ENVIRONMENTAL IMPACT ASSESSMENT: THE DEVELOPMENT OF A 20MW SOLAR PHOTOVOLTAIC (PV) POWER PLANT AT KHAN SUBSTATION IN USAKOS, ERONGO REGION-NAMIBIA.

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

DATE: JULY 2021

D&P ENGINEERS
AND ENVIRONMENTAL CONSULTANTS
"Purpose with Passion"

AUSSENKJER ENERGY INVESTMENT (PTY) LTD

ACCESS

The Development of a 20mw Solar Photovoltaic (PV) Power Plant at Khan Substation in Usakos, Erongo Region-Namibia

Environmental Management Plan (EMP)

Environmental Management Plan for
Access Aussenkjer Namibia IPP Consortium

P.O. Box 73766
Dubai
UAE

D&P Engineers and Environmental Consultants (Pty) Ltd.

20 Joseph Ithana Mukwayu street
Ludwigsdorf
Windhoek-Namibia
PO Box 8401, Bachbrecht,
Telephone: +264 (61) 302 672/ 081299 8444
Facsimile: +264 (61) 255 207
tdavid@dpe.com.na
https://www.facebook.com/DP-Engineers-and-Environmental-Consultants-193970370936785/

Project Number APP- APP-002793

July 2021

Compiled by:

D&P Engineers and Environmental
Consultants (Pty) Ltd
Email: info@dpe.com.na
Authors:
Tendai E. Kasinganeti

Contents

List of Figures

List of Tables

Definitions

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA (R)	Environmental Impact Assessment (Report)
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Plan Report
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

i. Purpose of This Environmental Management Plan

This Environmental Management Plan follows on environmental flaws associated with the proposed project, which were identified through the Environmental Scoping Report. A conscious decision was made based on the recommendations and guidelines by the Directorate of Environmental Affairs EIA guidelines in order to assess both significant and less significant environmental impacts proposed by the development. The developed Environmental Management Plan (EMP) for this proposed activity will have to be effectively implemented by the client, to ensure that adverse environmental impacts are not considered.

The framework within which this EMP is developed includes identifying various activities, their occurrence in the construction and operation processes and the likely impacts that are associated with those activities.

It is therefore necessary to subcategorize the EMP into Construction and Operational activities. The first category of the EMP which deals with project activities identified and highlight the activities impacts and the phases they are likely to occur. In this respect, this EMP alludes on anticipated construction activities and the mitigation measures that will need to be applied to reduce the severity of the impacts the proposed development may have on the surrounding environment. This will also include rehabilitation measures that will need to be implemented once the construction is completed and how to continuously monitor the plant in accordance to monitoring parameters highlighted herein.

ii. EMP PRINCIPLES

The following principles have informed the compilation of this environmental management Plan:

- The environment is considered to be composed of both biophysical and social components.
- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- Development must be socially, environmentally and economically sustainable.
- Construction, in general, is a disruptive activity and all due consideration must be given to the environment, particularly the social environment, during the execution of the project to minimize the impact on the affected parties.
- Minimization of areas disturbed by construction activities will reduce the severity of the construction related environmental impacts and reduce rehabilitation requirements and costs.
- As minimum requirements, relevant standards relating to international, national, regional and local legislation, where applicable, shall be adhered to. This includes

requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinance etc.

- Reasonable measures to avoid pollution and environmental degradation are to be provided for.
- The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling, or minimizing further pollution, environmental damage or adverse health effects must be paid for by the person responsible for harming the environment.
- The responsibility for the environmental, health and safety consequences of the proposed development exists throughout its life cycle

1. CHAPTER ONE: BACKGROUND

1.1. Introduction

Access Aussenkjer Namibia (AAN) herein referred to as the proponent has been awarded an Independent Power Producer (IPP) for the development of a 20 MW Solar Photovoltaic (PV) Power Plant at Khan Sub Station at Usakos on a Build-Own Operate (BOO) basis by NAMPOWER. In this respect, the proponent intends to establish the 20MW solar power (PV) plant and associated structures at Khan Sub Station in Usakos, Erongo Region-Namibia.

In terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)) and the Environmental Assessment Regulations of 2012; an EIA is required to obtain an Environmental Clearance Certificate from the Ministry of Environment and Tourism (MET) before the proposed project can proceed.

Furthermore, as per the requirements of the Environmental Management Act No. 7 of 2007, Access Aussenkjer Namibia has appointed D&P Engineers and Environmental Consultants (DPEE) to conduct an Environmental Assessment (EA) and develop an Environmental Management Plan (EMP) for the development. This has been followed by an application for Environmental Clearance Certificate (ECC) to the Ministry of Environment and Tourism (MET): Directorate of Environmental Affairs (DEA).

In this respect, this document forms part of the application to be made to the DEA's office for an Environmental Clearance certificate for the proposed 20 MW PV plant, in accordance with the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts regulations (GN 30 in GG 4878 of 6 February 2012).

1.2. Project Location

The proposed solar PV plant is to be conducted on a 100-hectare land portion in Usakos, Erongo Region-Namibia. The exact project area coordinates are as follows:

A) 22°05'58.1"S / 15°15'05.4"E. b) 22°08'17.5"S / 15°17'14.7"E
c). 22°07'43.8"S/ 15°18'30.3"E. d) 22°05'31.6"S / 15°18'11.5"E

Additionally, a project Locality map is on Figure 1.

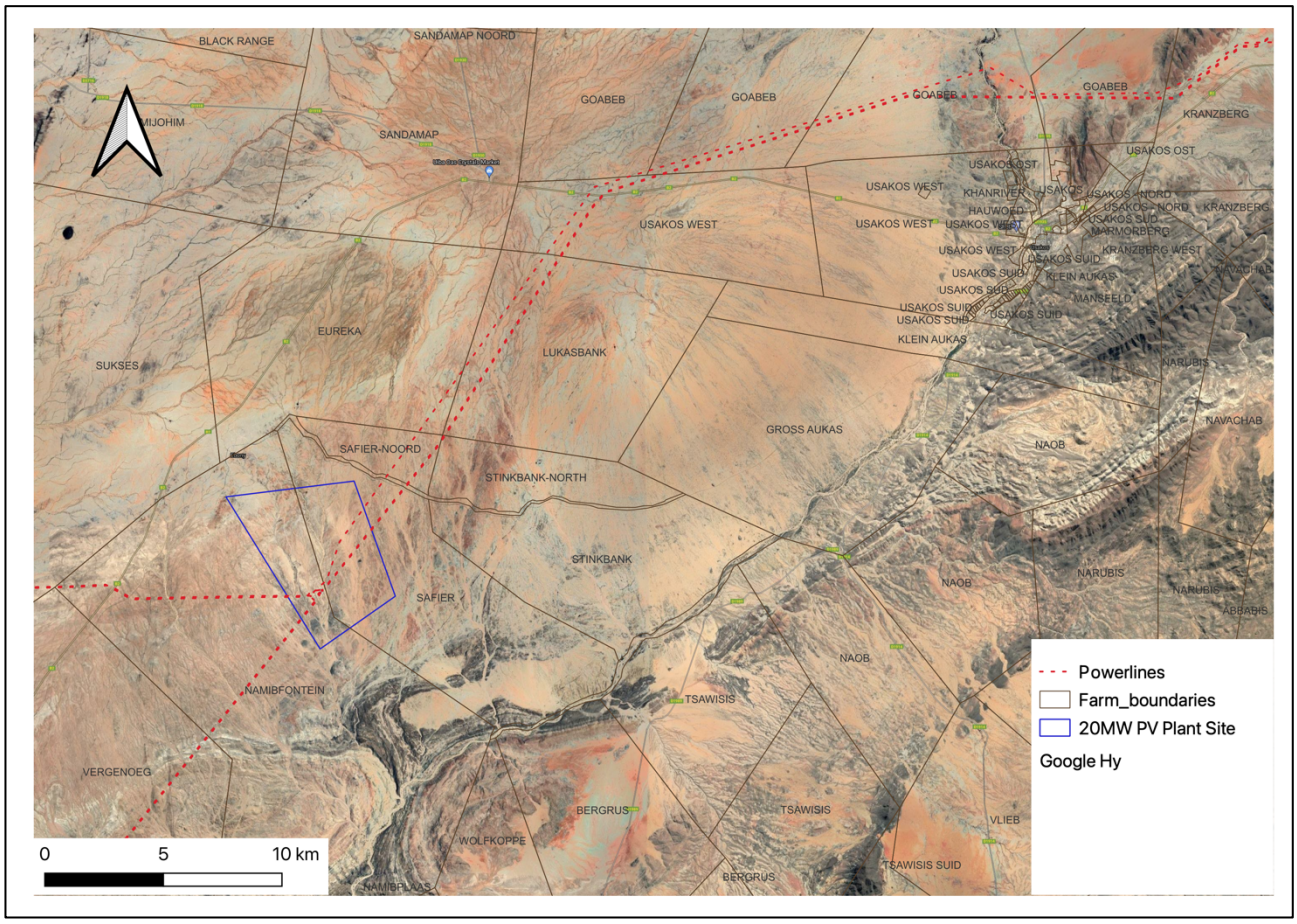

Figure 1: Proposed Project Site.

2. PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

This EMP has been developed for the proposed establishment of a 20 MW PV plant at Khan substation in Usakos. It forms the operational framework within which the proposed project is to operate within. All anticipated environmental and social impacts identified in the environmental scoping report are addressed, with a mitigation action, monitoring requirements, key indicator and responsibilities.

This EMP is incessant, and it requires compliance monitoring, updating and or amendment if the scope of operations change. All personnel working on the project will be legally required to comply with the standards set out in this EMP.

This section describes the Environmental Management Plan (EMP) for impacts associated with the proposed development. The EMP stipulates the management of environmental programs in a systematic, planned and documented manner. The EMP below includes the organizational structure, planning and monitoring for environmental protection at the proposed farm area development and other areas of its influence. The aim is to ensure that the proponent maintains adequate control over the project operations to:

- To prevent negative impacts where possible;
- Reduce or minimise the extent of impact during project life cycle;
- Prevent long-term environmental degradation.
- Ensure public safety and health is protected

2.1. Legal and Other Requirements Compliance

This report presents the EMP and has been undertaken in accordance with the requirements of the Environmental Management Act, No. 7 of 2007 and the Environmental Assessment regulations of 2012. As such, key requirements in accordance to this Act, classifies the proposed project as listed and invokes the need for an environmental management plan to sustainably implement this project. However, legal compliance is not only limited to the EMA, but also applies to all applying legal requirements identified in the ESR. When licenses are required such as wastewater discharge, the proponent should ensure that all licenses and permits are obtained and fulfilled as per conditions.

2.2. The EMP Administration

There is a strong need to clearly outline the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. There is also a need for the proponent to appoint an overall responsible person (Site Manager) to ensure the successful implementation of the EMP.

It solely remains the responsibility of AAN to ensure;

- That all members of the project team, including contractors, comply with this EMP;
- That all personnel are provided with sufficient training, supervision, and instruction on the EMP; and
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

3. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The proposed PV plant development will have environmental impacts as indicated in the Environmental scoping report. This section describes the Environmental Management Plan (EMP) for impacts associated with the proposed development. The EMP stipulates the management of environmental programs in a systematic, planned and documented manner. The EMP below includes the organizational structure, planning and monitoring for environmental protection at the proposed project development and other areas of its influence. The aim is to ensure that the proponent maintains adequate control over the project operations to:

- To prevent negative impacts where possible;
- Reduce or minimise the extent of impact during project life cycle;
- Prevent long term environmental degradation.

3.1. EMP Administration

There is a strong need to clearly outline the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. To ensure that the EMP is effectively implemented, the consultant also recommends that MET: DEA also conduct regular inspection visits on site to enforce conducting of quarterly and biannual reports.

Furthermore, there is also a need for the proponent to appoint an overall responsible person (project manager) to ensure the successful implementation of the EMP as highlighted below:

Table 1: Roles and Responsibilities in EMP Implementation

ROLE	ENVIRONMENTAL RESPONSIBILITIES
Access Aussenkjer Namibia	Responsible to enforce EMP implementation during construction and operation phases.
Environmental Control Officer (ECO)	Implement, review and update the EMP. • Ensure all reporting and monitoring required under EMP is undertaken, documented and distributed as needed • Conduct environmental site training (tool box talks) and inductions with the support of an environmental consultant. • Conducts environmental audit at work site with the support of environmental consultant. • Close out all non-conformances. • Ensure materials being used on site are environmentally friendly and safe.
The Directorate of Environmental Affairs	Approve the EMP and any amendments to the EMP. • Approve reports of environmental issues and non-conformances as issued. • Review and approve environmental reports submitted as part of EMP implementation • Ensure that the client is compliant to the EMP through biannual reporting on environmental performance.
Project Manager	Control and monitor actions required by the EMP. • Report all environmental issues to HSE Manager. • Ensure documented procedures are followed and records kept on site. • Ensure any complaints are passed onto the management within 24 hours of receiving the complaint.
Contractors	Follow requirements as directed by the EMP when conducting work. • Report any potential environmental issues to site engineer/project manager, indicating spilt oil, excess waste, excessive dust generation, dirty water running off the site and other possible non-conformances. Ensure monthly ESG reporting.

Table 2 : Construction and Operation EMP (C&O EMP)

Impact	Description	Mitigation/ Management Action	Monitoring Requirements	Responsibility
Camp Set up and Drilling Phase Impacts				
Noise pollution	Noise will be generated through: -Access roads upgrading -Construction activities -PV plant operation activities and maintenance.	- A construction interval will be established, used and adhered to. - Workers will be issued earplugs to protect them from excessive noise. - Public will be notified through printed timetable stating planned operational activities. - Construction activities will be conducted during daytime. -Site notices will be erected on, around the site-notifying visitors, and nearby residents of different hazards on site. -No go areas marked as sensitive environments, especially for birds needs to be avoided during construction and	-Daily Observations -Monthly Monitoring	Project Manager
Dust Generation	Dust will accumulate because of the land preparation, onsite movements of vehicles and machines, wind blowing on loose material during construction and tipping.	- Dust suppression will be done through watering dust sources surfaces. -Watering down dusty surfaces, -Ensure that protective equipment such as respirators are distributed to employees, and ensure their use. -Site notices to be erected on and around the site to inform visitors and surrounding residents. -Fallout dust monitoring will be conducted.	-Daily Observations -Monthly Monitoring	Project Manager
Loss of Biodiversity	-Vegetative plants on site will be removed -Habitat destruction for both ground dwelling species and tree dwelling species. -Soil disturbance on and around the site.	- The proposed project area is already disturbed, hence there is little vegetation to be affected by the development. - All the major trees will be preserved and the layout plan will fit into the environment without affecting the trees. - Ground disturbance will only be limited to the boundary area to avoid affecting a large area. -Upon completion of construction activities more trees and lawn will be planted on and around the site to restore the site into a status that is environmentally friendly. -When necessary a permit must be obtained from the Directorate of Forestry before removing a major tree species (In this respect, a permit is not necessary to be obtained for land clearance for MAWF)	-Daily Observations -Monthly Monitoring	Project Manager

Impact	Description	Mitigation/ Management Action	Monitoring Requirements	Responsibility
		- All protected species must not be removed must be clearly marked and such areas fenced off. - Utilise existing tracks and roads where possible. - During vegetation clearing avoid killing and/or hunting of animals.. -The Mitigation Plan in the Fauna and Flora Specialist Study should be followed and implemented, mainly through identification of protected plants and relocation of the plants through Namibia botanical gardens. -Protected species removal/relocation permits should be obtained prior to construction and land clearing.		
Greenhouse gas emissions	Green House Gasses (GHGs) emissions will be produced from the following activities: • Fuels combustion for transport (construction vehicles and equipment) • Ground excavation releases phosphorus found underground and releases particulate matter into the atmosphere.	-Design an operation system that cuts on fuel consumption. - Use of solar energy system during construction for lighting and other minor energy needs.	-Daily Observations	Project Manager
Pollution from construction activities	Construction is associated with a use of machinery, material supplements and generation of waste on site	- Ensure that all waste from is stored and contained in designated containers and transported to the nearby waste disposal site. -Adequate ablution must be provided at the construction site for the use of the workers. -Waste bins will be put on site and regularly emptied to handle domestic waste.	-Daily Observations -Borehole and Surface water monthly monitoring (level and quality)	Project Manager
Hydrocarbons release into the environment	There will be no storage of oils and fuel on site, however there is risk of spillage of hydrocarbons from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental contamination	-Implement a maintenance programme to ensure all vehicles, machinery and equipment are remain in proper working order -Vehicle maintenance should be Conducted in designated areas only, preferably off-site. -Waste oil, fuels and other chemicals from drip trays on stationery vehicles and machinery will be disposed of as hazardous waste at a licensed facility by a specialist hazardous waste handler.	-Daily Observations	Project Manager

Impact	Description	Mitigation/ Management Action	Monitoring Requirements	Responsibility
		-Oil residue will be treated with oil absorbent material such as Drizit or bio-remediation and removed to an approved waste disposal site -No bins containing organic solvents such as paint and thinners shall be cleaned on site, unless containers for liquid waste disposal are provided on site.		
Safety and Health risks	Electricals related Safety and Health hazards	- Equip workers with Personal Protective Equipment (PPE), provide trainings on how to effectively use the PPE. -Provide platforms for briefings and meetings about possible safety and health hazards in the work place -Provide site signs warning and informing about different hazards on site.	-Daily Observations	Project Manager
Land use change	The existing environment will drastically change from a dormant piece of land to a PV plant.	The development should blend into the existing area through designing and colour coding. -Green designing will bring life to the site and blend with surrounding areas	-Pre-construction	Project Manager
Resources consumption	The construction industry can be resource intensive, i.e. water resources. Additionally water requirements for cleaning the PV panels could also be required during operation	-Water saving should be ensured by the site manager i.e. repairing leakages, opening taps only when water is required and recycling of water on site	-Pre-construction	Project Manager
Flooding and Storm Water	-The area is potentially prone to flooding after alterations to the local topography.	-Standard storm water drainage will be part of the water reticulation designs indicating the storm water deposit areas During construction all access tracks and the compound area will be constructed using permeable granular materials. - Vehicular movements will be restricted to the access tracks and designated areas where possible to avoid or limit soil compaction, which could have a detrimental impact on infiltration rates. -The ground conditions are sandy hence the use of vehicles on-site is unlikely to create muddy conditions, which may in-turn increase suspended solids levels in surface water run-off. -All run-off is likely to dissipate naturally to ground, however standard storm drains are going to be installed around the project area to avoid water flowing into nearby properties.	-Pre-construction	Project Manager

Impact	Description	Mitigation/ Management Action	Monitoring Requirements	Responsibility
		- During operation the following design features will reduce the risks from surface water run-off from solar panels by promoting dispersion and infiltration: • The gap between panels will be sufficient (typically 20 mm) to allow drainage to ground rather than onto adjacent panels. • The ground surface around and between the frames will be maintained as grass to ensure that bare soil areas are minimised. • The vegetated gap between rows of frames will be of greater width than that of each row of solar panels. • Groundcover vegetation will be maintained in good condition in those areas receiving runoff from solar panels. • The surface gradient is generally less than 10% across the site and therefore run-off is expected to remain dispersed and unlikely to form channels. • Broad grass strips around the edge of the array will also act to impede drainage of surface water to field margins		
Population Influx	The project will bring in skilled and unskilled workforce into the project area from other places increasing population density in the area.	-Train and brief employees to respect local cultures and leaders, -Engage on massive sexual health training and awareness and providing contraceptives such as condoms, as well as provide means counselling for those that are affected by HIV/AIDS and other STDs, - Provide environmental trainings and continue a regular basis briefing the employees about nature conservation (animal and plants), and discourage indiscriminate vegetation clearance.	-Daily Observations	Project Manager
Employment creation	The proposed project provides an opportunity of outsourcing work	- Work with local leadership (councillor) on acquiring non-skilled labour from the residents.	-Daily Observations	Project Manager
Business linkages	-Raw materials acquiring and contracting companies provide an opportunity for businesses.	-The proponent will outsource most of its materials and services from the surrounding areas.	-Daily Observations	Project Manager
Infrastructure development	The development presents a unique opportunity for infrastructure development in Bethanie.	-Development such as road upgrading will not only be limited up until the project site, but it will be extended to service other residents as well.	-Daily Observations	Project Manager

3.2. Monitoring Environmental Managment Programme

3.2.1. Overview

The following management plans need to be implemented during the construction, operation and rehabilitation phases phase of the proposed Solar PV Farm.

- Construction Management Plan;
- Operation Plan;

Many of the issues to be addressed in these plans are regulated in existing laws, regulations and guidelines. In addition, it is recognized that the content of several plans will be generic, in the sense that existing procedures are documented in standard code of practice, and that adaption of such generic plans will only be possible as a dynamic process during the construction phase.

3.3. Construction Management Plan

The environmental management programme to be implemented by the proponent shall include the following key measures:

3.3.1. Management of Construction Site

1. The construction contractor shall comply with all relevant laws and regulations concerning water provision, sanitation, wastewater discharge and liquid and solid waste handling and disposal. The contractor is referred to the requirements of the EMA.
2. The campsite will be access controlled to prevent the access of livestock and local fauna.
3. The contractor shall not locate the campsite, or sanitation facilities, in any areas in which vegetation is pristine, nor within 100 m from any watercourse.
4. The contractor shall at all times carefully consider the machinery required for the desired task while minimizing the extent of environmental damage.
5. The contractor shall keep construction campsites clean and tidy at all times. The contractor shall not leave domestic waste uncontained, and temporary storage shall be enclosed to keep out people and animals. No permanent domestic waste disposal shall be permitted at the campsites. All domestic refuse is to be removed to an existing licensed landfill site.
6. The contractor shall take specific measures to prevent the spread of veld fires, caused by activities at the campsites. These measures may include appropriate instruction of employees about the fire risks and the construction of firebreaks around the site perimeter.

7. All vehicles and plant will be allocated a dedicated parking area in the camp site. Plant still standing for long periods of time will be provided with a drip tray in order to contain any possible hydrocarbon spills. Drip trays will be provided with absorbent material on a permanent basis.
8. Adequate firefighting equipment shall be made available and maintained on site.
9. Decommissioning of the campsite will involve removal of all compacted platforms and slab foundations or as agreed with the land owner.

3.3.2. Management of Fuels and other Hazardous Materials

10. The contractor shall comply with all applicable laws, regulations, permits and approval conditions and requirements relevant to the storage, use and proper disposal of hazardous materials.
11. The contractor shall manage all hazardous materials and wastes in a safe and responsible manner, and shall prevent contamination of soils, pollution of water and/or harm to people or animals as a result of the use of these materials.
12. Should soil be contaminated by hazardous substances, soil will be removed and disposed of at a registered hazardous waste disposal facility.
13. The contractor shall not construct fixed fuel storage or refuel any vehicle or equipment within 100 m from a watercourse or wetland, within a floodplain, or where there is the potential for spilled fuel to enter a watercourse or groundwater. Should it not be possible to establish such facilities outside the 100 m zone, the contractor shall ensure that the necessary precautions to prevent and clean up spillages.
14. The contractor shall enclose all fixed storage.
15. The contractor shall place on – site tools and equipment, such as pumps, compressors, and generators on impermeable sheeting (i.e. polyethylene or other similar materials) to prevent hydraulic fluid or fuel leaks from contaminating soils or groundwater or entering any watercourse or wetland.
16. The contractor shall take all reasonable precautions to prevent fuel and lubricant spills during the course of construction. To this end, the contractor shall ensure that regular audits are performed to verify that no leakage or defective equipment is brought onto site.

17. The contractor shall ensure that there is sufficient spill containment and absorbent material available on site to manage accidental spills. The contractor shall immediately clean up accidental spillages of fuel and oils, or other hazardous substances.

3.3.3. Management of the Construction Footprint

18. The contractor shall prevent littering and the random discard of solid waste on the site.
19. The contractor shall manage hazardous waste.
20. The contractor shall ensure that all areas marked as sensitive areas with protected species such as mountain aloe should be avoided and preserved at all times, in consultation with the ECO and farm owners.
21. The contractor shall minimize the risk of fires.
22. The contractor shall prevent trespassing on the site.
23. The contractor shall prohibit, and actively monitor and prevent, poaching or harassment of wild animals by contract employees.
24. The contractor will ensure that travelling speeds do not exceed 10 km/h and shall ensure that this restriction is enforced. This may include, but not limited to, the monitoring of vehicle speeds and the erection of speed limit signs.

3.3.4. Management of Dust and Noise Nuisance during construction and operation

25. The contractor shall control dust along the construction footprint so as to ensure that no detrimental effects to occupiers of the land or general public are caused. Control measures to be considered include the use of water browsers to wet down surfaces that have been denuded and which have the potential to generate dust.
26. Wetting of denuded areas, including the topsoil stockpile, will be done in such a manner than only enough water is utilized for dust suppression, and to ensure no unduly runoff is caused.
27. The contractor shall comply with legal requirements for the management of noise impacts.
28. The contractor's employees shall not make recreational use of all – terrain vehicles or motorcycles on site.
29. An appropriate freeboard will be enforced for trucks hauling dirt, sand, soil and other lose materials. All material transported by trucks will be covered to prevent undue nuisance dust during transportation.
30. Fallout dust monitoring will be conducted on a 28/ day cycle during construction.

31. Groundwater level and quality monitoring will be conducted monthly.
32. Surface water quality monitoring will be conducted, if any is present.

3.3.5. Waste Management

33. Temporary storage of construction waste will be limited to within the construction camp site, and areas designated.
34. The contractor shall be responsible for the collection and removal of waste from the construction site.
35. The contractor shall arrange for the removal of waste on a weekly basis to a registered landfill site. Records of this disposal shall be kept on site.
36. Hazardous waste will be separated from domestic waste and stored is demarcated bins.
37. Hazardous waste bins will be stored on a hard standing surface, covered and made water tight.
38. Safe disposal certificate will be obtained from the sub-contractor appointed for the removal of hazardous waste, and will be in adherence to the EMA Act and the Walvis Bay Municipality waste management guidelines and by-laws.
39. The contractor shall respect the property and rights of the landowners and occupiers at all times and shall treat all such persons with courtesy.
40. Access over land, the integrity of fences, the closure of gates, control of veld fires, littering, dust control, noise abatement, harassment of animals, sedimentation and contamination of surface and ground water, damage to landscape and vegetation, and all such environmental matters, shall be controlled as far as practical by the contractor in the best interests of the proponent.

3.3.6. Complaints Register

41. The contractor and proponent shall establish and maintain a register for periodic review by the Project Management Team that logs all complaints raised by I&APs about the construction and operational activities.
42. The register shall be regularly updated and maintain records, including the name of the complainant, his/her domicile and contact details, the nature of the complaint and if any action was taken to rectify the problem.

3.3.7. Rehabilitation Plan

43. The contractor shall restore the construction footprint to the natural contours of the ground and shall allow normal surface drainage, as far as practical.
44. The contractor shall loosen compacted soils along the construction footprint by means of a plough or scarified. Scarifying areas where topsoil has been removed shall be carried out prior to the replacement of topsoil. Care shall be taken to avoid topsoil inversion if scarifying is carried out in areas where topsoil has not been removed. Any ripping or scarifying operations shall not exceed a depth of 100 mm.
45. The contractor shall prevent concentrated runoff along, or next to, the construction footprint, and shall do so by shaping the land, establishing vegetation, and taking other appropriate measures to absorb and disperse runoff.
46. In places where erosion control is required, including gullies, watercourses, large depressions, and steep slopes, the contractor shall construct diversion banks across the construction footprint to divert the flow of water away from the construction area and into the natural drainage courses.
47. Where the land is naturally armoured with surface rock or stone, the contractor shall, after construction, replace the armouring over the construction footprint to protect against erosion.
48. **An ECO should be contracted to conduct quarterly reports before the triennial renewal period.**

4. CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS

4.1. Recommendation from Environmental Assessment Practitioner

Based on the information provided it is the opinion of D & P Engineers and Environmental Consultants cc that no fatal flaws have been identified for the proposed development and that the information contained in this report is sufficient enough to allow DEA to make an informed decision.

The Environmental Consultant therefore recommends that Environmental Clearance be granted for the proposed development based on the following recommendations:

- The proposed activity is not anticipated to have significant environmental impacts.
- The following recommendations should be implemented in order to ensure that potential impacts associated with the establishment and operation of the site are minimised:
    i. Any areas disturbed during construction and operation must be rehabilitated.
    ii. Species relocation should be implemented.
    iii. Construction to take place during working hours.
    iv. Trampling and disturbance associated with construction should be limited to within 5m (five metres) of the footprint of the site.
    v. On completion of the project all litter and construction debris shall be immediately removed from the site.
    vi. Mitigation measures to reduce the potential visual impact should be implemented as far as possible.