p>-Complaint's logbook is prepared and onsite</p>	-Proponent	PRO appointment (Prior to project activities) and their responsibilities throughout the project activities
Employment	Creation of employment opportunities	<p>-Un and semi-skilled labour should be sourced from the local communities.</p> <p>-Preference of local people for employment for jobs should be implemented, i.e., permanent residents from the farms should be employed for the unskilled labour preferentially to out-of-area people (outsiders) where possible. Out-of-area employment should be justified, for example by the unavailability of local skills.</p> <p>-Equal opportunity should be provided for both men and women, when and where possible.</p>	-Number of locals employed for exploration activities	Proponent in collaboration with the Drilling contractors	Pre-exploration and when necessary, throughout
Corporate Social Responsibility (CSR)	Investing in the community	-Where possible, the Proponent should invest in the community, with goods and services that can improve lives.	-There are visible and recorded efforts of CSR	-Proponent	Throughout the project activities
Land use fees and associated fees for socio-economic development	Local socio-economic development	<p>-Commit to the conditions listed in the land access agreements signed with farmers (landowners).</p> <p>-The payments of land access fees should be made as agreed.</p> <p>-Plan for exploration holes in which groundwater will be encountered, and inform the farm owner to decide if they would</p>	-Proof of funds paid to the respective farmers' bank account and related records.	-Proponent	Pre-exploration and when necessary, throughout

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		like to keep the borehole(s) for their own use after exploration. The Proponent should equip the borehole(s) for the farmer(s).			
Specialised procurement of services and goods	Empowerment of local businesses	-All services related to exploration activities such as trenching, site establishment, drilling and other services or goods that the Proponent may need, preference and available, locally and regionally, priority should be given to local and regional businesses for such services and goods.	-Number of hired contractors. -Record of hired or contracted companies or services providers	-Proponent -Exploration Manager	Pre-exploration
Prospecting and Exploration Phase					
EMP implementation and training	Lack of EMP awareness and implications thereof	-EMP trainings should be provided to all workers on site. -All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. The site should be inspected, and a compliance audit done throughout the project activities, monthly and bi-annually for overall EMP implementation. An EMP non-compliance penalty system should be implemented.	-Records of EMP compliance/monitoring conducted bi-annually -The ECC is renewed every 3 years -Records of EMP training conducted.	-Exploration Manager -ECO	Throughout the exploration phase
Communication between the Proponent and landowners	Lack of communication (proper liaison) between landowners and Proponent with regards to land use/access	-The contact details of the PRO or Exploration Manager should be provided to the farmers prior to undertaking activities for easy communication. -Compile a clear communication procedure / plan which should include a grievance and response mechanism.	-Records of continued farmers' consultation -Community / farmers' grievances addressed to their satisfaction -Complaint's logbook -Land access agreement conditions	-PRO	Throughout exploration
Grazing land	Loss of grazing areas	-Any unnecessary removal or destruction of grazing land, due to exploration activities should be avoided.	-Limited cleared sites -Less access tracks	-Exploration Manager -ECO	Throughout exploration

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Vegetation found on the site, but not in the targeted exploration areas should not be removed but left to preserve biodiversity and grazing land.</p> <p>-Drilling mud and any other fluid used onsite should not be disposed of on top of the vegetation (grass or shrubs) onsite. The fluids should be properly stored in designated containers onsite and disposed of at the nearest appropriate waste facility.</p> <p>-Workers should refrain from driving off road and creating unnecessary tracks that may contribute to loss of grazing land.</p> <p>-Environmental awareness on the importance of the preservation of grazing land for local livestock should be provided to the workers.</p>	<p>-No complaints from farmers regarding significant land/vegetation clearing</p>		
Water Resources Use	Over-abstraction (water demand and availability)	<p>-Fresh water abstracted from boreholes or supplied by carting should be used efficiently, and recycling and re-using of water on certain site activities should be encouraged.</p> <p>-The Proponent should cart water for drilling from elsewhere outside the site area to relieve pressure of the available resources. Agreements for water supply should be made between the willing water supplier and the Proponent.</p> <p>-If the carted water is directly abstracted from a certain borehole or boreholes offsite, the Proponent should apply for a Groundwater Abstraction & Use Permit from the Department of Water Affairs of MAWLR.</p> <p>-A water supply agreement should be signed prior to obtaining the water from the reliable supplier(s) for exploration.</p> <p>-Water reuse/recycling methods should be implemented as far as practicable such that the water used to cool off exploration equipment should be captured and used for the cleaning of project equipment, if possible.</p>	<p>-Water supply agreements</p> <p>-Proof/ recording/ quantification of water saving efforts.</p> <p>-Water supplier</p> <p>-Water supplying agreements</p> <p>-Water storage tanks on site</p>	<p>-Proponent</p> <p>-Exploration Manager</p>	<p>-Once off supply agreement</p> <p>-Throughout the exploration phase</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Water storage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site.</p> <p>-Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and become accountable.</p>			
Soils	Physical soil/land disturbance and loss of topsoil	<p>-Stockpiled topsoil and drill materials should be used to backfill the excavated and disturbed site areas/spots for rehabilitation.</p> <p>-The topsoil that was stripped from certain site areas to enable project works and can be returned to its initial position, should be returned. This is to avoid unnecessary stockpiling of site soils which would leave them prone to erosion.</p> <p>-Soils that are not within the intended footprints of the site areas should be left undisturbed and soil conservation implemented as far as possible.</p> <p>-Project vehicles/machinery should stick to access roads provide and not to unnecessarily create further tracks on and around the site by driving everywhere resulting in soil compaction.</p> <p>-Effectively stabilise altered landforms to minimise soil erosion.</p>	<p>-No proliferation of informal vehicle tracks.</p> <p>-No new erosion gullies.</p>	-ECO	Throughout exploration
Soils and water resources	Soils and water resources pollution	<p>-Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching water resources bodies.</p> <p>-All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel handling procedures.</p> <p>-Develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.</p>	<p>-No complaints of pollutants on the soils and eventually in the water due to exploration activities</p> <p>-No visible oil spills on the ground or pollution spots.</p> <p>-Complaint's logbook</p> <p>-Availability of sufficient waste containers</p>	<p>-Exploration Manager</p> <p>-ECO</p>	Throughout exploration phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<ul style="list-style-type: none"> -Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training. -Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site. -Polluted soil should be removed immediately and put in a designate waste type container for later disposal. -Drip trays must be readily available on this trailer and monitored to ensure that accidental fuel spills along the tank trailer path/route around the exploration sites are cleaned on time (soon after the spill has happened). -Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility. -Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources. -Toilet water should be treated using chemical portable toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility. 	<p>-Non-permeable material to cover the ground surface at areas where hydrocarbons and potential pollutants are utilized.</p>		
Biodiversity	Loss of Fauna and Flora	<p><u>Fauna (animals)</u></p> <ul style="list-style-type: none"> -Refrain from disturbing, snaring, killing or stealing livestock on and around the farms and general area. -Avoid the killing of small soil and rock outcrops' species found on site. -Exploration trenches and boreholes should be secured (temporary fencing) then backfilled and capped, respectively, after sampling is completed to prevent injuries to animals after falling in. 	<ul style="list-style-type: none"> -No disturbance to unmarked areas. -No complaints from locals regarding unauthorised vegetation removal or cutting down of trees. -No complaints of wildlife hunted by the project workers. 	<ul style="list-style-type: none"> -Exploration Manager -ECO 	Throughout the exploration phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Incorporate Environmental awareness and biodiversity preservation into the employment contracts of all workers.</p> <p>-Breeding sites for faunal species that are found within the site and nearby should not be disturbed.</p> <p>Flora (vegetation):</p> <p>-Avoid unnecessary removal of onsite vegetation, thus, promoting a balance between biodiversity and the project.</p> <p>-If and only if necessary to remove a protected such as camelthorn trees, a permit should first be obtained from the nearest MEFT's Forestry Office. <u>At maximum, avoid cutting of trees within the EPL and surroundings. This is to preserve the already scarce vegetation in the area.</u></p> <p>-Vegetation found on the site, but not in the targeted exploration site areas or access route should be left undisturbed/avoided.</p> <p>-Vehicle movement should be restricted to existing roads and tracks/farmers approved additional road access to prevent unnecessary damage to the surrounding vegetation.</p> <p>-No onsite vegetation should be cut or used for firewood.</p> <p>-Access roads should be created in a manner that disturbs minimal vegetation.</p> <p>-Environmental awareness on faunal and floral biodiversity preservation should be provided to the workers and contractors. This should be incorporated into the workers' contracts.</p>	<p>-No intentional disturbance and destruction of site vegetation and faunal species</p> <p>-Barricading tape (to indicate working areas)</p> <p>-Visible preservation of onsite vegetation</p>		
Illegal hunting	Illegal hunting of wildlife	<p>-The Poaching (illegal hunting) or disturbance/harming of wildlife on the farms and surrounding areas is strictly prohibited.</p> <p>-A No tolerance to Poaching Policy should be developed and apply to all site personnel (workers) and visitors.</p> <p>-Incorporate a No-tolerance rule for poaching in every employment contract and ensure that the workers understand the</p>	<p>-There are no incident reports of illegal hunting of wildlife by the crew.</p> <p>-Contact details of the Anti-poaching Police Unit provided and visible onsite</p>	<p>-Exploration Manager</p> <p>-ECO</p>	<p>During site set up, and throughout exploration</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		seriousness of this. In other words, there is no tolerance for poaching or to wildlife crime.			
Land Use	Conflict between land uses and exploration activities	<p>-Exploration activities should not in any way hinder the existing land uses within the EPL but rather promote co-existence throughout the project operations while respecting other land users such as eco-tourism and game hunting.</p> <p>-The project workers and vehicles should be limited to the actual EPL active sites only but not unnecessarily wander and drive around farms, respectively.</p> <p>-Ensure that project activities comply with the conditions set by the competent, regulatory, and farm owner such that exploration activities do not severely impact other existing activities on and around the EPL.</p>	<p>-Land access and use consents with clear conditions</p> <p>-Compliance with conditions set within operational permits by relevant and affected landowners.</p> <p>-Little to no complaints of significant interference from land users/owners</p>	<p>-Exploration Manager</p> <p>-PRO</p>	Throughout the exploration phase
Visual (aesthetic)	The scarring of landscape and presence of exploration vehicles and machinery may impact the scenic view of the area for tourism and travellers on the roads.	<p>-The exploration activities should be done away from the roads, and explored sites rehabilitated as far as possible.</p> <p>-Concentrated stone block sampling to the areas behind the mountain that overlook the local roads (B2 and D1967). In other words, exploration activities that are likely to leave visible scars on the hills or mountains should be done on areas behind these mountains and not on the areas that are visible from the road.</p> <p>-Minimize the land scarring by targeting specific areas only.</p> <p>-The campsite (if onsite) should be established behind outcrops or thick vegetation where possible to limit their obvious presence to road users (tourists and travellers alike).</p>	<p>-No complaints of visual nuisance from the travellers or farmers.</p> <p>-No disturbed sites areas are left without rehabilitation</p> <p>-Exploration works are limited to areas far from the roads.</p>	-Exploration Manager	Throughout the exploration phase
Road use and safety	Increase in vehicular traffic flow	-Project related goods and services should be delivered to site once to twice a week to reduce the daily movement of trucks and putting too much pressure on local roads.	-No complaints from the public or farmers regarding vehicular traffic issues related to the project activities.	<p>-Exploration Manager</p> <p>-ECO</p>	Throughout exploration phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-If additional access roads (tracks) are required, the respective farmer/landowner should be consulted before creating new tracks to give consent and or guidance.</p> <p>-Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses and adhere to the road safety rules.</p> <p>-Drivers should drive slowly (40km/hour or less) and be on the lookout for livestock and wildlife as well as people on farms.</p> <p>-Ensure that the site access roads are well equipped with temporary road signs.</p> <p>-Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults.</p> <p>-Vehicle drivers should only make use of designated site access roads provided and as agreed.</p> <p>-Vehicle drivers should not be allowed to operate vehicles while under the influence of alcohol.</p> <p>-Project vehicles should be parked within the boundary or demarcated areas for such purpose.</p> <p>-Deliveries from and to site should be done optimally during weekdays and between the hours of 8am and 5pm.</p> <p>-The site access road(s) should be maintained to an unacceptable standard for the vehicles.</p>	<p>-All personnel operating the project vehicles and machinery are appropriately licensed and possession of valid driving licenses.</p> <p>-Demarcated areas for parking, offloading, and loading zones are on sites.</p> <p>-No creation of unnecessary tracks on site.</p>		
Local roads	Overuse and maintenance	<p>-Heavy trucks transporting materials and services to site should be scheduled to travel twice a week to avoid daily travelling to site, unless on cases of emergencies.</p> <p>-While operating in the area, consider frequent maintenance of access roads to ensure that the roads are in a good condition for other roads users (farmers and travellers) in the area.</p>	-Visible efforts of maintaining access roads by the Proponent	-Proponent -Exploration Manager	Throughout exploration, when necessary

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Occupational and Community Health and safety	General health and safety associated with project activities in both phases	<ul style="list-style-type: none"> -During inductions, provide project workers with an awareness training of the risks of mishandling equipment and materials on site and health & safety risk associated with their respective jobs. -Project workers should be properly equipped with adequate and appropriate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc. -All workers should be dewormed before commencing with exploration activities. This should be repeated as prescribed. -Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible. -Drilled exploration holes that will no longer be in use or to be used later after being drilled should be properly marked for visibility and capped/closed off. -Trenches should be temporarily fenced off during sampling, and once completed, they should be backfilled thereafter -Drill cuttings and excavated materials should be put back into the hole and the holes filled and levelled, and trenches backfilled respectively. -An emergency preparedness plan should be compiled, and all personnel appropriately trained. -Workers should not be allowed to enter the working sites when under the influence of alcohol as this may lead to mishandling of equipment which results into injuries and other health and safety risks. -Ensure that goods and projected loads are securely fastened to vehicles to avoid falling and injure people. -Warning signage should be erected at hazardous site areas such as open trenches. 	<ul style="list-style-type: none"> -Comprehensive health and safety plan for all exploration activities compiled. -Quarterly refresher training on health & safety -Occupational Health and Safety Personnel Health and Safety Trainings -Availability of fully-furnished first aid kits -Trained worker to administer first aid 	<ul style="list-style-type: none"> -Proponent -Exploration Manager -ECO 	Throughout exploration and trainings offered as and when required

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-The site areas that are considered temporary risks should be equipped with "danger" or "cautionary" signs clearly written in the local languages, i.e., Afrikaans and English.			
	Potential increase of prevalence of HIV and AIDS, as well as other sexually transmitted diseases (STDs) prevalence	-Engage workers in sexual health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. -Provision of condoms and sex education through distribution of pamphlets and health trainings. These pamphlets can be obtained from the nearest local health facility.	-No new infections recorded linked to project workers -Occupational health and safety personnel -Sex and Health Education/Awareness -Provision of condoms at the campsite	-Exploration Manager -ECO	Throughout exploration
	Accidental fire outbreak	-Portable and serviced fire extinguishers should be provided at site and camp. -No open fires to be created by project personnel onsite. -Consider using gas or paraffin cooks to prepare food instead of open fires. The cooks/stoves fire should be put out before leaving the camp (if the camp is established onsite/at the farms). -Make provision for smoking areas for crew members who smoke. This is to ensure that the cigarettes' fire is completely put out to and disposed of in allocated bins at the smoking area. -Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage. -Raise awareness to workers on the impact of careless handling of fires and flammable substances in the fire.	-No wildfires recorded (due to presence of workers) -Fire extinguishers (1 per vehicle) and 1 per working site	-Proponent -ECO	Throughout exploration
Archaeology and heritage	Accidental disturbance of archaeological or heritage objects	-Buffer zones should be maintained & respected around known significant cultural heritage sites as far as possible. Graves, caves, rock shelters, Bushmen paintings and areas with cultural significance are excluded from any development.	-Preservation of all artefacts and objects that are discovered on and around project site -Salvage equipment	-Exploration Manager -ECO	As and when required, i.e., prior to site set up, and during exploration.

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-A "No-Go-Area" should be put in place where there is evidence of sub-surface archaeological materials, archaeological sites, gravesites, historical, rock paintings, cave/rock shelters or past human dwellings. It can be a demarcation by fencing off or avoiding the site completely by not working closely or near the known site. The 'No-Go Option' might have a NEUTRAL impact significance.</p> <p>-Efforts should be made to avoid damage to or destruction of any outcrop that harbours caves or rock shelters, if any are found at drill sites, then they should be marked and the sites should be adjusted to avoid them.</p> <p>-Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the National Heritage Act (Act No. 27 of 2004), Section 52 (2).</p> <p>-Direct damage to archaeological or heritage sites should be avoided as far as possible and, where some damage to significant sites is unavoidable, scientific/historical data should be rescued.</p> <p>-During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed and making the correct judgment on which actions should be taken (refer to CFP Appendix 1 attached hereto).</p> <p>-The Proponent, direct employees and Contractors should adhere to the provisions of Section 55 of the National Heritage Act in the event significant heritage and cultural features are discovered in the course of the project works.</p>	<p>-Archaeologist to recommend further actions</p> <p>-Flag tapes</p> <p>-GPS (site marking)</p>	<p>-Operator (Driller and or Excavating personnel)</p>	
Littering and waste management	Environmental Pollution	<p>-Workers should be sensitized to dispose of waste in a responsible manner and not to litter.</p>	<p>-No visible litter around the project area</p>	<p>-ECO -Exploration Manager</p>	<p>Throughout exploration phase</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
(general waste and sanitation)		<ul style="list-style-type: none"> -Dispose of waste in a responsible manner and not to litter. -After each daily works, ensure that there are no wastes left on the working sites or scattered around the camp. -All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to designated waste sites. -No waste may be buried or burned on site or anywhere else. -The exploration site should be equipped with separate waste bins for hazardous and general/domestic waste. -Oil spills should be taken care of by removing and treating soils affected by the spill. -A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented. -Ensure careful storage and handling of hydrocarbons on site is essential. -An emergency plan should be available for major/minor spills at the site during operation activities. 	<ul style="list-style-type: none"> -Provision of sufficient waste storage containers -Waste management awareness -Waste disposal permits to municipalities -Environmental, Health and Safety Statements and Policy 		
	Wastewater generated by exploration workers living on-site.	<ul style="list-style-type: none"> -Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater. -No open defecation is allowed on and around the site. -Sewage waste should be stored as per the portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility -Provide sufficient toilet facilities for workers (mobile/portable chemical toilet if possible). 	<ul style="list-style-type: none"> -Adequate toilet and basic ablution facilities on site -Chemical toilets Sewage removal operator -Waste treatment agents/chemicals. 	<ul style="list-style-type: none"> -Exploration Manager -ECO 	Throughout exploration phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-Emptying of chemical toilets should be done according to the manufacturer's specifications.			
Air Quality	Dust generation	<p>-Exploration vehicles within the area should not be driven at a speed more than 40 km/h to avoid dust generation.</p> <p>-When and if the project reaches the advanced stages of exploration, a reasonable amount of water should be used on gravel roads, using regular water sprays on gravel routes and near exploration sites to suppress the dust that may be emanating from certain exploration areas on the EPL.</p> <p>-Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers on site drilling areas, where they are exposed to dust.</p> <p>-Excavating equipment should be regularly maintained to ensure drilling and excavation efficiency and so to reduce dust generation and harmful gaseous emissions.</p>	<p>-No complaints from the public about vehicle emissions and dust generation.</p> <p>-Visible efforts to curb dust</p> <p>-Complaint's logbook</p> <p>-Dust suppressant (Water)</p>	<p>-Exploration Manager</p> <p>-ECO</p>	Throughout exploration phase
Noise	Nuisance	<p>-Noise from operations' vehicles and equipment on the sites should be at acceptable levels.</p> <p>-Exploration hours should be restricted to between 07h30 and 17h00 to avoid noise and vibrations generated by exploration equipment and the movement of vehicles before or after hours.</p> <p>-No noise making exploration activities such as drilling should take place within 1km of the farmhouses.</p> <p>-When operating the drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.</p>	<p>-No complaints of excessive noise from farmers</p> <p>-Complaint's logbook</p> <p>Noise protective equipment for workers</p>	<p>Exploration Manager</p> <p>-ECO</p>	Throughout exploration
Social nuisance	Local properties disturbance and values	-The project workers and contractors should be informed of the importance of respecting the farmers' properties by not trespassing or injuring / killing their livestock and wildlife.	-No complaints from farmers about property	<p>-Exploration Manager</p> <p>-ECO</p>	Throughout the exploration phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Any worker or contractor found guilty of trespassing should be called in for disciplinary hearing and/or dealt with as per their employer' (Proponent)'s code of employment conduct.</p> <p>-The workers/contractors should be advised to respect the local's private properties, values, and norms.</p> <p>-No worker should be allowed to wander in people's private yards or fences (no-go areas) without permission.</p> <p>-The cutting down or damaging of vegetation belonging to the affected farmers or neighbouring farms, without the landowners' permission is strictly prohibited.</p>	<p>theft, disturbance, or intrusion</p> <p>-Grievance / complaint logbook</p> <p>-Land access agreement conditions</p>		

Table 5-2: The Mitigation measures for site rehabilitation

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Progressive Rehabilitation and Decommissioning Phase					
Rehabilitation	Disturbance and damaging of land site land	<p>-All drilled boreholes and excavated pits related to the project activities should be capped and backfilled, respectively.</p> <p>-All waste generated and stored on site during exploration activities should be disposed of at the respective nearest solid waste management sites.</p> <p>-The stockpiled topsoil should be levelled soon after completion of works at sites.</p> <p>-Any temporary setup on site should be dismantled, and the area rehabilitated as far as practicable, to their original state.</p> <p>-Explored areas on worksites should be progressively rehabilitated by stockpiling and backfilling.</p>	<p>-Capped boreholes and backfilled pits</p> <p>-Excavators and other backfilling/demolishing machinery</p> <p>-No sign of waste or littering seen on site and around site areas.</p> <p>-Carrying away of waste, and removal of vehicles and equipment from site</p>	<p>-Proponent</p> <p>-Exploration Manager</p>	<p>Progressive rehabilitation done throughout the exploration phase and complete decommission and rehabilitation done after completion of exploration works.</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-Provision of both financial and technical resources for progressive rehabilitation. -Respective farmers should be consulted to approve and sign off Site Rehabilitation Completion to their satisfaction	-No stockpiled topsoil (topsoil is levelled after completion of each work) -Campsite dismantled, site levelled and materials taken away from site. -Visible signs of stockpiled topsoil -Record of trenches excavated, and boreholes drilled -Waste containers on sites -Photo records of backfilled sites -Records of finances set aside for decommissioning activities		

5.3 The Environmental Monitoring Actions

To ensure that the implementation of recommended environmental management measures is working and produces the desired results (minimizing the "medium" and uphold the "low" significance ratings of impacts), certain key impacts will need to be monitored and reported on. The environmental aspects to be monitored are shown in Table 5-3. The "Observation, compliance status and Recommended Action" columns will be completed for every monitoring done on site.

Monitoring reports are to be compiled by the project ECO, audited by an Independent Environmental Consultant, and submitted to the DEAF for archiving on a bi-annual basis (every 6 months throughout the project operations) or as required by the Environmental Commissioner (as per the ECC conditions). The environmental components or features provided in the Table will be updated accordingly once the project commences.

Table 5-3: Monitoring of Biophysical and Social Aspects referred to in the assessment (modified after Resilient Environmental Solutions, 2019)

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Water and soil pollution									
Soil pollution by hydrocarbon (fuel and lubricant spills)	Complaints from farmers within the project sites	To prevent contamination of site soils	No complaints from landowners or public about visible oil spills	Inspection of complaints logbooks	Weekly	ECO	ECO-> Exploration Manager	A logged complaint	Further consultations with the landowners and or communities
Wastewater generated by exploration workers living on-site.	Open defecation and urination.	To prevent environmental pollution	Adequate toilet facilities on site. Complaints from the farmers about open defecation.	Visual observation. Inspection of complaints logbook.	Weekly	ECO	ECO-> Exploration Manager	A logged complaint	Clean-up of affected areas.
Soils									
Loss of topsoil	Increased loss of soil	To prevent loss of topsoil	No proliferation of informal vehicle tracks. No new erosion gullies	Visual observation	Weekly	ECO	ECO-> Exploration Manager	Proliferation of new vehicle tracks Formation of new gullies in work areas	Rehabilitation of affected explored areas
Air quality (Dust)									
Increase in dust generation, which might negatively	Complaints from public about increased in	To reduce public complaints and prevent negative	No complaints from the public about increased	Inspection of complaints logbook.	Weekly	ECO	ECO-> Exploration Manager	A logged complaint	Dust suppression around working

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
affect occupational and residential respiratory health.	dust generation.	changes in air quality due to exploration activities	dust generation.						areas to reduce fugitive dust
Hydrocarbon emissions from vehicles	Complaints from the public about increased vehicles fumes	Same as above.	No complaints from the public about increased vehicle emissions	Inspection of complaints logbook.	Weekly	ECO	ECO-> Exploration Manager	A logged complaint	Servicing of vehicles and machinery by a certified service provider
Poaching (Illegal hunting)									
Illegal hunting of wildlife	Reported poaching incidents by projects team	To prevent illegal hunting of wildlife	Incidents reports of illegal hunting of wildlife by exploration workers.	Consultation with the local Police Service for reported incidents of poaching.	Weekly	ECO	ECO-> Exploration Manager > local Police Service (Anti-poaching Unit)	An incidents report logged with the local Police Service	Appropriate action will be decided by the local Police Service
Habitat loss (Biodiversity)									
Localised loss of habitat and vegetation	Loss of habitat	To prevent loss of habitat outside areas of interest	No disturbance to unmarked areas within the project area	Visual observation	Weekly	ECO	ECO -> Exploration Manager	Vegetation clearance outside of marked areas.	Rehabilitation of affected areas to the satisfaction of the ECO
Occupational and Public Health and Safety									
No health and safety plan for	Compiled health and safety plan	To prevent health and safety impacts	No significant health and safety	Visual observation	Daily/ weekly	ECO and Exploration Manager	ECO-> Exploration Manager	Health and safety incident	Remedy the consequences

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
exploration activities.	for exploration activities.		incidents (i.e., serious injuries or loss of life)	Inspection of complaints logbooks					
Potential increase in outbreak of wildfires due to project activities	Occurrence of wildfires	To prevent environment damage caused by wildfires	No wildfires recorded (due to presence of exploration workers)	Visual observation	Daily	ECO	ECO -> Exploration Manager - > local Police Service	Outbreak of wildfires due to the exploration workers	Rehabilitation of affected areas
Archaeology and cultural heritage									
Potential disturbance of archaeological and cultural heritage resources	Presence or unearthing of archaeological or cultural heritage resources	To prevent destruction of artefacts and sites	Preservation of all artefacts and sites that are discovered within the site boundary or around the project site area	Inspection of records of findings	Daily	ECO Operator / Contractor	Operator->Foreman-> Superintended->ECO->Project Archaeologist -> National Heritage Council (NHC)	Unearthing of archaeological or cultural heritage resources	Cease all activities on site and wait for NHC to inspect site and give further instructions / actions
Employment creation and Corporate Social Responsibility (CSR)									
Creation of employment, procurement of goods and services	Employment opportunities -Community projects support -Local / regional procurement	To ensure that locals benefit from the Project	Employment, community support and local and regional procurement	Inspection: employed, procurement & community project records	Monthly	Exploration Manager	Exploration Manager or Proponent	Number of CSR projects	Open communication and reasonable requests / proposals
Noise									

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Potential increase in noise	Above ambient noise levels.	To ensure that generated noise does not disturb residents.	Complaints from residents about noise generated.	Inspection of complaints logbook	Weekly	ECO	ECO -> Exploration Manager	A logged complaint about above normal noise levels	Revision of site activities
Vehicular Traffic									
Increase in traffic density on declared Roads Authority (RA) roads or damage to these.	Complaints from the public about increase in traffic on the roads. Complaints about damage to RA roads caused by movement of project vehicles and machinery.	To ensure continued ease of access to local roads by residents / communities	No complaints from the public about increase off traffic due to exploration activities	Inspection of logbooks	Weekly	ECO	ECO -> Exploration Manager - > Roads Authority	A logged complaint about traffic increase or damage to RA roads	Find alternative access roads for the workforce. Rehabilitation of affected roads
HIV and AIDS									
Potential increase in HIV and AIDS prevalence.	New HIV or sexually transmitted infections (STIs)	To prevent new infections in the area	No new HIV or STIs infections recorded	Liaison with local health facilities	Monthly	ECO	ECO -> Exploration Manager - > Ministry of Health and Social Services	Recorded new HIV or STIs linked to exploration workers	Continued sex education and provision of condoms
Environmental Pollution (Littering)									
Environmental pollution	Scattered litter	To prevent littering of the	No visible litter around	Visual observation	Daily	ECO	ECO -> Exploration Manager	Visible littering	Clean-up of the affected areas

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
from solid waste during exploration activities.		general project area	the project area					around project site	and ensuring workers utilise waste containers provided.
Visual									
Visual impact owing to the project's exploration activities	Contrasting landscape (eyesore to travellers on the local roads	To prevent and or reduce the appearance of contrasting land scars	Reduction of and minor contrasting landscape in the project site areas	Visual observation	Weekly	ECO	ECO -> Exploration Manager	Major and very visible contrasting land scars on the site areas	Effective implementation of provided measures and continual improvements.
Site Rehabilitation									
Soil and land disturbance because of exploration activities.	Stockpiled topsoil and very disturbed site areas	To prevent major soil / land damage by project activities	No major soil and land disturbance	Visual observation	Daily	ECO	ECO -> Exploration Manager	Visible soil and land disturbance	Effective progressive levelling of topsoil and backfilling of pits / holes

Appendix 1: Chance Finds Procedure (CFP) After Kinahan, 2020

Areas of proposed activities are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development work. The procedure set out here covers the reporting and management of such finds.

Scope: The “*chance finds*” procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The “chance finds” procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): “*a person who discovers any archaeological objectmust as soon as practicable report the discovery to the Council*”. The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Manager/Supervisor must report the finding to the following competent authorities:

- **National Heritage Council (NHC) of Namibia: +264 61 244 375**
- **NHC of Namibia (Technical Office): +264 61 301 903**
- **National Museum: +264 61 276 800**
- **National Forensic Laboratory: +264 61 240 461.**

Archaeological material must NOT be touched. Tempering with the materials is an offence under the Heritage act and punishable upon conviction by the law.

Responsibility:

Operator: To exercise due caution if archaeological remains are found

Foreman: To secure site and advise management timeously

Superintendent: To determine safe working boundary and request inspection

Archaeologist: To inspect, identify, advise management, and recover remains

Procedure:

Action by person identifying archaeological or heritage material:

a) If operating machinery or equipment stop work

- b) Identify the site with flag tape
- c) Determine GPS position if possible
- d) Report findings to foreman

Action by foreman

- a) Report findings, site location and actions taken to superintendent
- b) Cease any works in immediate vicinity

Action by superintendent

- a) Visit site and determine whether work can proceed without damage to findings
- b) Determine and mark exclusion boundary
- c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by Archaeologist

- a) Inspect site and confirm addition to project GIS
- b) Advise NHC and request written permission to remove findings from work area
- c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

- a) Actions as above
- b) Field inspection by archaeologist to confirm that remains are human
- c) Advise and liaise with NHC and Police
- d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.