ENVIRONMENTAL MANAGEMENT PLAN (EMP)

FOR THE

Establishment of a 5 MW Solar Photovoltaic Power Park, Omaheke

Prepared for:

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List of Acronyms

DEA	Directorate of Environmental Affairs
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
I&AP	Interested and Affected Parties
MET	Ministry of Environment and Tourism
MW	Megawatt
PV	Photovoltaic
ToR	Terms of Reference

1. INTRODUCTION

Erongo Diagram Investments Pty Ltd in association with Messrs Capital Resources Services (PTY) Ltd, intend to establish a solar photovoltaic plant on a portion of Farm Groot Quinta 976, approximately 45km east of Gobabis in Omaheke region. The objective of the project is to harvest solar radiation that will generate electricity and be fed into Namibia's national power grid via NamPower substation Omaere – Ghanzi.

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1.2 Why an EMP?

The Environmental Management Act no.7 of 2007 requires that, each development projects in Namibia should conduct an Environmental Impact Assessment and thus develop an Environmental Management Plan after which an application for an Environmental Clearance Certificate will be made. The purpose of the Environmental Management Plan (EMP) is to prevent any negative environmental impacts and to ensure those that do happen are kept to the minimum by providing this practical and achievable plan of management.

1.3 Objectives of this EMP

The purpose of the Environmental Management Plan (EMP) is to provide measures for the mitigation and management of potential negative impacts and the optimization of potential positive impacts that may be associated with the proposed project during the construction, operational and potential decommissioning phases.

The need for compliance and the need for monitoring compliance by inspection are explained as well as various role players and their responsibilities and reporting procedures are contained within this EMP.

1.4 Environmental sensitive areas at the Project Site

- The site that has been selected for the solar power plant needs be near an existing substation in order to ensure that power that is generated can be supplied to the NamPower grid with minimum additional
- The area that is earmarked for the solar power plant is densely vegetated but does not constitute potential sensitive biodiversity areas.

- There are some negative impacts during the construction phase. These impacts will be localized and do not necessarily have a negative impact on the biodiversity of the surrounding environment.
- The envisaged development will improve power supply to Omaheke Region, and Namibia and will also ensure that long term Solar Power Generation infrastructure is put in place.
- The socio economic impacts associated with the solar power plant construction will have an insignificant effect on the towns of Gobabis or Witvlei since it is not expected that jobseekers will inhabit these towns.
- Access to the site will be via an existing road and there will be no loss of sensitive biodiversity with the establishment of this project.

2. EMPLEMENTING THE EMP

2.1 Role Players and Responsibility

The overall implementation of this EMP, through the appointed contractor, remains the responsibility of the project proponent. However different stakeholders will also have roles to play in order to ensures proper project management.

a. Project Manager (Proponent)

- Ensure that the Project and the Contractor are aware of all specifications, legal constraints as well as procedures pertaining to the project specifically with regards to the environment.
- Ensure that all stipulations within the EMP are communicated and adhered to by employees, contractor(s) and sub-contractors.
- Monitor the implementation of the EMP throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes.
- Be fully conversant with the Environmental Scoping Report for the project, and all relevant environmental legislation

b. Contractor and sub-contractors

The Contractor(s) Managers will be contractually required to comply with the various commitments in this EMP. In the event of nonconformance, the contractor will be required to take corrective action according to the requirements of the EMP. Clean up may be done on their behalf, and if so, the contractor will be back-charged accordingly.

c. Ministry of Environment and Tourism

MET, through the office of Environmental Commission are the regulating authority and thus responsible for the approval/disapproval of this EMP. Moreover, MET is responsible to issue the Environmental Clearance Certificate and impose conditions that need to be complied with. Finally, MET may conduct monthly inspections as well as review project environmental and incident reports.

2.2 Awareness and Training

It is important to ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimization of environmental harm.

To achieve effective environmental management, it is important that employees, Contractors and Subcontractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP. This requires the Project Manager to ensure proper environmental training. The environmental training should typically include the following:

- Employees must have a basic understanding of the key environmental features of the site and the surrounding environment
- The significant environmental impacts, actual or potential, as a result of their work activities
- The environmental benefits of improved personal performance.
- Their roles and responsibilities as well as importance in achieving conformance with the environmental policy and procedures, and with the requirement of the Agency's environmental management systems, including emergency preparedness and response requirements.
- The potential consequences of departure from specified operating procedures.
- The mitigation measures required to be implemented when carrying out their work activities.
- The importance of not littering and the need to use water sparingly.
- Details of, and encouragement to, minimize the production of waste and re-use, recover and recycle waste where possible.

3. MANAGEMENT AND MITIGATION MEASURES: CONSTRUCTION PHASE

Activity	Action Required	Responsible Party	Frequency of Monitoring
Health, Safety and Environment Training	All relevant aspects of the Labour Act 11 of 2007 and the regulations regarding Health and Safety of employees at work should be implemented. The Proponent and the Contractor must undertake training of employees to make them aware of the EMP for the Solar Photovoltaic Plant. Training must contain common elements such as familiarization with the company safety, health and environmental policy and commitment to waste prevention, and recycling.	Manager, Safety officer, EDI	On-going
Effects of construction activities	*Air pollution*: During windy conditions dust generating construction activities should be limited. Wetting of dry surfaces should be considered as a means to reduce dust generation. During excessive dust conditions personal protective equipment should be provided to employees; (appropriate personal protective equipment such as dusk masks)	Contractor	Monitor Daily
	Noise: Noise levels shall be kept within acceptable limits and construction workers must abide by local by-laws regarding noise.		
	Secondary fire hazards: Ensure that open fires are not allowed onsite, near overhead power cables or near fuel storage areas.		
	Provision of storage for construction material: A suitable and safe area for storage of the construction material must be provided, especially when hazardous substances are on site.		
	Provision of storage or facilities for dangerous and toxic material: Materials such as fuel, oil and paint, shall be stored in an isolated area or under lock and key, as appropriate, in well-ventilated areas. Sufficient care must be taken when handling these materials to prevent pollution.		

Activity	Action Required	Responsible Party	Frequency of Monitoring
Rehabilitation of construction areas	*Rehabilitation of the temporary sites:* On completion of construction, temporary structures must be removed and the area rehabilitated. All areas outside the project area boundaries where disturbances occurred should be lanced or ripped.	Contractor	Once-off
	All persons employed by the Contractor or his subcontractors shall abide by the requirements of the general Environmental Management Act 27 of 2007 and any other legislations mentioned.	Contractor, subcontractors	Continuous
	Rubble must be removed from the construction and rehabilitation sites frequently and disposed of at a licensed landfill site.	Contractor	Continuous
	The contractor must rehabilitate the construction camp once construction activities have terminated. Compacted areas will be ripped and covered in order to ensure recovery of the natural vegetation cover.	Contractor	Once-off
	Any contaminated soil is to be removed and disposed of at an appropriately permitted landfill site in accordance with the acceptable methods prescribed for the particular waste class and hazard rating.	Contractor	Continuously
Safety and security	The site and workers are to be managed in strict accordance with the Labour Act 11 of 2007 regarding Health and Safety of employees at work.	Proponent / Contractor	Monitor Daily
	Ensure that the handling of electrical equipment and other materials is done by qualified employees that are allowed to handle such items.		
	Ensure the site is fenced off and access to the site is controlled.		
Noise pollution	The construction workers must abide by the Noise Control Regulations, promulgated in terms of the Labour Act 11 of 2007.	Proponent / Contractor	Monitor Daily

Activity	Action Required	Responsible Party	Frequency of Monitoring
Atmospheric pollution	All vehicles transporting material that can be blown off (e.g. soil, rubble.) must be covered with a tarpaulin, and speed limits of 60 km/h must be adhered to.	Proponent / Contractor	Once-off and as necessary. Monitor daily
	Excessive dust conditions shall be reported to the site ECO. During windy conditions dust generating construction activities should be limited.		
	Vehicles to be used during the construction phase are to be kept in good working condition so as not to be the source of excessive fumes and nuisance.		
Visual impact	Colour Schemes and Paint colours for the buildings and walls should be considered to ensure the structures blend with the natural environment.	Proponent	Once-off and as necessary
Erosion, sedimentation and flooding	Make sure construction teams limit activities to within the boundaries of the project site.	Contractor, ECO	Daily
	Vegetation clearance should be limited to within the site and the access road. Stockpiles must be covered in excessive windy conditions		
	Preventative plan and use of sheeting to avoid soil contamination in events of spill and while servicing.		
	All trenches and excavation works must be properly backfilled in accordance with a qualified engineer.		

Activity	Action Required	Responsible Party	Frequency of Monitoring
Waste Management	All solid and chemical wastes that are generated must be removed and disposed of at a licensed waste disposal site in accordance with the disposal methods prescribed for the particular waste class and hazard rating.	Contractor	Continuous or as necessary
	Burning or burying of waste should not be allowed.		
	Litter accumulating on the site must be stored in closed containers, collected and disposed of at an approved waste disposal facility.		
Domestic Effluent Disposal	Toilet facilities and waste water: During construction an adequate number of portable/chemical toilets shall be supplied. Regular inspections shall be carried out to ensure toilets are kept in a hygienic state. Toilet paper shall be supplied to all toilets. Staff shall be advised to use the provided toilets at all times.	Contractor, ECO	Continuous or as necessary
	The effluent containment system must be inspected for leakages on a regular basis and any leakages must be attended to immediately.		
Surface and groundwater quality	There are no permanent water bodies in close proximity to the project site, however effluent as well as spill residue should be properly managed and contained to prevent possible underground water pollution.	Contractor,	Ongoing
	A standard procedure should be in place for the clean-up accidental spills. Use ground cover sheeting where decanting of hazardous substances takes place.		
Water supply and Use	Water used must be clean, potable and free of suspended material and substances which could put health at risk.	Contractor	Ongoing