20MW Solar Power Plant Environmental Management Plan in Naruchas Sub-Station, Hardap Region, Namibia

ENVIRONMENTAL MANAGEMENT PLAN

PROJECT NUMBER: 240725004451

DATE:17 September 2024

Report Compiled for:

Ano Energy (Pty) Ltd

P O Box 29720

Email Address: kkangueehi0@gmail.com

Application number: 240913004685

Compiled by: Augite Environmental Consulting

909 City Street, Windhoek

Cell number: +264 817069027

DATE AND APPROVAL PAGE

Project Name: 20MW Solar Power Plant Environmental Management Plan in Naruchas Sub-Station, Hardap Region, Namibia

Client Company Name: Ano Energy (Pty) Ltd

Client Name: Tirronen Kauluma

Ministry Reference: Dr Ismael Kangueehi

Authors: Dr Ismael Kangueehi

Status of Report: Final for government submission

Project Number: 240913004685

Date of issue:15 September 2024

Review Period:

DISCLAIMER

Augite Environmental cc has prepared this scoping report and the preliminary EMP on behalf of the proponent. This report has been authored by employees of Augite Environmental cc, who have no material interest in the outcome of this report, nor do any of the Augite Environmental cc team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. Augite Environmental cc is independent from the proponent and has no vested or financial interest in the project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of Augite Environmental cc is, or is intending to be, a director, officer, or any other direct employee of the proponent. No member or employee of Augite Environmental cc has, or has had, any shareholding in Augite Environmental cc. Any personal views or opinions expressed by the writer may not necessarily reflect the views or opinions of Augite Environmental cc or its client.

Table of Contents

DEFINITIONS AND ABBREVIATIONS 5
Introduction 6
Project Background 6
Environmental Regulatory Requirements 8
The importance and extent of an EMP 8
MANAGEMENT OF THIS EMP 8
SHORTCOMINGS, UNKNOWNS, AND DRAWBACKS IN RELATION TO THIS EMP 9
ENVIRONMENTAL ASSESSMENT PRACTITIONER 9
Summary of Environmental Management Plan during construction, operation and decommissioning phases 12
Monitoring, Auditing and Reporting 17
Inspections and Audits 17
Internal Inspections/Audits 17
External Audits 17
Documentation 18
Reporting 18
Environmental Management System Framework 18
Policy and Performance Standards 18
Enviro-Legal Documentation 18
Impact Aspect Register 18
Procedures and Method Statements 19
Register of Roles and Responsibilities 19
Site Map 19
Environmental Management Schedule 20
Change Management 20
Closure Plan 21
Alternatives Considered 21

Preferred Alternative: Rehabilitation/ Backfill of excavated zones. 21
Closure Assumptions 22
Closure and Rehabilitation Activities 23
Infrastructure 23
Roads 23
Remediation of Contaminated Areas 24
Vegetation 24
Waste Management 24
Conclusion 26

DEFINITIONS AND ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exploration Prospecting Licence
GPS	Global Positioning System
HSE	Health, Safety and Environmental
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NHC	National Heritage Council
PPE	Personal Protective Equipment
SOPs	Standard Operating Procedures
ToRs	Terms of Reference

Introduction

Project Background

The allocated area is located 18 kilometers north of Rehoboth on the B1 enroute to Windhoek in the Hardap region. The proposed solar power plant will be constructed approximately 20 kilometers from Rehoboth on the Rehoboth Townland. The coordinates for the centre of the allocated plot are -23.173304°, 17.100338°.

The solar power plant substation will assist in the supply of electricity to Namibia in the future and potentially supply electricity to neighbouring countries. The proponent intends to construct a 20 MW solar power plant.

Augite Environmental Consulting was appointed by the proponent to undertake an Environmental Assessment (EA) and Environmental Management Plan (EMP) for the mineral exploration project. Augite Environmental cc has compiled this environmental management plan (EMP) in terms of the Environmental Management Act (EMA) of 2007 and its regulations of 2012. The purpose of this EMP is to support the full environmental impact assessment (EIA) report.

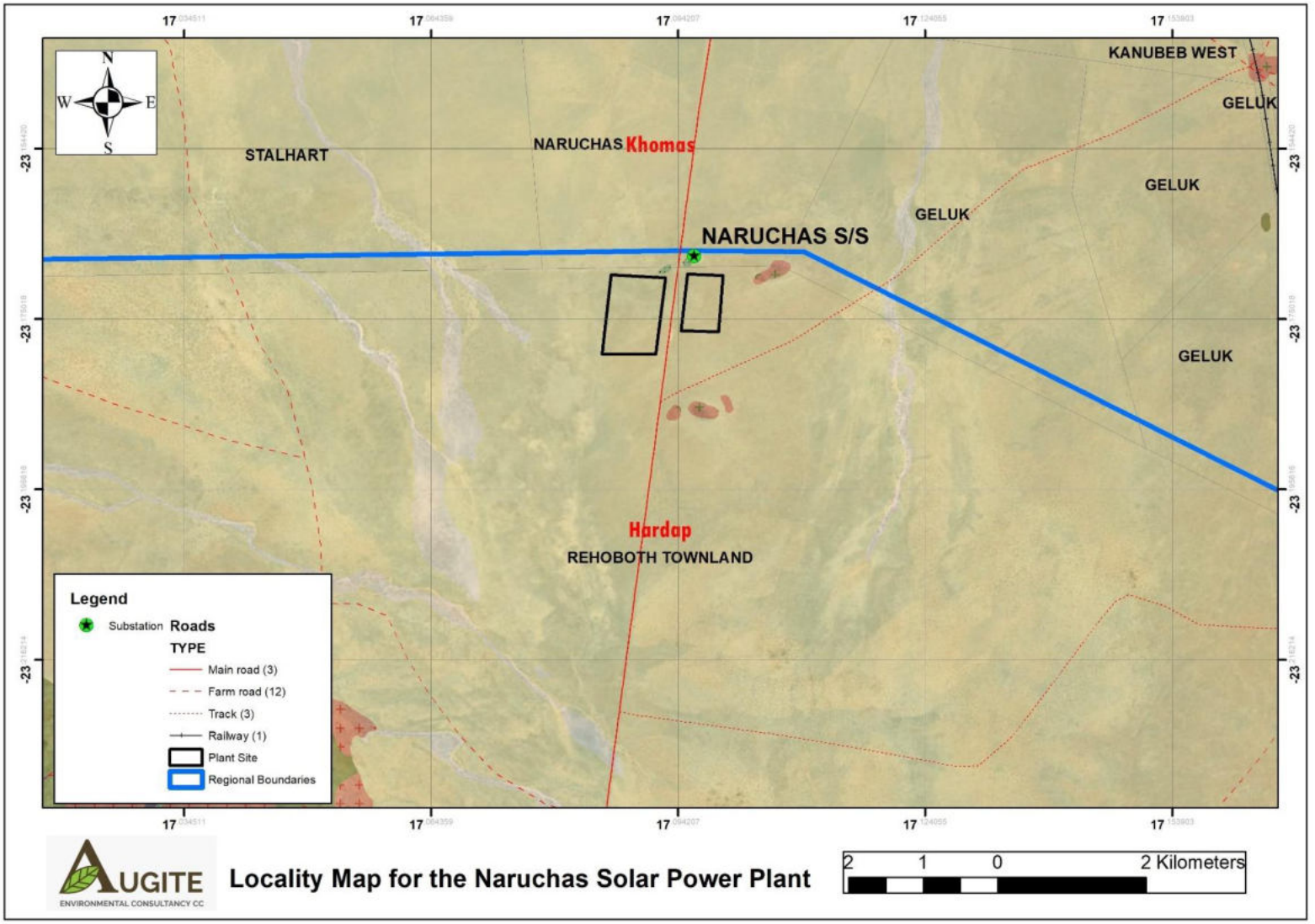

Figure 1. The surrounding roads that connect of the project area to the nearest town which is Rehoboth.

Environmental Regulatory Requirements

The anticipated Project is considered as a listed activity as stipulated in the Environmental Management Act, No. 7 of 2007 and its Regulations, promulgated in 2012. An Environmental Clearance Certificate is a requirement by the Ministry of Mines and Energy before any exploration work might commence on the project. An ECC can only obtained once upon completion of an Environmental Management Plan, Environmental Scoping report and an Environmental Impact Assessment.

This report presents the EMP and has been undertaken in terms of the requirements of the Environmental Management Act, 2007 and its Regulations.

The importance and extent of an EMP

This EMP will cover the logical framework, mitigation measures and management strategies for the anticipated activities associated with the applied project. It is crucial that the possible environmental impacts are reduced and reduced to levels that are very low and that all the environmental management laws and requirements are followed and respected. In terms of implementations, all the stipulated EMP protocols, responsibilities and requirements must be followed. An EMP is an important component of an environmental scoping report and is a backbone of the assessments that need to be carried out before, during and after operations. Hence, the EMP becomes a document that should be constantly reviewed and adhered during the entire operations timeline. An environmental scoping report can be reviewed for additional information on the applied and anticipated project, on how the assessments will be conducted, assessment regulations, laws and the outcomes of the assessment. The proponent's employees, and stakeholders will be legally required to comply with the requirements set out in the final EMP that is completed and approved by the MET.

MANAGEMENT OF THIS EMP

Upon approval from the relevant authorities, the proponent, will hold the environmental clearance certificate for the proposed project and will be responsible for the implementation and management of this EMP. Before the expansion activities commence, this EMP will be reviewed, amended as required and approved ready for implementation. The implementation and management of this EMP, and thus the monitoring of compliance, will be undertaken through daily duties and activities, as well as monthly inspections.

SHORTCOMINGS, UNKNOWNS, AND DRAWBACKS IN RELATION TO THIS EMP

Regulations and compliance which relates to statutory occupational health and safety requirements will be the responsibility of the proponent and are not covered in this EMP. Augite Environmental consultant recommends and advises the proponent to develop a safety management plan. All details and recommendation outlined in this EMP are based on the project description, in case trye project objectives change in the future, the EMP may require updating and potential further assessments to be undertaken again.

ENVIRONMENTAL ASSESSMENT PRACTITIONER

Augite Environmental consultants cc has prepared this preliminary EMP on behalf of the proponent. This report has been authored by employees of Augite Environmental Consultants cc, who have no material interest in the outcome of this report, nor do any of the Augite Environmental Consultants cc team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report Augite Environmental Consultants cc is independent from the proponent and has no vested or financial interest in the project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending to be, a director, officer, or any other direct employee of Epitome Energy (Pty) Ltd. No member or employee of Augite Environmental Consultants cc has, or has had, any shareholding in Epitome Energy (Pty) Ltd.

POLICY AND LEGISLATIVE FRAMEWORK

Table 1. below outline the legislative requirements which are applicable to the operational and maintenance activities

Legislation:	Implications
Environmental Management Act no 7 of 2007	• All activities performed should be in line with the following principles: • Interested and affected parties should have an opportunity to participate in decision making • Listed activities should be subject to an EIA • Polluter should pay for rehabilitation • Pollution should be minimized • Environmental assessments should be carried out for listed activities. The proposed activity can be classified under the following range of activities: • Generation of electricity • Transmission of electricity

	These sections details the process to be followed in order to obtain a clearance certificate. ✓ All existing listed activities must obtain a clearance certificate within one year of the law coming into effect. Therefore, all existing activities which can be considered a listed activity should apply for clearance.
EMA Regulations GN 28-30 (GG 4878) (February 2012)	• This activity can be considered as electricity generation and transmission. ✓ These sections details the process to be followed in terms of producing an Environmental Assessment and this process should be adhered to during the generation of information for this document.
No. 156 Labour Act, 1992: Regulations relating to the health and safety of employees at work .	Children under the age of 16 may not be employed ✓ Forced labour may not be used. ✓ Basic conditions of employment as stipulated by the law must be met. ✓ The employer shall ensure the health and safety of all employees and non-employees on site. Employees must fulfil their duties in order to ensure their own health and safety and that of other employees and persons. Employees may leave the work site if reasonable measures to protect their health are not taken
Electricity Act no 4 of 2007	• Installations used for the provision of electricity should be operated with due compliance with the requirements of laws relating to health, safety and environmental standards. • Therefore – any company involved within the Electricity Supply Industry must adhere to the laws covering the previously stated aspects or stand to lose their licenses to operate.
Water Act no 54 of 1956	• Conditions in terms of the disposal and management of effluent are to be adhered to. • Any person causing pollution to a water source shall be guilty of an offence.
Public and Environmental Health Act no 1 of 2015	• A person generating waste must ensure that the waste generated is kept and stored under conditions that causes no harm to human health or damage to the environment. • Waste must only be disposed of at a waste disposal site, including an incinerator approved by the local authority concerned.
Water Resources Management Act no 24 of 2013	• The owner or occupier or other person in control of land where an incident that causes or is likely to cause a water resource to be polluted must take all reasonable measures to contain and minimize the effects of the incident; and to clean up polluted areas and remedy the effects of the incident.

Hazardous Substances Ordinance 14 of 1974	• To provide for the control of substances which may cause injury or ill-health to or death of human beings, by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; ✓ To provide for the division of such substances into groups in relation to the degree of danger; ✓ To provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and ✓ To provide for matters connected therewith.
Fertilizers, farm feeds, agricultural remedies and stock remedies Act no 36 of 1947	• Arboricide application is defined as an agricultural remedy under this Act ✓ Only registered pesticide may be used. ✓ May only buy herbicides in a container that complies with the prescribed requirements and is sealed and labelled. ✓ Only allowed to use herbicides in the prescribed manner. ✓ Landowners must be notified about applications, and the following information must be supplied: o Purpose of administration o Registered name and number of the product ⁞ Precautions to be taken before, during and after each administration.
The Nature Conservation Ordinance (1975) as amended through the Nature Conservation Amendment Act of 1996	• Permits are required to enter the National Park. Permits are also required for the removal of any protected plant or tree. It also stipulates that no damage may be done to any object of geological, ethnological, archaeological, historical or other scientific interest without the appropriate permits**.**
National Heritage Act No 27 of 2004	Permits are required to enter the National Park. Permits are also required for the removal of any protected plant or tree. It also stipulates that no damage may be done to any object of geological, ethnological, archaeological, historical or other scientific interest without the appropriate permits
Soil Conservation Act no 76 of 1969	Institutions may be ordered by the relevant Minister to construct soil conservation works when and where necessary. ⁞ Fire protection schemes may be implemented to regulate the prohibition of veld burning as well as the prevention, control and extinguishing of veld and forest fires. ⁞ It is illegal to damage, destroy / fail to maintain any soil conservation works; fire belts; works constructed in terms of a fire protection scheme.
Forest Act no 12 of 2001	Vegetation may not be removed within 100 m of a river, stream or water course ⁞ A person shall be liable for damage caused by any fire which arises as a result of activities carried out on site without having taken reasonable measures to prevent a fire.

SUMMARY OF ENVIRONMENTAL MANAGEMENT PLAN DURING CONSTRUCTION, OPERATION AND DECOMMISSIONING PHASES

Table 2. The roles and responsibilities for operational and maintenance activities:

INITIAL PHASE			
ENVIRONMENTAL IMPACT	**PROPOSED MITIGATION MEASURES**	**RESPONSIBILITY**	**MONITORING PLAN**
Air pollution	• Control speed and operation of construction vehicles. • Prohibit idling of vehicles. • Maintenance of vehicles and equipment. • Sensitize field exploration workers and contractors. • Workers should be provided with dust masks if working in sensitive areas.	Contractor Site Manager	Amount of dust produced. Level of Landscaping carried out.
Noise Pollution	Maintain equipment and vehicles. Field work should only be carried out only during daytime i.e. 08h00 to 17h00. Workers should wear earmuffs if working in noisy section. Management to ensure that noise is kept within reasonable levels.	Contractor Management	Amount of noise
Solid waste	• Any debris should be collected by a waste collection company • If trenches are dug, waste should be re-used or backfilled. • The site should have waste receptacles with bulk storage facilities at convenient points to prevent littering during exploration.	Management	Presence of well- Maintained receptacles and central collection point.

Oil leaks and spills	• Vehicles and equipment should be well maintained to prevent oil leaks. • Contractor should have a designated area where maintenance is carried out and that is protected from rainwater. • All oil products should be handled carefully.	Contractor	No spills and leaks on the site
First aid	A well-stocked first aid kit shall be maintained by qualified personnel	Management	Contents of the first aid kit
Visual	Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating.	Management	Employees will be trained on the importance of minimising visual impacts
Archaeological Sites	• Buffer zones will be created around the sites. • Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of mineral exploration activities. • All archaeological sites to be identified and protected before further exploration commences.	Contractor Management	• Register of all archaeological sites identified.
Occupational Health and Safety	• Provide Personal Protective Equipment • Train workers on personal safety and how to handle equipment and machines. • A well-stocked first aid kit shall be maintained by qualified personnel. • Report any accidents / incidences and treat and Compensate affected workers. • Provide sufficient and suitable sanitary conveniences which should be kept clean.	Contractor Management	• Workers using Protective Equipment. • Presence of Well stocked First Aid Box. • Clean sanitary facilities.
Fauna	• Some habitat areas such as trees of the riverbeds and tunnels outcrops will be avoided wherever possible. • A fauna survey will be conducted to determine the effect of fragmented habitat on game species should the need arise. • No animals shall be killed, captured or harmed in any way.	Contractor Management	• Regular monitoring of any unusual signs of animal habitat.

	• No foodstuff will be left lying around as these will attract animals which might result in human animal conflict.		
Alien Invasive Plants	• The explorer will ensure that debris is properly disposed off. • Vehicle tyre inspections can be carried out although this may not be a practical mitigation measure. • Eradicating alien plants by using an Area Management Plan	Contractor Management	• Regular monitoring of any unusual signs of alien species.
Loss of vegetation	• Environmental considerations will be adhered to at all times before clearing roads, trenching and excavating. • Paths and roads will be aligned to avoid root zones. Permeable materials will be used wherever possible. • The movement of vehicles in riverbeds, rocky outcrops and vegetation sensitive areas will be avoided. • The movement of vehicles will be restricted to certain tracks on	Management	• Warning signs on site • restored vegetation
OPERATIONAL PHASE			
Archaeological Sites	• Buffer zones will be created around the sites. • Adhere to practical guidelines provided by an archaeologist to reduce the archaeological impact of mineral exploration activities. • All archaeological sites to be identified and protected before further exploration commences.	Management Contractor	• Update Register of all Archaeological sites identified.
First aid	• A well-stocked first aid kit shall be maintained by qualified personnel	Management	• Contents of the first aid kit.
Fire preparedness	• Firefighting drills carried out regularly. • Firefighting emergency response plan. • Ensure all firefighting equipment are regularly maintained, serviced and inspected.	Management	• Number of fire drills carried. • Proof of inspection on firefighting equipment. • Fire Signs put up in strategic places.

	• Fire hazard signs and directions to emergency exit, route to follow and assembly point in case of any fire incidence.		• Availability of firefighting equipment.
Environment Health and Safety	• Train workers on personal safety and disaster preparedness. • A well-stocked first aid kit shall be maintained by qualified personnel. • Report any accidents / incidences and treat and compensate affected workers. • Provide sufficient and suitable sanitary conveniences which should be kept clean. • Conduct Annual Health and Safety Audits.	Management	• Provide sanitary facilities. • Copies of Annual Audit
Grading	• Dust generation during construction phase	Management	• Inspection and monitoring during operating hours are recommended
Operating plant and equipment	• Working hours should only be between 08:00-17:00 during the week and 08:00-13:00 on Saturdays where sand removal involves the use of power tools and heavy equipment. • Sunday is recommended as a rest day for the workers. • Regular maintenance of sand removal machinery and haulage trucks • Spilled oil should be treated as hazardous waste. • Drip trays for trucks to avoid oil leakages and to be used when refuelling	Management	•Oil spills inspections must be conducted daily. •Regular maintenance must be carried out on the equipment •Visual inspections of the operations must be monitored on a daily basis.
DECOMMISSIONING PHASE			
Environmental/ Social Impact	**Proposed mitigation measures**	**Responsibility**	**Monitoring plan/indicator**
Noise & Air pollution	• Maintain plant equipment. • Decommissioning works to be carried out only during daytime.	Management	Amount of noise

	• Workers working in noisy section to wear earmuffs. • Workers should be provided with dust masks.		
Solid waste	• Solid waste should be collected by a contracted waste collection company • Excavation waste should be re-used or backfilled.	• Contractor • Management	• Amount of waste on Site. • Presence of Well maintained receptacles and central collection point
Occupational Health and Safety	• Provide Personal Protective Equipment. • Train workers on personal safety and how to handle equipment and machines. • A well-stocked first aid kit shall be maintained by qualified personnel. • Demarcate area under decommissioning.	Management	• Workers using Protective Equipment. • Presence of a First Aid Box.

Monitoring, Auditing and Reporting

Inspections and Audits

During the life of the project, performance against the EMP commitments will need to be monitored, and corrective action taken where necessary, to ensure compliance with the EMP and relevant enviro-legal requirements.

Internal Inspections/Audits

The following internal compliance monitoring programme will be implemented:

1.Project kick-off and close-out audits will be conducted on all contractors. This applies to all phases, including drilling contract work during operations:

Prior to a contractor beginning work, an audit will be conducted by the applicable phase site manager to ensure that the EMP commitments are included in Contractors' standard operating procedures (SOPs) and method statements.

Following completion of a contractor's work, a final close-out audit of the contractor's performance against the EMP commitments will be conducted by the applicable phase site manager.

2. Monthly internal EMP performance audits will be conducted during the construction/initial and decommissioning phases.

3. Ad hoc internal inspections can be implemented by the applicable phase exploration manager at his/her discretion, or in follow-up to recommendations from previous inspection/audit findings.

External Audits

At the close of each project phase, and annually during the operational phase, an independently conducted audit of EMP performance will be conducted.

Specialist monitoring/auditing may be required where specialist expertise are required or in order to respond to grievances or authorities directives.

Officials from the DEA may at any time conduct a compliance and/or performance inspection of mineral exploration operations. The proponent will be provided with a written report of the findings of the inspection. These audits assist with the continual improvement of the

exploration project and the proponent will use such feedback to help improve its overall operations.

Documentation

Records of all inspections/audits and monitoring reports will be kept in line with legislation. Actions will be issued on inspection/audit findings. These will be tracked and closed out.

Reporting

Environmental compliance reports will be submitted to the Ministry of Environment and Tourism on a bi-annual basis.

Environmental Management System Framework

In order implement Environmental Management Practices, an Environmental Management System (EMS) will be established and implemented by the proponent and their Contractors. This subchapter establishes the framework for the compilation of a project EMS. The applicable engineering manager will maintain a paper based and/or electronic system of all environmental management documentation. These will be divided into the following main categories:

Policy and Performance Standards

A draft environmental policy and associated objective, goals and commitments has been included in the EMP. The mineral explorer may adapt these as necessary.

Enviro-Legal Documentation

A copy of the approved environmental assessment and EMP documentation will always be available by the proponent. Copies of the Environment Clearance Certificate and all other associated authorisations and permits will also be kept with the exploration team. In addition, a register of the legislation and regulations applicable to the project will be maintained and updated as necessary.

Impact Aspect Register

A register of all project aspects that could impact the environment, including an assessment of these impacts and relevant management measures, is to be maintained. This Draft EMP identifies the foreseeable project aspects and related potential impacts of the proposed project, and as such forms the basis for the Aspect- Impact Register; with the Project Activity. It is however noted that during the life of the project additional project aspects and related impacts

may arise which would need to be captured in the Aspect-Impact Register. In this regard, the impact identification principles set forth in the scoping report can be used to update the Register. This method can be modified as required by the applicable exploration manager as necessary during the life of the project.

Procedures and Method Statements

To affect the commitments contained in this EMP, procedures and method statements will be drafted by the relevant responsible mineral exploration staff and Contractors. These include, but may not be limited:

Standard operating procedures for environmental action plan and management programme execution.

Incident and emergency response procedures.

Auditing, monitoring, and reporting procedures, and

Method statements for EMP compliance for ad hoc activities not directly addressed in the EMP action plans.

All procedures are to be version controlled and signed off by the applicable exploration manager. In addition, knowledge of procedures by relevant staff responsible for the execution thereof must be demonstrable and training records maintained.

Register of Roles and Responsibilities

During project planning and risk assessments, relevant roles and responsibilities will be determined. These must be documented in a register of all environmental commitment roles and responsibilities. The register is to include relevant contact details and must be updated as required.

Site Map

An up-to-date map of the solar power plant site indicating all project activities is to be maintained. In addition to the project layout, the following detail must be depicted:

Materials handling and storage;

Waste management areas (collection, storage, transfer, etc.);

Sensitive areas;

Incident and emergency equipment locations; and Location of responsible parties.

Environmental Management Schedule

A schedule of environmental management actions is to be maintained by the applicable phase site managers and/or relevant Contractors. A master schedule of all such activities is to be kept up to date by the exploration manager. Scheduled environmental actions can include, but are not limited to:

Environmental risk assessment;

Environmental management meetings;

Soil handling, management and rehabilitation;

Waste collection

Incident and emergency response equipment evaluations and maintenance

Environmental training;

Stakeholder engagement; Environmental inspections; and

Auditing, monitoring and reporting.

Change Management

The EMS must have a procedure in place for change management. In this regard, updating and revision of environmental documentation, of procedures and method statements, actions plants etc. will be conducted as necessary in order to account for the following scenarios:

Changes to standard operating procedures (SOPs);

Changes in scope;

Ad hoc actions;

Changes in project phase; and

Changes in responsibilities or roles

All documentation will be version controlled and require sign off by the applicable phase site managers.

Closure Plan

The closure vision for the proposed project is to establish a safe, stable, and non-polluting post-prospecting landscape that can facilitate integrated, self-sustaining and value generating opportunities, thereby leave a lasting positive legacy. The aim of the closure plan is to:

Creating a safe, physically stable rehabilitated landscape that limits long-term erosion potential and environmental degradation.

Sustaining long term catchment yield and water quality.

Focusing on establishing a functional post-prospecting landscape that enables self-sustaining agricultural practices where possible.

To encourage, where appropriate, the re-instatement of terrestrial and aquatic wetland biodiversity

Alternatives Considered

Considering that this is an energy supplying project, the proposed project is not complex, and the risks associated with constructing a solar power plant are understood and can be mitigated at closure. Alternative options for closure are limited. There are only two options that have been considered as activity alternatives for the closure plan:

Preferred Alternative: Closure or Backfill of the excavated areas where solar power plant have with overburden removed during operations.

Alternative 2: To rehabilitate the operated zones with tress, in-order to allow for groundwater recharge by surface run-off.

Preferred Alternative: Rehabilitation/ Backfill of excavated zones.

Rehabilitation is the restoration of a disturbed area that has been degraded because of activities such as digging, clearing of land, road construction or waste disposal, to a land use in conformity with the original land use before the activity started. This also includes aesthetical considerations, so that a disturbed area will not be visibly different to the natural environment. This also involves maintaining physical, chemical and biological ecosystem processes in degraded environments, hence the preferred option of backfilling the sand, gravel and rock removed parts of the river with the overburden removed during development and cover with growth medium to establish vegetation. This option has several advantages as discussed below:

Advantages:

The site will be aesthetically acceptable.

The site will blend in with the environment.

The site will be a suitable habitat for fauna and flora again.

The site will be safe and pollution free.

Revegetating the site will ensure that the site in non-erodible.

Opting for alternative 1, which is to leave boreholes without backfilling poses a risk in that, these boreholes may fill in with water, which may become attractive to wildlife and communities leading to drowning and the risk of being trapped in the declines. To mitigate these risks, it is necessary to backfill. Treatment technologies should be used to prevent decanting.

Closure Assumptions

This closure plan has been developed based on limited available information including environmental data. Some of the information currently available may need to be supplemented during the operational period. Therefore, several assumptions were made about general conditions, and closure and rehabilitation of the facilities at the site to develop the proposed closure actions. As additional information is collected during operations, these assumptions will be reviewed and revised as appropriate.

The assumptions used to prepare this plan include the following:

The closure period will commence once the last planned sand, gravel and rock removal site has been operated.

The proposed prospecting operating sites will be adhered to minimise the potential impacts.

Vegetation establishment will be in line with a project area's indigenous vegetation.

Water management infrastructure developed for the operational phase will be retained for closure /end of the life of the project as necessary.

There are limited opportunities for any infrastructure to be built on site and if any infrastructure is built, it will be of limited benefit to the community.

Therefore, all buildings will be demolished.

All hazardous and domestic waste will be transported offsite for disposal in licensed landfills.

No roads are anticipated to be constructed to access the site; existing roads will be used as far as possible. Where access tracks have been developed in cases where there are no roads, these will be rehabilitated and closed as part of normal closure actions.

Closure and Rehabilitation Activities

The rehabilitation actions intended to be undertaken at the end of the life of the proposed prospecting activities are described below.

Infrastructure

All infrastructures will be decommissioned, and the footprints rehabilitated for the establishment of vegetation. Material inventories will be managed near the end of prospecting activities to minimize any surplus materials at closure. Where practicable, equipment and materials with value not needed for post-closure operations will be sold and or removed from the site. Equipment with scrap or salvage value will be removed from the site and sold to recyclers. A soil contamination investigation will be conducted on completion of demolition activities. The purpose of this is to identify areas of possible contamination and design and implement appropriate remedial measures to ensure that the soil contaminants are removed. Closure actions will include:

All power and water services to be disconnected and certified as safe prior to commencement of any decommissioning works.

All remaining inert equipment and decommissioning waste will be disposed to the nearest licensed general waste disposal facility.

Salvageable equipment will be removed and transported offsite prior and during decommissioning.

All tanks, pipes and sumps containing hydrocarbons to be flushed or emptied prior to removal to ensure no hydrocarbon/chemical residue remains.

Roads

Existing roads will be used as far as possible. Closure actions concerning roads and parking areas will include:

Removal of all signage, fencing, shade structures, traffic barriers, etc.

All ‘hard top’ surfaces to be ripped along with any concrete structures.

All potentially contaminated soils are to be identified and demarcated for later remediation; and

All haul routes that have been treated with saline dust suppression water need to be treated, with the upper surface ripped and removed to designated contaminant disposal areas.

Remediation of Contaminated Areas

All soil, contaminated with hydrocarbons, will be identified, excavated, if possible, to at least 200 mm below the contaminated zone and then treated.

All tanks, pipes and sumps containing hydrocarbons will be flushed or emptied.

Removed soils will be managed as determined by the nature and extent of the contamination.

Liquid storage tanks will be emptied, the structure removed/demolished and sub-surface holes filled; and

All equipment in which chemicals have been stored or transported will be cleaned and disposed of in a suitable disposal facility.

Vegetation

Successful revegetation will help control erosion of soil resources, maintain soil productivity, and reduce sediment loading in streams utilizing non-invasive plants that fit the criteria of the habitat (e.g. soils, water availability, slope and other appropriate environmental factors). Invasive species will be avoided, and the area will be managed to control the spread of these species.

To counter the effects of erosion, naturally occurring grassland species will be planted on slopes. These species will provide soil holding capacity and reduce runoff velocity. The flatter areas will be re-vegetated with the objective of creating a sustainable ecosystem. The occurrence of protected plant species will need to be determined before vegetation is removed and the required permits will be obtained for either destruction or relocation.

Waste Management

Waste management activities will include:

Hazardous waste will be managed handled, classified, and disposed.

Non-hazardous will be disposed in the nearby licensed landfill site.

Scrap and waste steel will be sold to recyclers.

It may be necessary to fence temporary salvage yards for security reasons, particularly where these are located close to public roads.

Conclusion

The environmental management plan report is prepared for the Environmental Impact Assessment for Ano Energy (Pty) Ltd, was provisionally granted land to construct a solar power plant close to the Naruchas sub-station in the Hardap region. Environmental management plan is a critical step in the preparation and evaluation of an EIA for the construction and setting up a solar power plant in the area. In most cases, operation once completed will not be complicated. The methods that will be employed are mainly minimal clearing of land, using an excavator to the required and allocated area of interest.

All management measures and legal requirements outlined in this EMP should be implemented to ensure environmental compliance by all parties undertaking the operational activities. This will ensure that potential negative impacts are identified, avoided or mitigated and positive impacts are enhanced. It is unlikely that the operation and maintenance of the transmission line and station will have significant environmental and social repercussions and it is therefore recommended that the ECC is issued.

With the potential employment of 150 people, this means that 150 families will benefit from the project during the clearing and planting phase of the project. The project has great potential to improve livelihoods and contribute to sustainable development within the surrounding community.

Several other potential impacts have been addressed in Section 5 and 6 of this EIA, and will be managed through the implementation of the EMP. The EMP contains a set of Environmental Specifications that will form part of all contracts between the proponent and contractors such as lubrication companies. The requirements of the EMP will be enforced on site by the Management team, and periodic environmental audits will be undertaken and submitted to MET. This EIA has been subject to a few limitations, which are explained as follows: the time available in which to secure an environmental contract with the authorities; and, the limited botanical work done to date did not raise any concerns but will be monitored on an on-going basis. If any “special” species of plants are found, these will be located by GPS. An addendum will then be added to the EMP to indicate localities that should be avoided, or to implement other appropriate measures about any special plants.