



94 Mandela Avenue, Klein Windhoek, Namibia
PO Box 81808, Windhoek, Namibia
Tel: (+264) 61 248 614 Fax: (+264) 61 238 586 Web: www.gcs-na.biz

Environmental Management Plan (EMP) for the Proposed Construction of a 66 kV Power Transmission Line near Mariental, Hardap Region

Amended EMP

Final

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GreeNam Electricity (Pty) Ltd



**Environmental Management Plan (EMP) for the Proposed Construction of a 66 kV Power
Transmission line near Mariental in the Hardap Region: Amendment**

Final

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	Name	Signature	Date
Author	Fredrika Shagama		26 June 2017
Document Reviewer	Eloise Carstens		18 July 2017

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1 OVERVIEW

1.1 Project Background

GreeNam Electricity (Pty) Ltd (“*GreeNam, The Proponent*” hereafter), an independent power producer based in Namibia intends to develop a 10 MegaWatt (MW) Photovoltaic (PV) solar power facility on Portion 126 of the Farm Koichas 89, approximately 4.5 km southeast of the town of Mariental in the Hardap Region. The PV Site is adjacent to the existing Hardap Substation. However, in order to commence with the construction of the PV solar power facility, power supply is required. For this reason, GreeNam proposes to construct a 66 kV power transmission line from its Hardap Photovoltaic Solar Project to the NamPower Hardap substation. The approximate location of PV Solar Project Site in relation to the Hardap Station is shown in **Figure 1-1**.

In line with the Environmental Management Act (Act 7 of 2007) an Environmental Assessment (EA) has been conducted for the proposed development.

1.2 Environmental Assessment Practitioner (EAP)

GCS Water Environmental Engineering Namibia (Pty) Ltd (“*GCS Namibia*” hereafter) have been appointed GreeNam, as independent environmental consultants to conduct the required Environmental Assessment (EA) which includes compiling an EMP for the proposed development. The EMP is to be submitted with the scoping EA report as supporting documents to the application for an Environmental Clearance Certificate (ECC) to the Environmental Commissioner at the Department of Environmental Affairs (DEA) of the Ministry of Environment and Tourism. The EMP will also be used by Contractors and Engineers as well as the Proponent in guiding them during the construction and operation of the power transmission line to ensure that impacts on the environment are limited or avoided altogether.

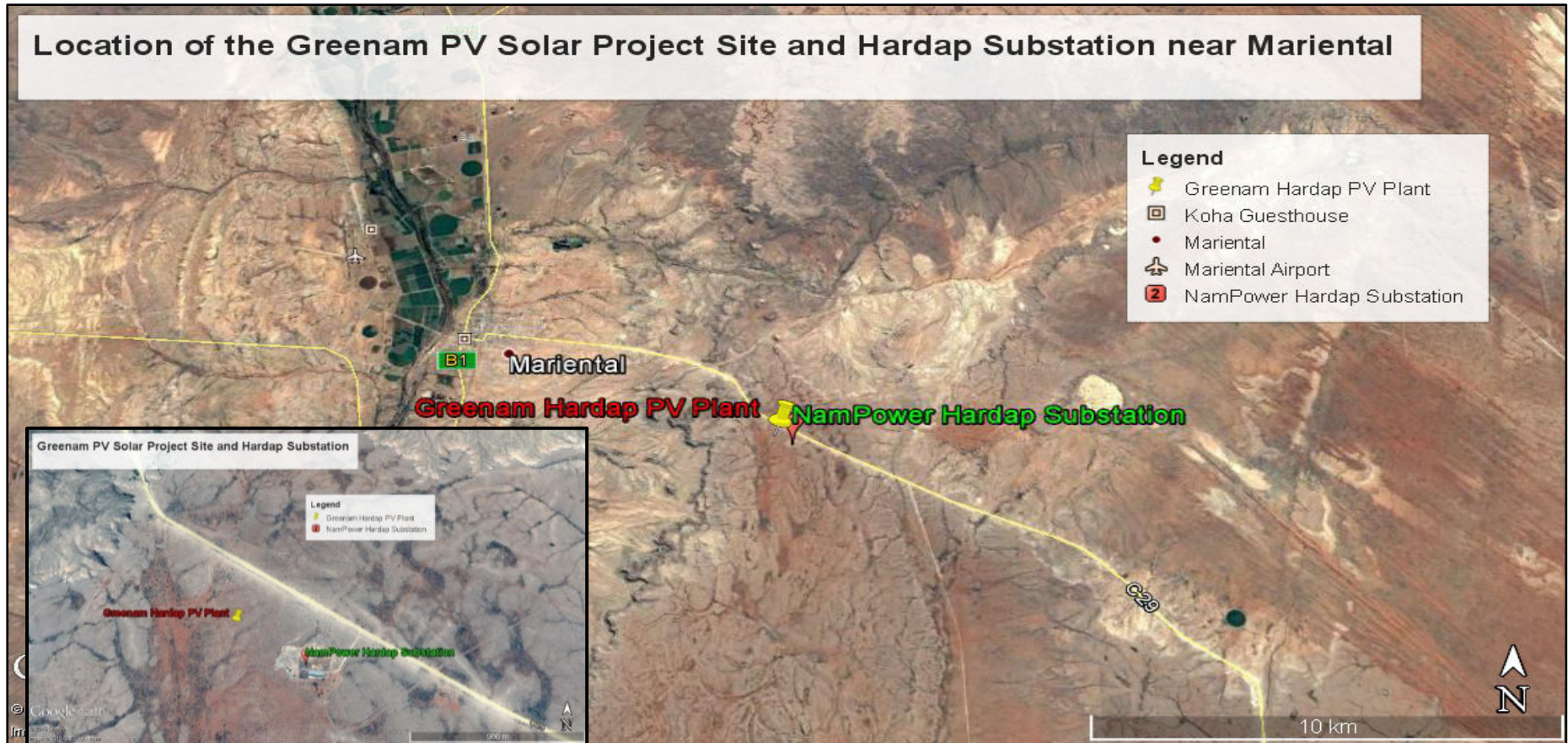


Figure 1-1: Approximate Location of the Hardap PV Solar Project Site southeast of Mariental, Hardap Region

2 PURPOSE OF THE EMP

Regulation 8 of the Environmental Management Act's (EMA) (7 of 2007) Environmental Impact Assessment Regulations (2012) requires that a draft Environmental Management Plan (EMP) be included as part of the scoping Environmental Assessment (EA) process. 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 synthesises all of the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the EIA Process and the required environmental management on the ground during project implementation and operation. It is important to note that an EMP is a legally binding 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 should be amended to adapt to address project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of this document is therefore to guide environmental management throughout the following life-cycle stages of the proposed development, namely planning and design, construction, operation and maintenance and if considered, decommissioning.

The following phases are addressed in this EMP:

- **Planning and design** - the period, prior to the construction phase, during which preliminary legislative and administrative arrangements are carried out in preparation of construction activities;
- **Construction phase** - it is during this phase when the power line and its associated infrastructure will be constructed;
- **Operation and maintenance** - the period during which the power line and its related infrastructure will be operational and maintenance is conducted by NamPower as deemed necessary.
- **Decommissioning** - Should it some day in future decided that the power line needs to be decommissioned, this phase will be implemented.

Following the identification of potential impacts and as part of the Significance Screening process, a Draft Environmental Management Plan (EMP) is then formulated to address the project impacts and environmental risks identified. Where standard industry practice mitigation measures are required and deemed sufficient to address the relevant impact/s, these are included in the Draft EMP: Where innovative or specifically engineered mitigation measures may be required, the scope for further impact investigation and mitigation design are included in the Terms of Reference for Further Study. It is noted that the Draft EMP also draws upon the relevant IFC and World Bank Group EHS guidelines for guidance on international best practice in impact management.

In accordance with the Namibian EIA Regulations and the IFC Performance Standards, the Draft EMP includes the following:

- A project specific Environmental Policy;
- Management capacity and competency requirements;
- Roles and responsibilities;
- Impact specific Action Plans;
- Source specific management programmes;
- Incident and emergency situation preparedness and management plans;
- Stakeholder management and grievance mechanisms;
- Monitoring, auditing and reporting requirements; and
- An Environmental Management System framework.

2.1 Incident and Emergency Response Preparedness

In line with requirements of best practice environmental management planning and the specific IFC guidelines, the impact assessment should identify potential emergency situation and the EMP should include an incident and emergency response plan. In this regard, an emergency situation or incident is defined as any situation where upset conditions pose an immediate risk to health, life, property or the environment. In the context of the project EMP, upset conditions are defined as conditions which fall outside the scope of normal operations and associated management measures. Most emergencies require urgent intervention to prevent a worsening of the situation, although in some situations, mitigation may not be possible and only palliative care can be offered in the aftermath.

With reference to the flow diagram presented in **Figure 2-1** below, a closed loop system of emergency planning, response, recovery and mitigation - the Emergency Management Cycle - is proposed. It is using this approach that the proposed emergency situation response action plans included in the EMP have been drafted. It is recommended that these draft action plans be updated during the EPCC phase of the project and be regularly reviewed and updated during the life of the project and as part of change management.

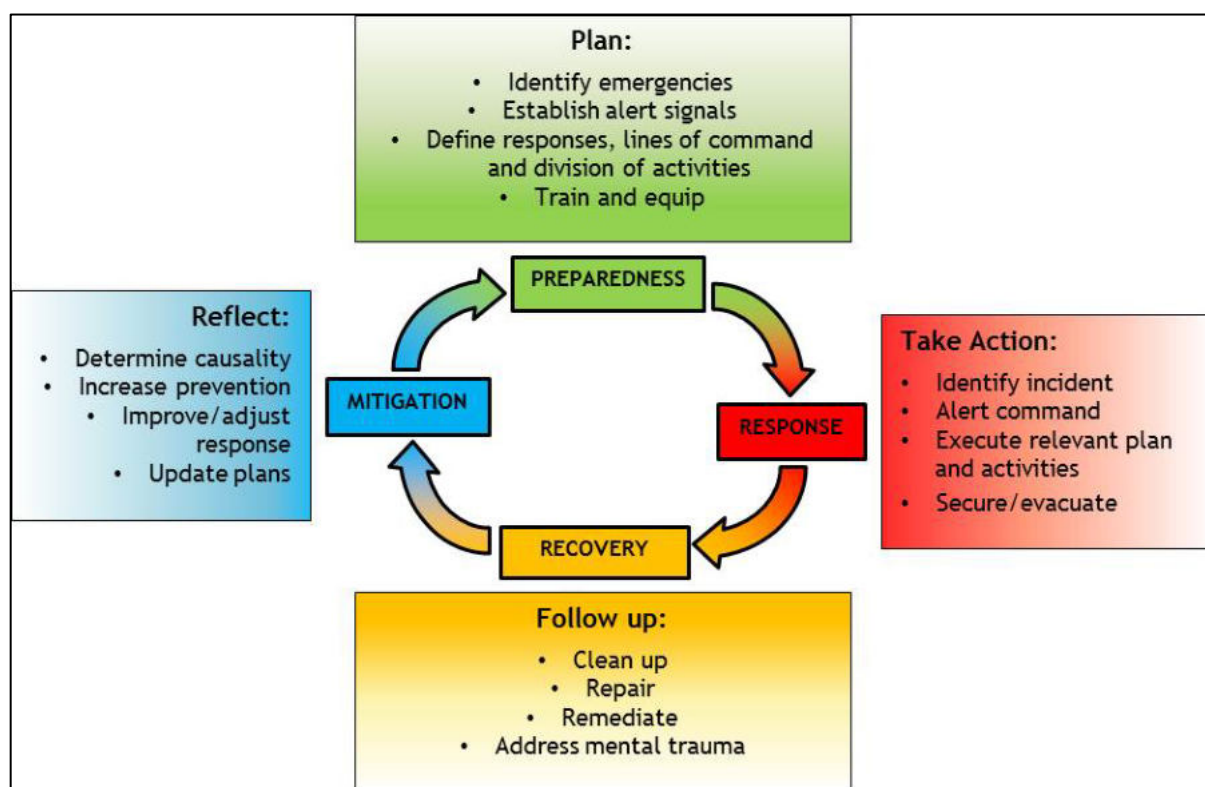


Figure 2-1: The Emergency Management Cycle (Source: GCS Water & Environmental, 2015)

3 LEGAL REQUIREMENTS

The contents of the EMP must meet the requirements Section 8 (j) of the EIA Regulations and as well as relevant international legal obligations. The EMP must address the potential environmental impacts of the proposed activity on the environment throughout the project life-cycle. It must also include a system for assessment of the effectiveness of monitoring and management arrangements after implementation. NamPower and/or GreeNam therefore has the responsibility to ensure that the proposed activity as well as the EIA process conforms to the principles of EMA and must ensure that any contractors appointed by them also comply with such principles.

Under the 2012 Environmental Impact Assessment (EIA) Regulations of the Environmental Management Act (7 of 2007), the proposed development is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC). This activity is listed under the following section:

“1 (b) The construction of facilities for transmission and supply of electricity.”

3.1 The Equator Principles

The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), in an attempt to establish an International Standard with which companies must comply with in order to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors. These principles are an attempt to:

‘...encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions’.

3.2 IFC Performance Standards

The International Finance Corporation’s (IFC) Sustainability Framework articulates the Corporation’s strategic commitment to sustainable development, and is an integral part of IFC’s approach to risk management. The Sustainability Framework comprises IFC’s Policy and Performance Standards on Environmental and Social Sustainability, and IFC’s Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC’s commitments, roles, and responsibilities related to environmental and social sustainability. IFC’s Access to Information Policy reflects IFC’s commitment to transparency and good governance on its operations, and outlines the Corporation’s institutional disclosure

obligations regarding its investment and advisory services. The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation in order to achieve its overall development objectives. The Performance Standards may also be applied by other financial institutions (GCS Water & Environmental Consultants, 2015).

There are eight (8) Performance Standards (Performance Standards on Environmental and Social Sustainability: January 1, 2012) which establish the standards that the IFC requires a client to meet throughout the life of an investment. These requirements are briefly described below.

Performance Standard 1: Environmental and Social Assessment and Management System

The client, in coordination with other responsible government agencies and third parties as appropriate, will conduct a process of environmental and social assessment, and establish and maintain an ESMS appropriate to the nature and scale of the project and commensurate with the level of its environmental and social risks and impacts. The ESMS will incorporate the following elements:

- i. Policy;
- ii. Identification of risks and impacts;
- iii. Management programs;
- iv. Organisational capacity and competency;
- v. Emergency preparedness and response;
- vi. Stakeholder engagement; and
- vii. Monitoring and review.

Performance Standard 2: Labour and Working Conditions

Performance Standard 2 recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers. The requirements set out in this Performance Standard have been in part guided by a number of international conventions and instruments, including those of the International Labour Organization (ILO) and the United Nations (UN). The core client requirements set out in this Standard involve:

- i. Working conditions and management of worker relationship;
- ii. Protecting the workforce;
- iii. Occupational health and safety;
- iv. Workers engaged by third parties; and
- v. Supply chain.

Performance Standard 3: Resource Efficiency and Pollution Prevention

During the project life-cycle, the client will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention principles and techniques that are best suited to avoid, or where avoidance is not possible, minimise adverse impacts on human health and the environment. The principles and techniques applied during the project life-cycle will be tailored to the hazards and risks associated with the nature of the project and consistent with good international industry practice (GIIP), as reflected in various internationally recognised sources, including the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines).

Performance Standard 4: Resource Community Health, Safety, and Security

Various project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Performance Standard addresses the client's responsibility to avoid or minimise the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups. The objectives of this Standard are:

- i. To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances
- ii. To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities.

Performance Standard 5: Land Acquisition and Involuntary Resettlement

Performance Standard 5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that

result in physical or economic displacement. Unless properly managed, involuntary resettlement may result in long-term hardship and impoverishment for the Affected Communities and persons, as well as environmental damage and adverse socio-economic impacts in areas to which they have been displaced. In this regard, the following objectives are defined:

- i. To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs.
- ii. To avoid forced eviction.
- iii. To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.
- iv. To improve, or restore, the livelihoods and standards of living of displaced persons.
- v. To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Performance Standard 6 recognises that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The requirements set out in this Performance Standard have been guided by the Convention on Biological Diversity, which defines biodiversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.” Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organised into four types: (i) provisioning services, which are the products people obtain from ecosystems; (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes; (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems; and (iv) supporting services, which are the natural processes that maintain the other services. This Performance Standard addresses how clients can sustainably manage and mitigate impacts on biodiversity and ecosystem services throughout the project’s lifecycle in light of the following objectives:

- i. To protect and conserve biodiversity.
- ii. To maintain the benefits from ecosystem services.
- iii. To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.

Performance Standard 7: Indigenous Peoples

Performance Standard 7 recognises that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalised and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded. Their languages, cultures, religions, spiritual beliefs, and institutions may also come under threat. As a consequence, Indigenous Peoples may be more vulnerable to the adverse impacts associated with project development than non-indigenous communities. This vulnerability may include loss of identity, culture, and natural resource-based livelihoods, as well as exposure to impoverishment and diseases. Private sector projects can create opportunities for Indigenous Peoples to participate in, and benefit from project-related activities that may help them fulfil their aspiration for economic and social development. Furthermore, Indigenous Peoples may play a role in sustainable development by promoting and managing activities and enterprises as partners in development. Government often plays a central role in the management of Indigenous Peoples' issues, and clients should collaborate with the responsible authorities in managing the risks and impacts of their activities. The key areas of client responsibility are as follows:

- i. To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples.
- ii. To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts.
- iii. To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner.
- iv. To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle.
- v. To ensure Free, Prior, and Informed Consent when: (i) impacts are on lands and natural resources subject to traditional ownership or under customary use; (ii) relocation of Indigenous Peoples from lands and natural resources subject to traditional ownership or under customary use is required.
- vi. To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.

Performance Standard 8: Cultural Heritage

Performance Standard 8 recognises the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to ensure that clients protect cultural heritage in the course of their project activities. In addition, the requirements of this Performance Standard on a project's use of cultural heritage are based in part on standards set by the Convention on Biological Diversity. The key areas of client responsibility are as follows:

- i. Protection of cultural heritage in project design and execution through: (i) complying with applicable host country law and internationally recognised practices; (ii) establishing appropriate Chance Find Procedures; (iii) maintaining consultation with affected parties; and (iv) ensuring community access.
- ii. Ensuring that the mitigation hierarchy associated with Performance Standard 8 is adhered to with regard to the Removal of Replicable Cultural Heritage, Removal of Non-Replicable Cultural Heritage and Critical Cultural Heritage.
- iii. Ensuring communication of community rights, consultation and sharing of benefits with communities where the use of cultural heritage, including knowledge, innovations, or practices of local communities is proposed for commercial purposes.

3.2.1 IFC standards included in the EMP

The following analysis shows which Performance Standards are applicable to this project and how they have been incorporated in the report:

PS 1 Assessment and Management of Environmental and Social Risks and Impacts		
Issue	Action and Deliverables required by Finance Company	Inclusion in EMP
Environmental and Social Assessment and Management	Develop an ESMS in line with the IFC Performance Standards that incorporates, as a minimum, the following elements: <ul style="list-style-type: none"> · Environmental and Social Policy; · Identification of risks and impacts; · Management programmes; · Organisational capacity and competency; · Emergency preparedness and response; · Stakeholder engagement; and · Monitoring and review 	Included in the EMP
Policy	The policy included in the FESR must be formally adopted by Greenam for the project or an alternatively policy drafted which states the commitment to management sponsorship and human and financial	Requirement to Greenam
Identification of Risks and Impacts	Develop a procedure for on-going identification and assessment of environmental and social impacts (as part of the development of the ESMS). Social in this regard also includes occupational health and safety.	Included in the EMP
Management Programmes	Develop a Stakeholder Engagement Plan in line with the IFC PSs. Develop relevant occupational health and safety plans/procedures/safe work procedures (to be informed by an H&S risk assessment (as described in PS 2 below).	Included in the EMP
Management Programmes	Based on waste type and proposed management actions, disposal site should be identified in accordance to Water Resources Management Act, 2013 (No. 11 of 2013).	Included in the EMP

<p>Organisational Capacity and Competency</p>	<p>The Project Company must develop an organogram. As noted above, the E&S Policy must state the Project Company’s commitment to management sponsorship and human and financial resources on an ongoing basis to achieve effective and continuous environmental and social performance. Key individuals with EHSS responsibility must be identified, such as;</p> <ul style="list-style-type: none"> · SPV EHSS responsible individual · Owner’s Engineer EHSS responsible person · EPC EHSS responsible person · O&M EHSS responsible person 	<p>Included in the EMP</p>
<p>Organisational Capacity and Competency</p>	<p>Develop the evaluation criteria for the people with direct responsibility for the project’s environmental and social (including H&S) performance to ensure that they have the knowledge, skills, and experience necessary to perform their work (including current knowledge of the host country’s regulatory requirements and the applicable requirements of Performance Standards 1 through 8)</p>	<p>Included in the EMP</p>
<p>Emergency Preparedness and Response</p>	<p>A consolidated Emergency Response Plan should be developed for each phase (documenting the information discussed and agreed during the above mentioned workshops), it is important to note that the following should be included in the report:</p> <ul style="list-style-type: none"> · Scenarios such as medical emergencies (e.g. injury, electrical shocks, etc.); · Identification of communities and individuals that may be impacted; · Provision/identification of equipment and resources; · Communication, including that with potentially Affected Communities; · Periodic training; and · Review and revision. <p>Ensure that the revision of the Emergency Response Plan is done in conjunction with relevant third parties (e.g. landowner, medical, fire department, disaster management, police, etc.).</p>	<p>Included in the EMP</p>

<p>Monitoring and Review</p>	<p>It is recommended that a procedure is developed to ensure that all regulatory requirements applicable to the project are identified, understood and consolidated into a user friendly format for implementation over the course of the entire project lifecycle.</p> <p>Develop an integrated monitoring plan to monitor and measure the effectiveness of the management programmes as well as compliance with contractual obligations and regulatory requirements. The EHSS monitoring requirements as set out in the FESR, EHSS management plans, Register of EHSS Legal and other requirements, procedures, permits, licenses, authorisations, etc. must all be set out in the EHSS Monitoring Plan. The EHSS Monitoring Plan should define all applicable monitoring criteria, and document the following, where applicable:</p> <ul style="list-style-type: none"> · Category (e.g. environmental, health & safety, social or general EHSS); · Aspect to be monitored; · Source (of monitoring requirement); · Monitoring frequency; · Monitoring methods; · Responsibilities; · Sampling locations; · Parameters to be monitored; and · Key Performance Indicators and Targets (where relevant). 	<p>Included in the EMP</p>
	<p>Audits to verify compliance with the management programmes and compliance with contractual/regulatory requirements (as part of the ESMS development)</p>	<p>Included in EMP</p>
	<p>Develop an EHSS legal register. Information in the EHSS register should include but not be limited to:</p> <ul style="list-style-type: none"> • Title of the law, regulation, by-law and permit/license; • The relevant section reference; • Requirement text; • Actions to be taken; • Controls; and • Law Type (e.g. international, national, local). 	<p>Included in the EMP</p>
<p>Stakeholder Engagement</p>	<p>Develop a Stakeholder Engagement Plan in line with the IFC PSSs.</p>	<p>Included in the EMP</p>

External Communications and Grievance Mechanisms	Amend the Grievance Mechanism for Public Complaints & Issues to include a clear method/guidance to screen and assess issues raised to determine how to address them.	Included in the EMP
	Establish what training, experience and/or qualification will be required for this “contact person” in the Grievance Mechanism. (This can be integrated into the EHSS training needs analyses/training needs matrix and training programs). Appoint a suitably qualified Community Liaison Officer to act as the “contact person” for the Grievance Mechanism for Public Complaints & Issues. This does not have to be a separate individual or a full time employee.	Included in the EMP. Responsibilities of “Community Liaison Officer” will fall on the ECO.
Communications and Grievance Mechanisms	Amended as suggested above, communicate the procedure to relevant external parties (e.g. landowners, farm workers, affected communities, etc.)	Included in the EMP.
IFC PS 2 Labour and Working Conditions		
Working Conditions and Management of Worker Relationship	Develop an HR policy and procedure in line with Namibian labour legislation and IFC PS 2.	Included in the EMP.
Working Conditions and Management of Worker Relationship	Develop an internal worker grievance mechanism (as part of the HR procedures) in line with Namibian labour legislation and IFC PS 2.	Included in the EMP.
Protecting the Workforce	Measures to prevent child or forced labour should be addressed through the HR policies and procedures which are to be developed.	Included in the EMP.
Occupational Health and Safety	Develop an H&S Policy in line with the Namibian Occupational Health & Safety legislation	Included in the EMP.

Occupational Health and Safety	Conduct an OHS risk assessment (by a suitably qualified person according to the methodology for on-going identification and assessment to be developed as mentioned above, or through a suitably qualified service provider)	Included in the EMP
Occupational Health and Safety	Based on the OHS risk assessment, develop Occupational health and safety plans (for construction and operation), safe work procedures, OHS incident recording & reporting procedures in line with the Occupational Health & Safety Act, 1993. The Occupational health and safety plan for the construction phase must comply with the OSHA: Construction Regulations, 2014	Included in the EMP
Workers Engaged by Third Parties	Establish procedures to assess the EPC/O&M contractors are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the requirements of this Performance Standard.	It is believed that NamPower will be the construction contractors and if any third party is to carry out the task, this will be Nampower's responsibility
Workers Engaged by Third Parties	Develop policies and procedures for managing and monitoring the EHSS performance of the EPC/O&M contractors. (This can be addressed through the development of the ESMS)	It is believed that NamPower will be the construction contractors and if any thrid party is to be carrying out the task, this will be Nampower's responsibility
Workers Engaged by Third Parties	Ensure that the EPC/O&M contractors and any sub- contractors have access to the grievance mechanism for workers. (This can be addressed through the development of the ESMS)	Included in EMP
Supply Chain	Measures to prevent child or forced labour should be addressed through the HR policies and procedures which are to be developed, and should apply to the entire supply chain (i.e. contractors, sub-contractors, service providers, etc.). Reasonable oversight and monitoring of supply chain as contemplated by the IFC	Included in the EMP
IFC PS 4: Community Health Safety and Security		
Community Health and Safety	Develop a Community Health and Safety Plan addressing crime, HIV/Aids and health (e.g. exposure to hazardous substances during transport) impacts.	The project is not located in a highly populated area. The nearest neighbour of the current project is the Farm owner. The need for a community health and safety plan is not considered necessary.

Community Health and Safety	As part of the Community Health and Safety Plan, develop measures to assist and collaborate with affected communities in the event of an emergency	Included in the EMP
Security Personnel	Conduct an appropriate assessment of risks posed by the security arrangements to those within and outside the Project site. Develop management measures as required based on the risk assessment Adequately vet security training measures and community interaction protocols.	The project is not considered to have a high security risk apart from the stealing of power cables. Security workers will not be appointed on the project.
Security Personnel	Develop plans/procedures related to security personnel addressing the following:: <ul style="list-style-type: none"> • hiring, rules of conduct, training, equipping, and monitoring of such security workers; • ensuring that those providing security are not implicated in past abuses; • ensuring security is adequately trained in the use of force (and where applicable, firearms); and • ensuring appropriate conduct toward workers and Affected Communities. 	The project is not considered to have a high security risk apart from the stealing of power cables. Security workers will not be appointed on the project.

3.2.2 Good International Industry Practice

In addition to legislation provided by Government bodies, the World Bank Group and IFC have provided a range of technical reference documents with general and industry-specific examples of Good International Industry Practice ('GIIP') (IFC, 2007). The IFC and World Bank Group EHS General Guidelines, as applicable to the proposed project, have been incorporated into the Draft Environmental Management Plan (EMP). Whilst power industry specific EHS guidelines are in place, there are no specific guidelines for direct solar energy conversion facilities. There are however guidelines pertaining to the transmission and distribution of electricity, which are relevant to the proposed project in so far as internal transmission and distribution to the adjacent Hardap Substation are concerned. These too have been incorporated into the EMP where relevant.

3.3 Project Environmental Policy Statement

The following Draft Environmental Policy Statement has been compiled on behalf of GreeNam for its Namibian solar projects' 66 kV power transmission lines.

"As a participant in the renewable energy sector, GreeNam believes that its sustainability duties go beyond the provision of "green" energy; to do so in an environmentally and socially conscious manner, whereby the impacts of its associated activities on the biophysical environment are minimised and the rights and interests of surrounding land users are not adversely affected."

Project Goals:

- *To operate in harmony with surrounding land users;*
- *To ensure ecosystem functionality and associated land capability are not lost; and*
- *To operate in a socially and culturally sustainable manner.*

Project Commitments:

- *Adherence to Namibian environmental legislative requirements and applicable and feasible IFC/World Bank Group guidelines;*
- *Incorporating environmental duty of care into all business operations, from project design and planning, through execution, to operational review and improvement;*
- *Utilising the best available techniques, not entailing excessive costs, to comply with the requirements of existing and future legislation, and encouraging those working on site to meet the same standards;*
- *Keeping track of ancillary services in a cradle-to-grave approach, including the appointment of environmentally compliant service*

providers and the monitoring and correcting of service provider behaviour, as appropriate;

- *Implementing systematic waste and energy consumption minimisation programmes, and practicing good environmental and social housekeeping;*
- *Maintaining a state of preparedness for potential environmental incidents, and implementing mitigation to prevent recurrence;*
- *Efficient communication of environmental policies, objectives and targets, and the provision of the necessary training to all spheres of operation including service providers;*
- *Building lasting relationships with the neighbouring community, farmers, businesses and administrative organisations through honesty, disclosure and cooperation;*
- *Provision of information to Interested and Affected Parties on both planned and ad hoc project developments in a timeous and open manner; and*
- *Promotion of the company's objectives and positive response to enquiries and suggestions from both inside and outside the company.*

3.4 Organizational Capacity and Competency

3.4.1 Environmental Management

The key personnel to ensure compliance with this EMP report will be NamPower and GreeNam's applicable project phase site manager and the relevant contractors' environmental, health and safety (EHS) representative or site supervisor (as per responsibilities assigned in Table 4.2, 4.3, 4.4 and 4.5 of this document). In this regard, candidates for such positions must have relevant demonstrable experience in environmental management plan implementation.

It is noted that GreeNam may elect to appoint a dedicated environmental manager, in which case roles and responsibilities assigned to the site manager, could be shared between the site manager and the environmental manager, as appropriate. If so, these must be documented as per the Environmental Management System described in Section 4.8 of this EMP.

3.4.2 Staff Training

The applicable management will implement and maintain regular awareness and training programmes throughout the life of the project. In this regard, the following key issues will be included in staff awareness and training programmes, for project and contractor staff alike:

- Environmental procedures and protocols in line with the project's EMS;
- Environmental risks and the appropriate response actions;
- Hazardous materials and waste management;
- Energy and water efficiency, both at work and at home;
- The value of biodiversity and the need to conserve the species and systems that occur within and surrounding the project area;
- Zero tolerance of the killing or collecting of any biodiversity by anybody working for or on behalf of GreeNam;
- Strict speed control measures for all project related vehicles; and
- Relevant emergency response procedures.

3.5 Roles and Responsibilities

The implementation of environmental and social commitments will be conducted by both the applicable phase site manager and the relevant contractor environmental, safety and health representative or site supervisor, and if, required, specialist.

3.5.1 Site Manager

Overall responsibility for all activities that take place on the project site will reside with the applicable phase site manager. In this regard the following roles and responsibilities are applicable:

- The implementation of and compliance with the environmental management measures proposed in this document.
- Ensuring compliance with relevant environmental and related authorisations and license conditions.
- Implementation and maintenance of an Environmental Management System (subchapter 4.2 to 4.5).
- Maintaining stakeholder engagement and grievance mechanisms;
- Ensuring that the monitoring, auditing and reporting programmes are scoped and included in the annual budgets; and
- Identifying and appointing of appropriately qualified specialists (were necessary) to undertake the programmes in a timeous manner and to acceptable standards.

3.5.2 Contractors

All contractor EHS representative or site supervisors (as appropriate) will:

- Ensure the relevant commitments contained in the EMP Action Plans (subchapter 4.2 to 4.5) are adhered to;
- Compile relevant procedures and method statements for approval by the applicable phase site manager prior to initiation of activities;
- Ensure relevant staff are trained in procedures; and
- Maintain records of all relevant environmental documentation.

3.5.3 Specialists

Additional, specialised skills may be required on an ad-hoc basis or in terms of environmental support services and independent compliance monitoring and auditing. Suitable professionals will be sourced on a contract basis, as and when required.

3.6 Other Relevant Legal Requirements

The list of other requirements of an EMP as stipulated by Section 8 (j) of the Namibian EIA Regulations **Table 3-1**.

Table 3-1: Applicable and relevant Namibian legislations and guidelines for this specific EA process

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.
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).	
The Electricity Act (No. 4 of 2007)	The Act provides information on the requirements for electricity generation, trading, transmission, supply, distribution, importation and export. The Electricity Control Board (under the Ministry of Mines and Energy) exercises control over the provision, use and consumption of electricity in Namibia; ensures efficiency and security of electricity provision; ensures a competitive environment in the electricity industry in Namibia; and promotes private sector investment in the electricity industry.	Upon consultation with the Energy Division at the Ministry of Mines and Energy (MME), it was said that no license of power transmission is required from MME, as the power transmission should be included in the agreement between NamPower and the GreeNam. Contact: Mr. Nico Snyders Tel: 061 284 8160
The Road Traffic and Transport Act (No. 22 of 1999)	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and	GreeNam should apply for the permit to access the site from C29 from the Mariental Roads Authority office.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	<p>regulation of road transport across Namibia's borders; and for matters incidental thereto.</p> <p>Should the proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.</p>	<p>This application has been submitted and awaits approval.</p> <p>Contact:</p> <p>Mr. Eugene de Paauw</p> <p>Tel: 061 284 7027</p>
<p>The Forestry Act (No. 12 of 2001)</p>	<p>The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation.</p>	<p>If certain vegetation is found to be on the power line route and needs to be removed, GreeNam should apply for the relevant permit under this Act from the Department of Forestry at the Ministry of Agriculture, water and Forestry (if available, this can also be done at the Regional Forestry offices).</p>
<p>Public Health Act 36 of 1919</p>	<p>Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”</p>	<p>GreeNam and/or NamPower and all its employees should ensure compliance with the provisions of these legal instruments.</p>
<p>Health and Safety Regulations GN 156/1997 (GG 1617)</p>	<p>Details various requirements regarding health and safety of labourers.</p>	
<p>Labour Act (No. 6 of 1992)</p>	<p>Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act no. 6 of 1992.</p>	<p>NamPower should ensure that construction, operation and maintenance of the power line, the safety and welfare of workers are not compromised.</p>

3.7 Assumptions and Limitations

This EMP has been drafted with the acknowledgment of the following assumptions and limitations:

- This EMP has been drafted based on the scoping-level Environmental Assessment (EA) conducted for the proposed construction of the 66 kV power transmission line near Mariental. No specialist studies were included as part of the assessment; and
- The mitigation measures recommended in this EMP document is based on the risks/impacts in the scoping report which were identified based on the provided project description and anticipated project impacts. Should the scope of the project change, the risks will have to be reassessed and mitigation measures provided accordingly.

3.7.1 Level of Accuracy

The identification and assessment of potential impacts associated with the proposed project, and the proposed management measures and commitments set forth in this report, are based on the information and project planning details provided by GreeNam at the time of conducting the Scoping process. This information is assumed to be accurate and applicable to the final construction and operation of the proposed 66 kV power line. Where project design information was only available at a conceptual level (pending the EPCC phase outcome), commensurate high level risk identification and mitigation/control infrastructure design principles and guidelines are provided. In this regard, industry standards and international best practice guidelines were drawn upon.

3.7.2 Occupational Health and Safety

Occupational health and safety aspects of the proposed project were not considered in any detail in this assessment process. It is assumed that GreeNam and the relevant subcontractors will have the necessary occupational health and safety certifications and management plans in place for the construction of the proposed power line.

3.8 Report Structure

This EMP lays out the management actions for the proposed 66 kV power transmission line near Mariental. The EMP addresses the following phases:

- **Planning and design** - the period, prior to construction, operation and maintenance, during which preliminary legislative and administrative arrangements are carried out in preparation for the construction of the power infrastructure;
- **Construction phase** - during this phase, the power transmission monopoles and their related services infrastructure will be constructed;
- **Operation and maintenance phase** - the period during which the power line and its related infrastructure will be operational and maintenance is conducted by NamPower, as deemed necessary; and
- **Decommissioning phase:** the period during which NamPower may decide to discontinue the operations of the power line and its associated infrastructure. The modern world heavily relies on electricity for economic development, hence the decommissioning of the infrastructure is not anticipated at this stage. Regardless, mitigation measure will be provide thereof.

4 ENVIRONMENTAL MANAGEMENT PLAN ACTIONS

4.1 Key Potential environmental impacts to be managed

From the EA, the following key potential negative impacts have been identified per project phase and are summarised in Table 4-1 below.

Table 4-1: Summary of key potential environmental impacts per project phase

	Project Phase	Potential negative impacts identified in the EA
2	Construction	Health and safety, loss of biodiversity (vegetation), vehicular traffic safety, waste generation, visual, noise, soil and water resources and air quality.
3	Operation and maintenance	Health and safety, loss of biodiversity (birds) and civil aviation concerns.
4	Decommissioning	Power supply inconvenience (power shortage) to the PV Solar Power Plant.

The aim of the management actions of the EMP is to avoid potential impacts where possible. Where impacts cannot be avoided, measures are provided to reduce the significance of these impacts. The objective and goal of environmental management action plans are as follow:

Objective: *To prevent unnecessary disturbance of the environmental components (soil, water, biodiversity, health & safety, noise, air quality, etc.).*

Goal: *To ensure that the functionality of the environment is not lost.*

Management actions recommended to manage the potential impacts rated in the EA carried out for the proposed power transmission line construction are presented in the following tables. The management actions were compiled based on the four project phases:

- Planning and design phase (Table 4-2);
- Construction phase (Table 4-3);
- Operation and maintenance phase management actions (Table 4-4); and
- Decommissioning phase (Table 4-5).

The responsible persons at NamPower and/or GreeNam should assess these commitments in detail and should acknowledge their commitment to the specific management actions detailed in the table of the next subchapters.

As per the outcomes of the Environmental Impact Significance Screening conducted in the Scoping Report, the following Impact-Specific Action Plans per project phase, are proposed.

4.2 Phase 1: Planning and Design Management Actions

Prior to planning and design, the management requirements detailed in **Table 4-2** need to be carried out before any construction works while necessary preliminary legislative and administrative arrangements are made in preparation for the operation of the proposed development. These management requirements are also applicable for the period during which engineering designs are carried out.

Table 4-2: Planning and design management actions

Aspect	Management Requirement	Timeframes	Frequency	Implementation	Responsibility
Labour Recruitment	<ul style="list-style-type: none"> It is anticipated that NamPower (possibly in collaboration with Greenam) will utilize their own workforce. However, should the need to employ extra person(s), recruitment should not be done at the project site. 	Pre-construction	As required	NamPower and Greenam Human Resources	Project Phase Manager
Construction schedule	<ul style="list-style-type: none"> A convenient construction work/schedule should be prepared and be shared with the local authorities and neighbours to the site. This will ensure that they are aware of when to expect the movement of the construction team and vehicles in the area. 	Pre-construction	Once off	Construction Engineers / Contractors	Project Phase Manager
Civil Aviation Safety	<ul style="list-style-type: none"> The proposed power line pole designs and locations need to be verified to ensure that it meets the approval of the Directorate of Civil Aviation regarding the height of the transmission poles 	Pre-construction	Once-off	Construction Engineers	Project Phase Manager

Aspect	Management Requirement	Timeframes	Frequency	Implementation	Responsibility
	and the position in the area.				
Birds Impacts monitoring	<ul style="list-style-type: none"> If need be, NamPower or GreeNam should approach the NamPower/NNF Strategic Partnership to advise on methodology and provide training to the designated person in order to minimize the powerline impacts on birds. Contact: NamPower/NNF Strategic Partnership at email ecoserve@iway.na 	If necessary during construction and then in the operational phase	As required	GreeNam NamPower / NNF Strategic Partnership	Project Phase Manager
EMP Implementation	<ul style="list-style-type: none"> GreeNam needs to appoint a Proponent’s Representative (PR) that will act as their on-site implementing agent. This person should be responsible to ensure that the Proponent AND Contractor’s responsibilities are executed in compliance with relevant legislation and this EMP. 	Ongoing	As required	Environmental Officer	Project Phase Manager

4.3 Phase 2: Construction Phase Management Actions

The management actions for the construction phase are listed in **Table 4-3**.

Table 4-3: Construction phase management actions

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
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Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
EMP training	Lack of EMP awareness and the implications thereof	<ul style="list-style-type: none"> • Employees appointed for construction work on respective infrastructures must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work. • Comprehensive induction forms a critical component during the construction and operational period. This includes the following: <ul style="list-style-type: none"> ○ Ensuring that all employees are aware of their individual impact on the environment. ○ Ensuring that preventative measures and procedures are undertaken in order to reduce the risk of a potential impact. 	Ongoing	As required	NamPower Environmental Officer	Construction Site Manager
Monitoring	EMP non-compliance	<ul style="list-style-type: none"> • The implementation of this EMP should be monitored. • The site should be inspected throughout the construction at least 	Ongoing	As required	NamPower Environmental Officer	Construction Site Manager

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<p>once a day during construction and after completion of the construction work.</p>				
<p>Health and Safety</p>	<p>Health and Safety</p>	<ul style="list-style-type: none"> • Construction workers should be trained on how to handle materials and equipment on site (if they do not already know how to) in order to avoid injuries. • The contractor(s) should ensure that all personnel are provided with personal protective equipment (PPE), such as gloves, safety boots, safety glasses and hard hats at all times during construction hours on site. • No workers should be allowed to drink alcohol during working hours. • No workers should be allowed on site if under the influence of alcohol. • Among other workers, the construction team should include skilled workers such as power / electrical engineers and other related skills-equipped workers that are professionally aware 	<p>Ongoing</p>	<p>As required</p>	<p>NamPower Health and Safety Officer</p>	<p>Construction Site Manager</p>

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<p>of the safety risks associated with power line constructions.</p> <ul style="list-style-type: none"> The construction team should ensure that no unauthorised person, especially member of the public is wandering around the construction site / route where dangerous construction materials pose a risk of injury or a threat to their health and safety. 				
Waste Management		<ul style="list-style-type: none"> The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. No waste may be buried or burned on 	Ongoing	As required	NamPower Environmental Officer	Construction Site Manager

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<p>site or anywhere else.</p> <ul style="list-style-type: none"> • Waste containers (bins) should be emptied after the construction and removed from site to the municipal waste disposal site. • Separate waste containers (bins) for hazardous and domestic / general waste must be provided on site. • Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter. • No waste may remain on site after the completion of the project. • Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter. • No waste may remain on site after the completion of the project. 				
<p>Construction labourers</p>		<ul style="list-style-type: none"> • Construction workers should be transported, in a bus (or similar suitable passenger vehicle) to and from site. • If the construction team should be 	<p>Ongoing</p>	<p>As required</p>	<p>NamPower</p>	<p>Construction Site Manager</p>

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<p>provided with portable toilets (i.e. easily transportable) on site.</p> <ul style="list-style-type: none"> No workers should reside on-site for the entire duration of the construction period. 				
Vegetation	Loss of vegetation	<ul style="list-style-type: none"> No vegetation should be removed from site unnecessarily or disturbed in any way. No equipment should be left leaning on or on top of the site shrubs or trees during and after construction. No waste of any kind should be left on trees and shrubs after construction works. No vehicles should be driven out of the proposed route footprint, such that they disturb off-route vegetation. 	Ongoing	Throughout the phase	NamPower	Construction Site Manager
Vehicular Traffic	Vehicular Traffic Safety	<ul style="list-style-type: none"> Construction vehicle drivers should be in possession of valid and appropriate driving licenses. Vehicle drivers should adhere to the road safety rules and signs. Construction vehicles should have a 	Ongoing	As required	NamPower Constructors and Engineers	Construction Site Manager

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<p>scheduled time for loading and offloading materials at the site so that they do not interfere with daily traffic in the area whenever.</p> <ul style="list-style-type: none"> • Construction vehicles should not park by the road side, but on designated site where they cannot interfere or pose danger to traffic on C29. • Temporary construction warning signage should be put up close to the site. • Stop control should be erected on the road during delivery of large loads and construction equipment. • Reduced speed limits adjacent to the power line route during construction hours. 				
Noise	Nuisance (disturbance)	<ul style="list-style-type: none"> • Noise from construction vehicles and equipment should be reduced to an acceptable level. • Construction activities should be carried out between 09:00 and 17:00 on working days to ensure that noise is 	Ongoing	As required	NamPower and / GreeNam Environmental Officer(s)	Construction Site Manager

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<p>strictly limited to normal working days only i.e. no work is done in the weekends.</p> <ul style="list-style-type: none"> The working time should be respected in order to preserve tranquillity in the area especially, the surrounding residents. Noisy equipment should be shut down when are not in use (when not needed) to avoid unnecessary noise on site. Workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure. Workers should ensure that they put on these PPE at all times on work sites. 				
Air	Air Quality	<ul style="list-style-type: none"> Dust generation should be kept at an acceptable level by using a reasonable amount of water. If feasible, municipal wastewater should be treated to an acceptable water quality level, so that it can be used for construction purposes, which includes dust 	Ongoing	As required	NamPower Environmental Officer	Construction Site Manager

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<p>suppression on the road and on site.</p> <ul style="list-style-type: none"> Construction vehicles, especially heavy trucks should not be left idling to ensure that they are not emitting gases into the surrounding air, unnecessarily. 				
Soil and Water Resources	Soil and Water Contamination	<ul style="list-style-type: none"> Spill control preventative measures should be put in place to manage soil contamination. Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance to municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater system. An emergency plan should be available for major / minor spills at the site during construction activities. 	Ongoing	As required	NamPower Environmental Officer	Construction Site Manager

4.4 Phase 3: Operation and Maintenance Management Actions

The table below (Table 4-4) presents the management action for the operation and maintenance phase.

Table 4-4: Operation and maintenance phase management actions

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
EMP training	Lack of EMP awareness and the implications thereof	<ul style="list-style-type: none"> Employees appointed for operation and maintenance on respective site infrastructure and services must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work. 	Ongoing	As required	GreeNam Environmental, Health and Safety Officer	Site Maintenance Supervisor/Manager
Monitoring	EMP non-compliance	<ul style="list-style-type: none"> The implementation of this EMP should be monitored. The site should be inspected throughout the operation on a biannual basis. 	Ongoing	As required	GreeNam Environmental Officer	Site Maintenance Supervisor/Manager

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
Health and Safety	Health and Safety	<ul style="list-style-type: none"> Workers should be provided with appropriate personal protective equipment (PPE), such as gloves, safety boots, safety glasses and hard hats when conducting maintenance. No workers should be allowed on site if under the influence of alcohol. Workers should be trained on how to handle maintenance equipment (if they do not already know how to) in order to avoid injuries. Only skilled workers such as power / electrical engineers and other related skills-equipped workers should be allowed to carry out such activities, as they are the ones that are aware of the risks involved with power line operations. 	Ongoing	As required	NamPower Health and Safety Officer	Site Maintenance Supervisor/Manager
Birds (Fauna)	Bird collisions	<ul style="list-style-type: none"> The entire line should be marked 	Ongoing	As required	NamPower	Site Maintenance

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
	on the power line	<p>to increase its visibility and reduce the chance of collisions. Standard markers, e.g. spiral/coil Double Loop Bird Flight Diverters (BFDs) manufactured by Preformed Line Products (PLP), should be used. Marking should take place on the top-most wire (i.e. the earth/OPG wire or, if there is no earth wire, the top-most conductor) at 10 m intervals, with black and white devices alternating.</p> <ul style="list-style-type: none"> • As precaution with regards to overhead (O/H) line, the necessary mitigation of collisions of birds on power lines structure reference to the site / project should be O/W (overhead wire). • The span lengths of the powerline should be consistent. 			Environmental Officer	Supervisor/Manager

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
		<ul style="list-style-type: none"> Should monitoring indicate that collisions are still taking place despite the above marking, further mitigation would need to be investigated. If possible, the conductors should be offset to reduce the risk of electrocutions. Monitoring is essential and, should electrocutions take place, the situation will need to be reassessed 	Ongoing	As required	GreeNam Environmental officer NamPower Maintenance Engineer(s) NamPower / NNF Strategic Partnership	Site Maintenance Supervisor/Manager
Civil Aviation	Civil Aviation Safety	<ul style="list-style-type: none"> Civil Aviation Standards of the International Civil Organisation (ICAO) pertaining to the power line structures should be adhered to. The Regulations of Namibian Aviation Act No. 74 of 1962 for setting up power lines in Namibia should be complied with. 	Ongoing	As required	NamPower Maintenance Engineers	Site Maintenance Supervisor/Manager

4.5 Phase 4: Decommissioning Management Actions

The table below (Table 4-5) presents the management action for decommissioning phase.

Table 4-5: Decommissioning phase management actions

Environmental Feature	Impact	Management Actions	Timeframes	Frequency	Implementation	Responsibility
Power Line Decommissioning	Power shortage	<ul style="list-style-type: none"> NamPower should ensure that the power transmission to the GreeNam Plant is not compromised, by putting up an alternative power supply infrastructure. NamPower should inform GreeNam on time, of its intention to decommission the power line and also advice GreeNam on other possible sources of power supply to their PV Plant. 	Pre-decommission	Once-off	NamPower Kokerboom Manager	NamPower: Power System Development Division

4.6 Stakeholder Management and Grievance Mechanism

Public involvement is essential not only in the planning phases of a project but throughout the life of a project. Project developers are required to hold regular meetings with land users and local authorities in the project area to assess the development of the project, the environmental and socio-economic impacts and compliance with environmental management instruments. In addition, a grievance mechanism will be established through appropriate channels that are accessible to all parties, without prejudice or fear of repercussions and anonymity can be maintained, if requested.

In order to ensure on-going stakeholder engagement and two-way channels of communication, the following mechanisms will be implemented:

- The database of registered IAPs from this environmental assessment process is to be maintained and updated as necessary;
- Contact details of the applicable phase site manager to be provided to authorities and registered IAPs;
- Project progress updates, and notifications of any ad hoc deviations from planned project activities are to be sent to all stakeholders as required;
- An open door policy is to be maintained (parties to report to security at the site access); and
- The comments and responses register compiled for this environmental process is to be maintained and updated as necessary by the applicable phase site manager for the life of the project.

4.7 Monitoring, Auditing and Reporting

4.7.1 *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, in order to ensure compliance with the EMP and relevant enviro-legal or investor requirements.

Internal Inspections/Audits

The following internal compliance monitoring programme will be implemented:

- Project kick-off and close-out audits will be conducted on all contractors. This applies to all phases, including maintenance and repair 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 SOPs and method statements.
- Following completion of a contractors work, a final close-out audit of the contractor's performance against the EMP commitments will be conducted by the applicable phase site manager.
- Monthly internal EMP performance audits will be conducted during the construction and decommissioning phases.
- Ad hoc internal inspections can be implemented by the applicable phase site 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 response to grievances or authorities directives.

Documentation

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

4.7.2 Reporting

In line with the IFC requirements, an annual environmental performance assessment report will be submitted to the relevant funding agency. In addition, the report will be made available for public review.

Environmental compliance reports will be submitted to the Ministry of Environment and Tourism as stipulated by the Ministry.

Note: Should the ECC or financing agency indicate specific auditing and reporting requirements, these will be adhered to and included in the EMS Schedule.

4.8 Environmental Management System Framework

In order implement Environmental Management Practices, an Environmental Management System (EMS) will be established and implemented by GreeNam and NamPower and/or

NamPower (depending on the management actions as assigned in the Tables under 4.2 to 4.5). This subchapter establishes the framework for the compilation of a project EMS. The applicable phase site manager will maintain a paper based and/or electric system of all environmental management documentation. These will be divided into the following main categories:

4.8.1 Policy and Performance Standards

Policy, goals etc. a draft environmental policy and associated goals and commitments has been included in subchapter 3.3 of this EMP. GreeNam and/ or NamPower may adapt these as necessary.

4.8.2 Enviro-Legal Documentation

A copy of the approved environmental assessment and EMP documentation will be available on site at all times. Copies of the Environment Clearance Certificate and all other associated authorisations and permits will also be kept on site. In addition, a register of the legislation and regulations applicable to the project will be maintained and updated as necessary.

4.8.3 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 - Impact Relationship provided in Table 5.2 of the **Environmental Scoping report** serving as a draft Aspect-Impact Register. 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 chapter 6 of the report can be used to update the Register. This method can be modified as required by the applicable phase site manager as necessary during the life of the project.

4.8.4 Procedures and Method Statements

In order to effect the commitments contained in this EMP, procedures and method statements will be drafted by the relevant responsible project 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 phase site manager. In addition, knowledge of procedures by relevant staff responsible for the execution thereof must be demonstrable and training records maintained.

4.8.5 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.

4.8.6 Site Map

An up to date map of the 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;
- Soil management areas;
- Waste management areas (collection, storage, transfer, etc.);
- Sensitive areas;
- Incident and emergency equipment locations; and
- Location of responsible parties.

4.8.7 Environmental Management Schedule

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

- Environmental risk assessment;
- Environmental management meetings;
- Soil handling, management and rehabilitation;
- Transmission right-of-way activities;
- Waste collection and associated facility maintenance/servicing;
- Environmental management infrastructure maintenance;
- Incident and emergency response equipment evaluations and maintenance
- Environmental training;

- Stakeholder engagement;
- Environmental inspections; and
- Auditing, monitoring and reporting.

4.8.8 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 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 manager.

5 RECOMMENDATIONS FOR MONITORING (IMPACT ON BIRDS)

The following monitoring actions should be conducted by GreeNam and NamPower. The NamPower/NNF Strategic Partnership can be contacted to advise on methodology and provide training to the designated person, if required.

- Ensure that the powerline is monitored in an acceptable way for any signs of bird mortalities resulting from the construction and operation of the powerline.
- All bird mortalities should be recorded on a standardized form (see <http://www.nnf.org.na/project/nampowernnf-strategic-partnership/13/5/72.html>)

, with the GPS coordinates and powerline structure and other details, and photographs of the carcass (especially the head of the bird), powerline structure and general habitat; forward a copy of each report to the NamPower/NNF Strategic Partnership for further investigation.

The effectiveness of the mitigation measures should be monitored; retrofit further mitigation if required (e.g. for nocturnally flying species), and replace devices as and when necessary.

6 CONCLUSIONS

Based on the management actions and recommendation given in this EMP, GCS is confident that the proposed construction of the 66 kV power transmission line, as described in Chapter 2 of the Scoping Report may be granted an Environmental Clearance Certificate, provided that the EMP is implemented and that all the legal requirements pertaining to this development are complied with.