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REPORT ON:

13 MW SOLAR POWER PLANT – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

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DEFINITIONS AND ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
dB	Decibel
ECC	Environmental Compliance Consultancy
EIA	Environmental Impact Assessment
EMA	Environmental Management Act, No. 7 of 2007 and its regulations
ESMP	Environmental and Social Management Plan
IFC	International Finance Corporation
km	kilometre
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment Forestry and Tourism
MME	Ministry of Mines and Energy
MSB	Modified Single Buyer
MSDS	Material Safety Data Sheet
MW	Megawatts
OSH	Occupational Safety and Health
PPE	Personal Protective Equipment
PV	Photovoltaic
SANS	South African National Standards
SHE	Safety Health Environmental

1 INTRODUCTION

1.1 BACKGROUND TO THE PROPOSED PROJECT

Environmental Compliance Consultancy (ECC) has been engaged by the Proponent ISPS Solar Operations Namibia (Pty) Ltd to undertake an environmental assessment process and develop a scoping report and an environmental and social management plan (ESMP) in terms of the Environmental Management Act, No. 7 of 2007 and its regulations. An environmental clearance application will be submitted to the relevant competent authority: The Ministry of Mines and Energy (MME) and the Ministry of Environment, Forestry, and Tourism (MEFT).

The Proponent, ISPS Solar Operations Namibia (Pty) Ltd proposes the construction and operation of a 13 megawatts (MW) solar photovoltaic (PV) power plant on farm Maxwell No. 82, which will be linked to the Eldorado substation and supply B2Gold (Otjikoto mine) with electricity through the Namibian Modified Single Buyer (MSB) framework. Farm Maxwell No. 82 is located between Otjiwarongo and Otavi to the northwest of the Otjikoto mine (B2Gold). The farm can be accessed by driving along the B1 road for approximately 61 km from Otjiwarongo (en route to the Otavi) and turning onto the D2886 road. The proposed site is situated to the northeastern side of the road approximately 13 km from the B1 highway. The location is shown in Figure 1.

1.2 ENVIRONMENTAL REGULATORY REQUIREMENTS

This ESMP has been developed by following the requirements of the Environmental Management Act, No. 7 of 2007 and its regulations (EMA).

Legislation that should be adhered to include the following mentioned in table 1.

National regulatory regime	Relevance to the Project
Constitution of the Republic of Namibia of 1990	Social protection
Atmospheric Pollution Prevention Ordinance 11 of 1976	Social and Biophysical landscape protection
Environmental Management Act, No. 7 of 2007 and its regulations, including the Environmental Impact Assessment Regulations, No. 30 of 2012	Environmental Management
Electricity Act No. 4 of 2007 & its Regulations.	Project-related
National policy for Independent power Producers (PPs) of 2018	Project-related
Soil Conservation Act, No. 76 of 1969 and the Soil Conservation Amendment Act, No. 38 of 1971	Biophysical protection
Water Act, No. 54 of 1956	Water source protection
The Forestry Act, No. 12 of 2001 as amended by the Forest Amendment Act, No. 13 of 2005	Vegetation protection
Nature Conservation Ordinance Act No. 4 of 1975 and its regulations.	Biodiversity protection
Labour Act, No. 11 of 2007 and regulations relating to the Health and Safety of employees at Work (No. 156 of 1997)	Social protection
National Heritage Act, No. 27 of 2004.	Heritage protection
The Regional Councils Act (No. 22 of 1992)	Project-related
Draft Pollution Control; and Waste Management Bill (1999)	Biophysical landscape protection
Hazardous Substances Ordinance	Biophysical landscape protection

National regulatory regime	Relevance to the Project
Ordinance No. 14 of 1974	
IFC STANDARDS	POSSIBLE RELEVANCE
Performance Standard 1	Assessment and Management of Environmental and Social Risks and Impacts
Performance Standard 4	Community Health, Safety, and Security

1.3 PURPOSE OF THE ESMP

This ESMP provides a logical framework, proposed mitigation measures and management strategies for the activities associated with the proposed Project, in this way ensuring that the potential environmental and social impacts are mitigated and minimised as far as practically possible and that statutory and other legal obligations are adhered to and fulfilled. Outlined in the ESMP are the protocols, procedures and roles and responsibilities to ensure that management arrangements are effectively and appropriately implemented.

This ESMP forms an appendix to the environmental scoping report and impact assessment and has been based on the findings of the assessment; therefore, the environmental scoping report should be referred to for further information on the proposed Project, assessment methodology, applicable legislation, and assessment findings.

This ESMP is a live document and shall be reviewed at predetermined intervals, or updated when the scope of work alters, or when further data or information can be added. All personnel working on the Project will be legally required to comply with the standards set out in this ESMP.

The scope of this ESMP includes all activities carried out during the construction and operational stages of the Project.

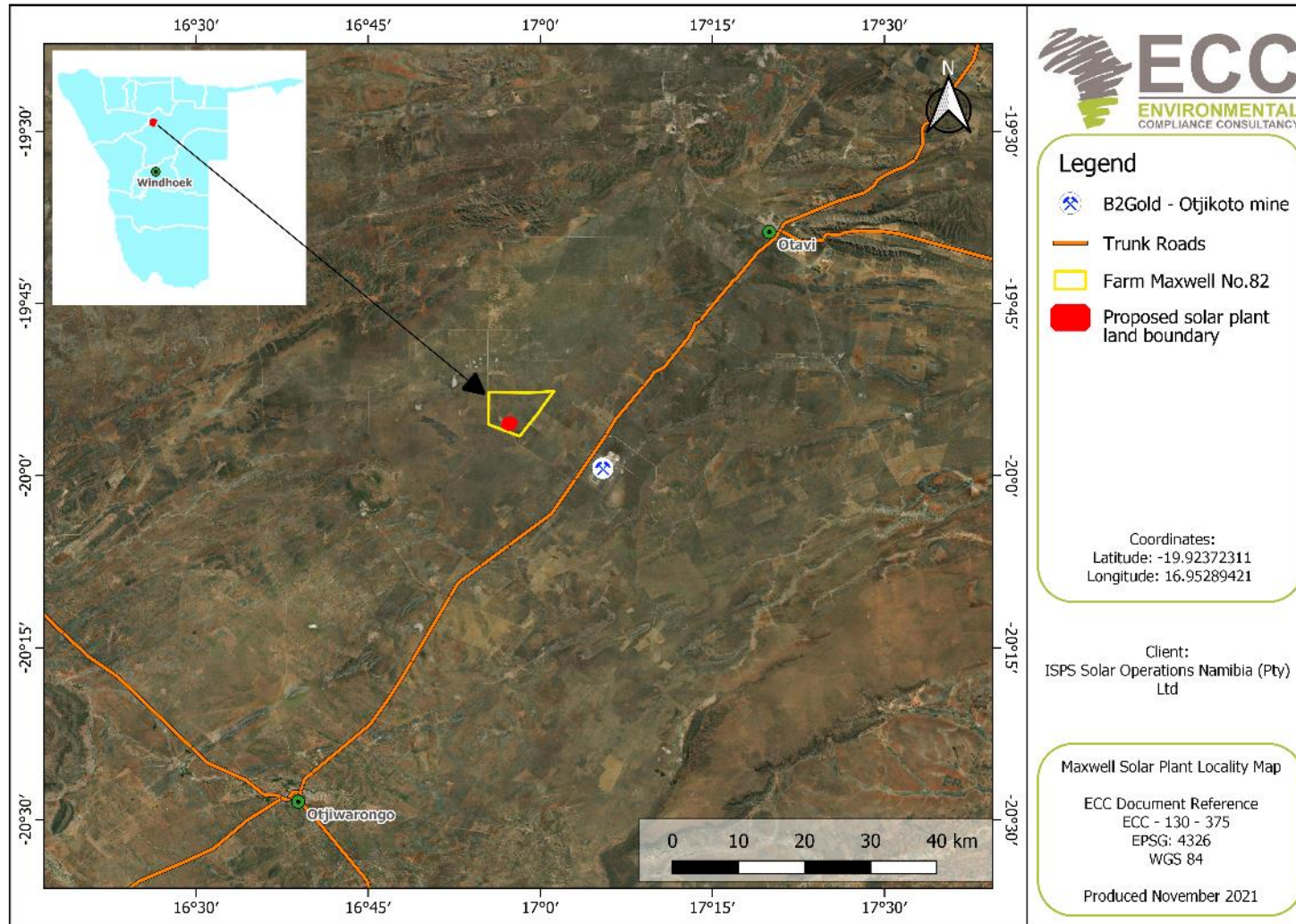


Figure 1 - Locality map showing the location of the proposed Maxwell solar PV power plant.

1.4 MANAGEMENT OF THIS ESMP

The Proponent will hold the environmental clearance certificate for the proposed Project and shall be responsible for the implementation and management of this ESMP. Before the commencement of the Project, this ESMP shall be reviewed, amended as required and approved for implementation. The implementation and management of this ESMP and thus the monitoring of compliance shall be undertaken through daily duties and activities as well as monthly inspections.

This report presents the ESMP and has been undertaken in terms of the requirements of the EMA of 2007 and its regulations.

1.5 LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS OF THIS ESMP

This ESMP does not include measures for compliance with statutory occupational health and safety requirements. This will be provided in the safety management plan to be developed by the Proponent. The Proponent should also ensure that all Nampower safety requirements and recommendations with regards to the overhead powerline are followed and adhered to.

Where there is any conflict between the provisions of this ESMP and any contractor's obligations under their respective contracts, including statutory requirements (such as licences, Project approval conditions, permits, standards, guidelines, and relevant laws), the contract and statutory requirements are to take precedence provided they are not in conflict with any environmental law or will in any way damage the environment beyond the limits set in the final approved ESMP.

The information contained in this ESMP has been based on the Project description as provided in the environmental scoping report.

1.6 ENVIRONMENTAL AND SOCIAL ASSESSMENT PRACTITIONER

Environmental Compliance Consultancy (ECC) (Reg. No. CC 2013/11401) has prepared this ESMP on behalf of the Proponent.

This report has been authored by Employees of ECC, who have no material interest in the outcome of this report, nor do any of the ECC team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent of the Proponent and has no vested or financial interest in the Project, except for fair remuneration for professional fees rendered which are based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by the

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2 PROJECT MANAGEMENT PERSONNEL

The Proponent shall provide a Project team to oversee the completion of current construction and proposed operational activities, which shall be composed of the Proponent's personnel and contractors. A nominated role shall be identified to ensure the management and implementation of this ESMP throughout the Project is carried out, which shall be supported by the Proponent.

2.1 ORGANISATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES

The Proponent shall be responsible for:

- Ensuring all members of the Project team, including contractors, comply with the procedures set out in this ESMP
- Ensuring that all persons are provided with sufficient training, supervision, and instruction to fulfil this requirement
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood

Contractors shall be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this ESMP, and meet the responsibilities listed above

The key personnel and environmental responsibilities of each role through the Project life are presented in Table 1.

Table 1 - Roles and responsibilities

Role	Responsibilities and duties
General Manager (Proponent)	<ul style="list-style-type: none"> - Responsible for ensuring compliance with this ESMP; - Ensuring employees understand and comply with the requirements of this ESMP; - Ensuring that all personnel are provided with enough training, supervision, and instruction to fulfil this requirement; - Ensuring compliance with this ESMP including overseeing the day-to-day activities during operations, and routine and non-routine maintenance works during operations; - Ensure the environmental policy is communicated to all personnel; - Responsible for providing the required resources (including financial and technical) to complete any required tasks; - Responsible for the management, maintenance and revisions of this ESMP;

Role	Responsibilities and duties
	<ul style="list-style-type: none"> - Maintain community issues and concerns register and keep records of complaints and responses provided; - Maintain an up-to-date register(s) of employees who have completed the site induction; - Ensuring that best environmental practice is undertaken throughout the operations of the solar PV plant; - Notifying relevant regulatory authorities as soon as possible if serious environmental incidents occur. - Being responsible for all management plans and environmental monitoring; and - Receiving and responding to environment-related complaints received from the public or other stakeholders.
Foreman (Appointed HSE responsible person)	<ul style="list-style-type: none"> - The site manager/foreman will be responsible for the implementation of the ESMP for the proposed solar PV plant. The foreman will be available, as required, throughout the operation of the solar plant and is responsible for the following roles: - Bearing authority and independence to demand reasonable steps as required to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant construction activities be ceased immediately should an adverse impact on the environment be likely to occur; - Weekly checklists must be completed by the foreman and findings submitted to the general manager; - Monthly ESMP checklists must be completed by the foreman. Findings are to be submitted to the general manager; - Provisioning of environmental awareness/management training and inductions; - Ensuring that best environmental practice is undertaken throughout the operations of the solar plant; - Timely distribution of any relevant environmental documentation, including revisions to this ESMP to all staff; - Responsible for being compliant with and adhering to this ESMP at all times; - Ensuring they have undertaken a site induction and are conversant with the requirements of this ESMP; and - Reporting of any operations and conditions that deviate from the ESMP or any non-compliant issues or accidents to the Proponent.
Employees/ Contractors as well as visitors	<ul style="list-style-type: none"> - Any contractors hired for operation or maintenance activities at the solar plant shall be compliant with this ESMP, and shall be responsible for the following:

Role	Responsibilities and duties
where applicable	<ul style="list-style-type: none"> - Undertaking activities by following this ESMP as well as relevant policies, procedures, management plans, statutory requirements, and contract requirements; - Implementing appropriate environmental and safety management measures; - Reporting environmental issues, including actual or potential environmental incidents and hazards, to the Proponent; and - Ensuring appropriate corrective or remedial action is taken to address all environmental hazards and incidents reported by employees and subcontractors.

2.2 EMPLOYMENT

The Proponent and all contractors shall comply with the requirements of the Republic of Namibia Regulations for Labour, Health and Safety, and any amendments to these regulations. The following shall be complied with:

- In liaison with local government and community authorities, the Proponent shall ensure that local people have access to information about job opportunities and are considered first for construction/maintenance contract employment positions;
- The number of job opportunities shall be made known together with the associated skills and qualifications;
- The maximum length of time the job is likely to last shall be indicated;
- Foreign workers with no proof of permanent legal residence shall not be hired;
- Every effort shall be made to recruit from the group of unemployed workers living in the surrounding area; and
- Every employee hired must be provided with a valid employment contract stating, the position hired for, the hourly remuneration offered.

3 COMMUNICATION AND TRAINING

It is important that regular communication is maintained with all the stakeholders and that stakeholders are made aware of potential impacts and how to minimise or avoid them. This section sets out the framework for communication and training in relation to the ESMP.

3.1 COMMUNICATIONS

The foreman/site manager shall communicate any environmental issues to the Project team through the following means (as and when required):

- Site induction;
- Internal and external audits and site inspections;
- Toolbox talks, including instruction on incident response procedures; and
- Briefings on key Project-specific environmental issues.

This ESMP shall be distributed to the Project team including any contractors and personnel working on the site to ensure that the environmental requirements are adequately communicated. Key activities and environmentally sensitive operations shall be briefed to workers and contractors.

During the construction and operational activities, communication amongst the management team shall include discussing any complaints received and actions to resolve them, any inspections, audits or non-conformance with this ESMP, and any objectives or target achievements.

3.2 ENVIRONMENTAL EMERGENCY AND RESPONSE

The general manager and the foreman are the primary contact persons in the event of an environmental emergency. The general manager has the authority and independence to request reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse environmental impact be anticipated. In the event of an incident that requires emergency services, the following services should be contacted.

Table 2 - Emergency contact details

Town	Ambulance	Police	Fire brigade
Otjiwarongo	+264 (67) 30-3734	+264 (67) 1-0111	+264 (67) 30-4444
Otavi	+264 (67) 23-4194	+264 (67) 23-4006	-

All employees need to be made aware of emergency procedures and what to do in the event of an emergency. This must be included in the training of employees. Regular documented drills also need to be carried out to ensure the competence of all employees in different emergencies.

3.3 COMPLAINTS HANDLING AND RECORDING

The Proponent shall maintain a complaint register that will detail the name and contact details of the complainant, the date and time of the complaint, the nature of the complaint, the appropriate action is taken to resolve issues, and the date of complaint handover. The Proponent shall be responsible for nominating the correct personnel to coordinate and resolve the issue.

Any complaints received verbally shall be recorded as per above and the information shall be given to the Proponent who is responsible for the management of complaints and will provide a written response to the complainant.

The workforce shall be informed about the complaints register, its location and the person responsible, to refer residents or the public who wish to lodge a complaint. The complainant shall be informed in writing of the results of the investigation and action to be taken to rectify or address the matter(s). Where no action is taken, the reasons why are to be recorded in the register.

The complaints register shall be kept for the facility and will be available for government or public review upon request.

3.4 SITE INDUCTION

All personnel involved in the Project shall be inducted to the site with a specific environment and social awareness training component. The environment and social awareness training shall ensure that personnel are familiar with the principles of this ESMP, the environment and social aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures. The Proponent shall ensure a register of completed training is maintained.

The site induction should include, but not be limited to the following:

- A general site-specific induction that outlines:
 - o What is meant by “environment” and “social”;
 - o What are the environmental risks and impacts of the solar plant;
 - o What can be done to mitigate against such impacts; and
 - o Why the environment needs to be protected and conserved
- The inductee's role and responsibilities concerning implementing the ESMP;
- The site environmental rules;
- Details of how to deal with, and who to contact if environmental problems do occur;
- Basic vegetation clearing principles and species ID sheets;
- Focal themes such as compliance, reporting of accidents and incidents, good housekeeping and standard procedures for waste management;
- The potential consequences of non-compliance with this ESMP and relevant statutory requirements; and
- The roles of responsible people for the Project.

4 REPORTING, COMPLIANCE AND ENFORCEMENT

4.1 ENVIRONMENTAL INSPECTIONS AND COMPLIANCE MONITORING

4.1.1 DAILY COMPLIANCE MONITORING

A copy of this ESMP shall be accessible, up-to-date, and on-site throughout the Project and shall be available upon request. It is the responsibility of the foreman/site manager to enforce the provisions of this ESMP and ensure this ESMP is complied with by all personnel daily throughout the facility. Daily, weekly and monthly inspections will be undertaken. Any environmental problems or risks identified shall be notified to the foreman and actioned as soon as is reasonably practicable.

4.1.2 MONTHLY COMPLIANCE MONITORING

Monthly inspections shall be undertaken by the general manager to check that the standards and procedures set out in this ESMP are being complied with. Any non-conformance shall be recorded, including the following details: a brief description of non-conformance, the reason for the non-conformance, the responsible party, the result (consequence), the corrective action taken and any necessary follow up measures required.

4.1.3 REPORTING

There shall be a requirement to ensure that any incident or non-compliance, including any environmental issue, failure of equipment or accident, is reported to the general manager.

4.2 RELEVANT PERMITS & BEST PRACTICE

Table 3 outlines some of the important permit applications with regards to the proposed Project and the following best practice documents apply to this development:

- **IUCN:** Mitigating biodiversity impacts associated with solar and wind energy development Guidelines for Project developers;
- **BirdLife South Africa:** Best practice guidelines - Birds & Solar Energy Guidelines for assessing and monitoring the impact of solar power generating facilities on birds in southern Africa; and
- **IFC:** Utility-Scale Solar Photovoltaic Power Plants. A Project Developer's Guide.

Table 3 - Project-related permit/registration requirements

Permit, licences or registration	Relevant authority	Project bearing
Water abstraction permits	Ministry of Agriculture, Water and Land Reform	An abstraction permit is required for the abstraction of water from a borehole for commercial purposes.
Sewage permits	Ministry of Agriculture, Water and Land Reform	Permits related to the sewage system should be obtained.
Permits for the removal of vegetation	Ministry of Environment, Forestry and Tourism	Permits will need to be obtained for the clearing of vegetation.
Electricity generation licence	Electricity Control Board	The Proponent will need to complete form Form_DGx_PV to apply for an electricity generation licence.

4.3 NON-COMPLIANCE

Where it has been identified that works are not compliant with this ESMP, the Proponent shall employ corrective actions so that the works return to being compliant as soon as possible. In instances where the requirements of the ESMP are not upheld, a non-conformance and corrective action notice shall be produced. The notice shall be generated during the inspections and the general manager shall be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcoming.

A non-compliance event or situation, for example, is considered if:

- There is evidence of a contravention of this ESMP and associated indicators or objectives;
- The foreman or the contractor has failed to comply with corrective or other instructions issued by the manager or qualified authority; or
- The foreman or contractor fails to respond to complaints from the public.

Activities shall be stopped in the event of a non-compliant event identified until corrective action(s) has been completed.

4.4 INCIDENT REPORTING

The general manager must ensure that an accident and incident (including minor or near-miss) reporting system is maintained by the foreman so that all applicable statutory requirements are covered. For any serious incident involving a fatality, or permanent disability, the incident scene must be left untouched until witnessed by a representative of the police. This requirement does not preclude immediate first aid being administered and the location being made safe.

The foreman must investigate the cause of all work accidents and significant incidents and must provide the results of the investigation and recommendations on how to prevent a recurrence of such incidents. A formal root-cause investigation process should be followed.

4.4.1 DISCIPLINARY ACTION

This ESMP is a legally binding document and non-compliance with it shall result in disciplinary action being taken against the perpetrator(s). Such action may take the form of (but is not limited to):

- Fines/penalties;
- Legal action;
- Monetary penalties imposed by the Proponent on the contractor;
- Withdrawal of licence(s); and
- Suspension of work.

The disciplinary action shall be determined according to the nature and extent of the transgression / non-compliance, and penalties are to be weighed against the severity of the incident.

5 ENVIRONMENTAL AND SOCIAL MANAGEMENT

5.1 ENVIRONMENTAL PERFORMANCE MEASUREMENT

Section 5 provides a register of environmental risks and issues, which identifies mitigation and monitoring measures, as well as roles responsible. This register will be subject to regular review by the manager and updated when necessary.

5.2 OBJECTIVES AND TARGETS

Environmental protection is the responsibility of management and if management is environmentally aware, it motivates all employees and their associated business partners, customers and suppliers to think and act in a more environmentally responsible manner. Environmental objectives and targets have been developed so that activities on the proposed site can minimise potential impacts on the environment, as far as reasonably practicable.

Environmental objectives for the Project are as follows:

- Zero pollution incidents;
- Sustainable resource use (water);
- Application of the waste management hierarchy;
- A safe working environment for employees; and
- Use natural resources effectively and efficiently.

5.3 REGISTER OF ENVIRONMENTAL RISKS AND ISSUES

An environmental review of the proposed Project has been completed to identify all the commitments and agreements made within the environmental scoping report. From this, a schedule of environmental commitments and risks has been produced (Table 4), which details deliverables including measures identified for the prevention of damage to the environment during the Project's lifetime.

Table 4 provides a register of environmental risks and issues, which identifies mitigation and monitoring measures, as well as the responsible person. This register will be subject to regular review by the manager and updated when necessary. The general manager will use this register to undertake monthly inspections to ensure the Project is compliant with this ESMP.

Table 4 - Environmental risks and issues, and mitigation and monitoring measures

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
Job creation, skills development and business opportunities	Beneficial socio-economic impacts on a local and regional scale	<ul style="list-style-type: none"> – Maximise local employment and local business opportunities; – Enhance the use of local labour and local skills as far as reasonably possible; and – Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible. 	Monthly, annually	Site foreman/ general manager
General construction completion and operational activities	Dust generation during the construction phase, future maintenance/construction and operational activities.	<p>To minimise the potential for dust generation the following management measures should be implemented, as required:</p> <ul style="list-style-type: none"> – Vehicles must adhere to speed limits to avoid producing excessive dust; – Vehicles and machinery should be maintained to limit exhaust fume emissions; – Use surfaces that minimise dust accumulation and facilitate effective cleaning; – Where an effect is profound, ensure dust suppression measures are in place; and – Employees to use and wear the appropriate PPE. 	Daily	Site foreman/ general manager
	Noise generation	The Labour Act, No. 11 of 2007 and Regulations relating to the Health and Safety of Employees at Work (GN 156/1997) should be closely followed for occupational noise exposure, specifically focusing on chapter 6. Section 197 ((1) Subject to sub	Daily	Site foreman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<p>regulations (2) and (3), no employer shall require or permit an employee to work in an environment in which he or she is exposed to an equivalent noise level equal to or exceeding 85 dB(A) and Schedule 3(2) Noise Regulations (regulation 197).</p> <p>The SANS standard for environmental daytime noise is 45 dBA (outdoors) and 35 dBA (indoors) in a rural district. The ESMP should be closely followed to ensure that noise generated stays below these limits, as far as reasonably practicable.</p> <ul style="list-style-type: none"> – Avoid noise-generating activities that could impact other users of the area by ensuring noisy activities are limited; avoid hammering on metal that generates intermittent noise, especially at night, and ensure appropriate measures are put in place to rectify noise complaints should they occur; – The Proponent should develop a health and safety management plan that takes into account noise generation; and – Ensure that procedures for receiving complaints from nearby land users or residents are in place and responded to timeously. 		

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
	Employee health and safety.	<ul style="list-style-type: none"> – Health and Safety management plan should be developed and implemented on-site by the Proponent; – The Labour Act, No. 11 of 2007 and Regulations relating to the Health and Safety of Employees at Work (GN 156/1997) should be adhered to; – Appropriate PPE should be used for relevant tasks on-site; – Safety induction training sessions should be given to all technicians and field staff before commencement of their shifts (i.e., staff conducting electrical works or maintenance); – Risk identification and suitable prevention measures should be employed within the power plant area to eliminate potential impacts; – Frequent maintenance of all equipment and daily inspections done; – Occupational Incidents and accidents on-site should be reported to the division: Occupational Safety & Health (OSH) at the Ministry of Labour, Industrial Relation and Employment Creation, by using form F.5; – Emergency contact details should be readily accessible to contact relevant services during an emergency; – No unauthorized use of equipment should be allowed; – In the unlikely event of a death occurring within site boundaries from occupational negligence or otherwise from 	Daily	Site foreman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<p>a "freak accident event", the area should be secured and all personnel removed from the scene;</p> <ul style="list-style-type: none"> – A root cause analysis into the event shall be undertaken as soon as practicably possible; – Counselling should be provided to the witnesses and other personnel members who may have been impacted by the event. – Appropriate safety signs should be added near dangerous areas or equipment; and – Employees should be made aware of all possible health and safety risks. 		
	Fire management	<ul style="list-style-type: none"> – Development of a fire management system through the process of risk identification and assessment; – Developing site-specific work procedures as part of the fire management system; – Induction on fire prevention and toolbox talks; – Control and reduce the potential risk of fire by segregating and safe storage of flammable materials; – Avoid potential sources of ignition for example, by prohibiting smoking in and around areas where chemicals/fuel is stored; – Ensure suitable fire-extinguishing equipment is accessed immediately and conveniently whenever necessary. This can 	Daily	All Staff members

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<p>include pails of water, buckets of sand, or portable extinguishers;</p> <ul style="list-style-type: none"> – For field fires, appropriate fire fighting equipment should be available on-site; – Emergency contact details should be readily available on-site; – Fires made for a “braai”/BBQ within the site area during construction should be monitored and put out to prevent the risks of causing a field fire; and – Ensure key personnel are trained to manage an emergency fire situation. 		
	Potential visual disturbances	<ul style="list-style-type: none"> – Light disturbances should be minimised; – Lighting on-site is to be sufficient for safety and security purposes; – Maintain complaints register on-site to record any complaints; – Lighting should not be a nuisance for any residents/camps or lodges surrounding the site; – Neighbouring farmhouses and buildings should be considered during construction, to prevent reflective light disturbances; – Neighbours should be informed of construction activities and potential duration of activities; 	Monthly/ annually	Site foreman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – The solar PV plant should blend in with the surrounding environment as far as reasonably practicable; and – Ensure that international best practice methods are considered for the construction of the solar PV plant. 		
	Site safety and security	<ul style="list-style-type: none"> – The site should be well secured to prevent theft or vandalism and unauthorized entrance to the premises, which could be ensured by having a security guard on duty, security cameras and security fence/wall on-site; – Contractors and staff should be informed in writing of the consequences when breaking laws or rules; – Ensure that all Nampower safety requirements and recommendations with regards to the overhead powerline are followed and adhered to; – Contractors or staff should not trespass on private land; – Security systems should be well maintained; – All employees should be regularly updated about the safety procedures; and – Emergency contact details should be readily available on-site. 	Daily, Monthly and annually	Site foreman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
Biodiversity	Potential habitat destruction and disturbance of wildlife.	<ul style="list-style-type: none"> - Keep or plant native vegetation between solar components (if larger rows are planned between components); - Try to limit the amount of vegetation that is cleared, to limit habitat loss; - Use grazing from animals/livestock, and not chemicals, to control vegetation on-site; - Try to keep some natural habitat intact; - Ensure efficient planning, in order to reduce disturbances in areas that do not form part of the planned construction area; - Reseeding native grasses between solar components; - Planting native vegetation on-site where possible; and - Holes excavated for pylons should be covered/fenced off during night or periods that no construction is taking place. 	Daily, Monthly, yearly	General manager/ foreman/ site manager
	The possible encountering of biodiversity on-site	<p>The Nature Conservation Ordinance Act No. 4 of 1975 and its regulations, Controlled Wildlife Products and Trade Act 9 of 2008 and the Animals Protection Act 71 of 1962 should be closely followed with regards to any encounters with wildlife within site boundaries.</p> <ul style="list-style-type: none"> - No living organism should be removed from the site by anyone other than by a professional/registered animal handler, pest control company, SPCA, MEFT/MAWLR or relevant rehabilitation or wildlife organisations; 	Daily, weekly	All staff members

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – No living organism shall be poached/consumed/harmed or killed for illegal purposes (i.e., illicit trade of pangolins for scales); – Prevent the killing of perceived dangerous species (e.g. snakes); collection of veld foods (e.g. giant bullfrog, tortoise, monitor lizard); any form of poaching (e.g. setting of snares for birds and ungulates, etc.). – Police and MEFT should be notified of any poaching incident involving sensitive or protected species or if such an animal is found on someone within or surrounding the Project site; – If snares or poaching equipment is found in the field it should be removed and destroyed; – Fences should be monitored for potential snares and traps; – Wildlife encountered on-site should be ethically treated; – Nests discovered on infrastructure within the Project site area should not be removed or destroyed if it is not clear that there are no eggs or chicks in the nests; – Nests/eggs/birds should be identified by a professional and action could be taken depending on advice or instruction given by the professional; – Pesticides and herbicides should not be used as far as reasonably possible; 		

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – If there is no other possibility the relevant pesticides/herbicides/chemicals should be used by a professional/registered pest control company and the MSDS of the substance used should be closely followed; – Invasive plant species should be removed and their spread should be prevented; and – Waste on-site should be well managed and removed from the site to prevent animals (i.e. rodents, snakes, scorpions etc) from breeding/living on-site. 		
	Potential displacement or harm of threatened or protected species	<ul style="list-style-type: none"> – Preconstruction monitoring is recommended to determine the presence of any threatened or protected species; – Keep some of the natural habitat on-site intact; – Professional ecologists should evaluate the site for any potential endangered or protected species (i.e., endangered vultures breeding in trees on-site); – Plant native vegetation between solar components, that will not necessarily influence/impact the solar panels (i.e., native grasses); – Do not use pesticides on-site as far as reasonably possible; – Use livestock/wildlife or manual labour to naturally control vegetation on-site; – The breeding season of wildlife should be considered for construction activities (i.e., ground-nesting birds); 	Daily	Site forman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> - Regular toolbox talks with construction workers and operational staff on the importance of biodiversity mitigation measures; and - Strict rules should be implemented on-site to prevent any poaching, harming, collection or killing of wildlife. 		
	Potential Avifauna collisions	<ul style="list-style-type: none"> - Keep a record of all avifauna collisions and name of species or photographic evidence with dates; - Lighting on-site should preferably be a colour that does not attract insects, to prevent nocturnal birds from flying into the structures; - Increase monitoring during the rainy season (when pans, dams and drainage lines hold water); - If collisions increase or are higher than the estimated numbers additional bird deterrent measures should be implemented; and - Bird Flight Diverters (i.e., coils, flappers, etc.) should be installed along the entire overhead powerline to minimise/prevent mortalities. 	Daily, Monthly	Site foreman/ general manager
	Potential removal of protected plant species	<ul style="list-style-type: none"> - Use existing roads for access to avoid new tracks; - Minimise clearance areas through proper planning of the construction/operational activities; - Protected plant species should not be removed, without the relevant permission or permits; 	Daily, Monthly	Site foreman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
	The potential introduction of alien vegetation	<ul style="list-style-type: none"> - Construction vehicles should not drive in the field or create new tracks, without evaluating the plant species within that area; - Route new tracks around established and protected trees, and clumps of vegetation; - Large trees or shrubs should be evaluated for breeding birds (especially for protected species, for example, white back vultures) before being removed to make way for the power plant; - A professional botanist or ecologist should be on-site to identify any rare, endangered, threatened and protected species; - During toolbox talks and induction sessions, highlight to workers that the removal of significant plants should be avoided; - Where possible rescue and relocate plants of significance; - Plant native vegetation between solar components, “ with acceptable characteristics within engineering constraints” (i.e., grass and small shrubs); - Use grazing from animals/livestock or manual labour, and not chemicals, to control vegetation on-site; - Promote revegetation of cleared areas upon completion of construction activities; 		

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> - All Project equipment arriving on-site from an area outside of the Project or coming from an area of known weed infestations (not present on the Project site) should have an internal weed and seed inspection completed before such equipment is used; - Ensure contractors receive induction on preventing the spread of alien weed; - Ensure the potential introduction and spread of alien plants is prevented; - Ensure the correct removal of alien invasive vegetation and prevent the establishment and spread of alien invasive plants; - Eradicate weeds and alien species as soon as they appear; and - Ensure workers are aware of alien species and weeds. 		
Heritage	Potential heritage discovery	<p>In case of discovering or unearthing heritage sites, the following measures (chance-find procedure) shall be applied:</p> <ul style="list-style-type: none"> - Works to cease and the area to be demarcated with appropriate tape by staff, and the general manager to be informed; 	Daily	All staff/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – Project manager to visit the site and determine whether work can proceed without damage to findings, mark exclusions boundary and mark the area with GPS; and – Contact the Namibian heritage council or a professional local archaeologist for any heritage finds. 		
Emergency Incidents	Soil and water contamination due to inadequate control or accidental release of hazardous substances on site	<p>During the construction and maintenance phases of the Project, the following should be taken into consideration.</p> <p>Storage</p> <ul style="list-style-type: none"> – Separate hazardous and non-hazardous chemicals from each other; – Label chemicals appropriately; – Chemicals with different hazard symbols should not be stored together - clear guidance on the compatibility of different chemicals can be obtained from the Materials Safety Data Sheets (MSDS) which should be readily available; – Store chemicals in a dedicated, enclosed, and secure facility with a roof and a paved/concrete floor. – Consider the feasibility of substituting hazardous chemicals with less hazardous alternatives. 	Daily	All staff members

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<p>Spills</p> <p>The spill kits with the following items as a minimum should be made available on site (If any large fuel or chemical tanks are on-site during the construction or operational phases of the Project):</p> <ul style="list-style-type: none"> – All up-to-date MSDS, readily available – Absorbent materials; – Shovels; – Heavy-duty plastic bags; – Protective clothing (e.g., gloves and overalls); – Major servicing of equipment shall be undertaken offsite or within appropriately equipped workshops; – For small repairs and required maintenance activities all reasonable precautions to avoid oil and fuel spills must be taken (e.g., spill trays, impervious sheets); – Provision of adequate and frequent training on spill management, spill response and refuelling must be provided to all onsite staff; – No refuelling is to take place within 50 meters of groundwater boreholes, surface water bodies or streams; 		

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – Vehicles and machinery are to be regularly serviced to minimise oil and fuel leaks; and – All major petroleum product spills (spill of more than 200 litres per spill) should be reported to the Ministry of Mines and Energy (MME) on Form PP/11 titled “Reporting of major petroleum product spill’. <p>The following points, therefore, apply to all areas on the site:</p> <ul style="list-style-type: none"> – Assess the situation for potential hazards; – Do not come into contact with the spilt substance until it has been characterised and necessary personal protective equipment (PPE) is provided; and – Isolate the area as required. <p>The following measures are to be implemented in response to a spill:</p> <ul style="list-style-type: none"> – Spills are to be stopped at the source as soon as possible (e.g., close valve or upright drum); 		

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – Spilt material is to be contained to the smallest area possible using a combination of absorbent material, earthen bunds or other containment methods; – Spilt material is to be recovered as soon as possible using appropriate equipment. In most cases, it will be necessary to excavate the underlying soils until clean soils are encountered; – All contaminated materials recovered after a spill, including soils, absorbent pads and sawdust, are to be disposed of at an appropriately licenced facility; and – A written incident report must be submitted to the general manager. 		
Groundwater and surface water pollution	Possible nutrient enrichment of groundwater due to leakage of sewage into the groundwater	<ul style="list-style-type: none"> – The sewage system needs to be well maintained at all times; – Need to carefully investigate the sewage system regularly to look for leakages; – The sewage system and chemical toilets need to be cleaned/pumped regularly by the relevant authority or company with the appropriate permits in place; and – Groundwater needs to be monitored and tested to ensure that there is no contamination if a leak occurred. 	Daily/weekly/ monthly	Site foreman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
	Water usage on-site	<ul style="list-style-type: none"> – Abstraction permits should be in place and abstraction monitored; – A water-wise mindset should be adopted on-site; – Water leakages or pipe bursts should be fixed as soon as possible; – Eco-friendly and low water use equipment should be used; and – Activities that require a lot of water (cleaning of solar components etc.) should be monitored to ensure that water is not wasted. 	Daily/weekly/ monthly	Site foreman/ general manager
Soil	Potential soil erosion during heavy precipitation or strong winds on-site.	<ul style="list-style-type: none"> – Follow and adhere to the Soil Conservation Act, No. 76 of 1969 and the Soil Conservation Amendment Act, No. 38 of 1971; – Indigenous vegetation could be planted to prevent erosion; – Rock beds could also be used to prevent erosion on the gentle slopes around infrastructure (if there are any gentle slopes post-construction); and – An erosion control plan should be developed and implemented on-site due to the extent of land to be cleared. 	Monthly, annually	Site foreman/ general manager
	Potential soil disturbances	<ul style="list-style-type: none"> – Follow and adhere to the Soil Conservation Act, No. 76 of 1969 and the Soil Conservation Amendment Act, No. 38 of 1971; 	Daily, monthly	Site foreman/ general manager

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – Try to keep soil disturbances to a minimum, for example only prepare the soil/ground as required for the construction of the solar plant (i.e., foundations); – Prevent driving with heavy vehicles in the field and use existing access roads as far as reasonably possible; – Prevent soil compaction; – Do not leave the ground bare (i.e., replant natural grasses or smaller plant species); – Store and retain topsoil and sub-soil removed from the construction areas for later use during reestablishment (i.e., when construction work is done); – Use native and non-invasive species for “landscaping and rehabilitation works”; – For the rehabilitation of disturbed areas use “soil, mulch and vegetation debris (that contain natural seed stock)” to facilitate natural revegetation; – Use “manual methods (e.g. hoeing or hand-pulling)” for the clearing of vegetation, where possible to limit soil disturbance; and – Soil erosion and sedimentation control measures should be implemented. 		

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
Waste management	Possible sewage discharge runs the risk of pathogen /diseases transmissions and odours.	<ul style="list-style-type: none"> – Ensure toilets are always clean and dry; – Provide adequate sanitary facilities, including clean water, soap, disposable paper towels; – Ensure suitable personal protective equipment that may include waterproof/abrasion-resistant gloves, footwear, eye, and respiratory protection; – Face visors are particularly effective against splashes when working with sewage; and – Install an impermeable hardstand in areas of high-risk contamination to prevent ground infiltration by pollutants. 	Daily	All staff members
	Environmental pollution (littering and poor storage of solid waste)	<ul style="list-style-type: none"> – Waste management should be handled in accordance with the International Finance Corporation (IFC) standards as follows: – Implement a waste management plan (from “cradle to grave” methodology) covering all aspects of waste generated on-site; – Training and toolbox talk about the importance of waste management; – Ensure a high standard of housekeeping across within farm boundaries; 	Daily/Weekly	All staff members

Task activity/ equipment	Impact identified	Mitigation control measures	Monitoring requirements	Responsibility
		<ul style="list-style-type: none"> – Solid waste shall be stored in an appointed area in covered, tip-proof metal drums/skips for collection and disposal to an approved waste management site; – The waste storage areas shall always be kept clean and tidy; – Storage of domestic waste on site may result in the attraction of unwanted scavengers and should be removed as soon as it is feasible; – Implement the waste management hierarchy across the site: avoid, reuse, recycle, then the disposal; – Return packaging of hazardous and non-hazardous materials (wherever possible), such as empty bags for reuse; – Solid wastes should be deposited/emptied regularly. – See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers; – Liaise with the governing body (municipality/council) regarding the waste and handling of hazardous waste (if any); – Hydrocarbon and chemical contaminated solids have the potential to cause contamination to the soil, ground and or surface water, thus correct storage and disposal methods are required. 		

6 DECOMMISSIONING

In the event that the solar plant is closed (and if ownership is not transferred), the Proponent and the new owner should mutually agree on the way ahead for the site and the infrastructure on-site. If the new owner has no use or plan for the site or buildings on-site the Proponent will be responsible to remove all equipment or any other materials from the site. If infrastructure is removed during decommissioning it is recommended that the Proponent implement a rehabilitation plan for the site, to ensure that the site is safe and that no further degradation to the site can occur.

7 IMPLEMENTATION OF THE ESMP

The proposed solar PV plants construction and operation work will be carried out in compliance with the relevant regulations. Minor to moderately significant impacts are anticipated and management and mitigation measures are in place to eliminate or reduce the severity of potential impacts.

This ESMP:

- A. Has been prepared according to a contract with the proponent;
- B. Has been prepared based on information provided to ECC up to January 2022;
- C. Is for the sole use of the proponent, for the sole purpose of an ESMP;
- D. Must not be used (1) by any person other than the Proponent or (2) for a purpose other than an ESMP; and
- E. Must not be copied without the prior written permission of ECC.

ECC has prepared the ESMP based on information provided by the Proponent, and the environmental scoping report conducted for ISPS Solar Operations Namibia and the proposed solar PV plant on farm Maxwell No. 82.