

Okahandja Solar (Pty) Ltd

Final Environmental Management Plan (EMP)
(Vol. 3 of 3) Report to Support the Application
for Environmental Clearance Certificate (ECC)
for the Proposed 10MW Solar PV Park
Comprising two (2) 5MW Plants next to each
other with an 22kV Overhead Powerline and
Access Road, Okahandja Townlands,
OTJOZONDJUPA REGION, NAMIBIA

JULY 2017

P.O. Box 86528
Eros Windhoek
WINDHOEK, NAMIBIA



DETAILS ABOUT THE PROPONENTS

Name: Okahandja Solar (Pty) Ltd

Address: P.O. Box 86528
Eros Windhoek
WINDHOEK, NAMIBIA

Details of the Contact Person: Mr. Harry GONTEB, Mobile: 0812022655,
Email: harry@chekainvest.com or hgonteb@gmail.com

Prepared By



Risk-Based Solutions (RBS) CC

The Consulting Arm of Foresight Group Namibia (PTY) LTD
Our Investments and Consultancy Portfolio / Specialisation:

- ❖ Environmental Assessments (Scoping, SEAs, EIAs and EMPs)
 - ❖ Oil and Gas Exploration and Production Technical Support Services
 - ❖ Minerals Exploration and Mining Technical Support Services
 - ❖ Renewable Energy Technical Support Services
 - ❖ Property Development and Tourism Investments
 - ❖ Waste Management Technical Support Services
 - ❖ Geoenvironmental and Geotechnical Engineering Technical Support Services
 - ❖ Programme and Project Management and Logistics Support Services
 - ❖ Specialised Training and Industry Research Support
-

Maerua Mall, Unit 158, 3rd Floor Block A
Cnr Jan Jonker Road & Centaurus Street
WINDHOEK NAMIBIA

P.O. Box 1839
WINDHOEK
NAMIBIA

Cell: +264 - (0)811413229 / 81277-2546

Tel: +264-61- 306058

Fax: +264-61-306059 / 61-256830

Email: frontdesk@rbs.com.na or smwiya@rbs.com.na

Global Office [URL:http://www.rbs.com.na](http://www.rbs.com.na) or www.foresight.com.na

Foresight Group Namibia (FGN) (PTY) LTD – *Perfecting the Future*
Risk-Based Solutions (RBS) – *Delivering the Solutions*

STATEMENT OF QUALIFICATIONS / SUMMARY CV / PROFILE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) – DR. SINDILA MWIYA

Dr. Sindila Mwiya has more than fifteen (15) years of direct technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources exploration / prospecting, extraction and utilisation, covering general and specialist technical exploration and production support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D and 3D Seismic and Gravity Surveys for minerals and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare stages. Through his companies, Risk-Based Solutions (RBS) and Foresight Group Namibia (FGN) (PTY) LTD, which he founded, he has worked and continue to work for global reputable resources (petroleum and mining / minerals) and energy companies such as Petrobras Oil and Gas (Brazil) / BP (UK), REPSOL (Spain), ACREP (Namibia/Angola), Preview Energy Resources (UK), HRT Africa (Brazil / USA), Chariot Oil and Gas Exploration (UK), Serica Energy (UK), Eco (Atlantic) Oil and Gas (Canada / USA), ION GeoVentures (USA), PGS UK Exploration (UK), TGS-Nowpec (UK), Maurel & Prom (France), GeoPartners (UK), PetroSA Equatorial Guinea (South Africa / Equatorial Guinea), Preview Energy Resources (Namibia / UK), Sintezneftegaz Namibia LTD (Russia), INA Namibia (INA INDUSTRIJA NAFTE d.d) (Croatia), Debmarine (Namibia), Namibia Underwater Technologies (NUTAM) (Namibia), InnoSun Holding (PTY) LTD (Namibia / France) and Okahandja Solar (Pty) Ltd (Namibia). Dr. Sindila Mwiya is highly qualified with extensive experience in petroleum, mining, renewable energy (Solar, Wind, Biomass, Geothermal and Hydropower), Non Renewable energy (Coal, Petroleum, and Natural Gas), applied environmental assessment, management and monitoring (Scoping, EIA, EMP, EMP, EMS) and overall industry specific HSE, cleaner production programmes, geoenvironmental, geological and geotechnical engineering specialist fields.

He continue to worked as an Environmental Assessment Practitioner (EAP), Technical Consultant (RBS / FGN), Projects Director and has worked as a Lecturer (University of Namibia- UNAM), External Examiner/Moderator (Namibia University of Science and Technology-NUST), National (Namibia) Technical Advisor (Directorate of Environmental Affairs, Ministry of Environment and Tourism / DANIDA – Cleaner Production Component) and Chief Geologist for Engineering and Environment Division and a Field-Based Geotechnician (Magnetics, Seismic, Gravity and Electromagnetics Exploration and Survey Methods) for Geophysics Division, Geological Survey of Namibia, Ministry of Mines and Energy. He has supervised and continue to support a number of MScs and PhDs research programmes and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence developmental approaches, utilisation, management and for development policies, plans, programmes and projects financed by governments, private investors and donor organisations. Since 2006, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment and Tourism (MET) through GIZ and continue to play a significant role in the amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), preparation of new Strategic Environmental Assessment (SEA) Regulations, preparation of the updated Environmental Impact Assessment (EIA) Regulations as well as the preparation of the new SEA and EIA Guidelines and Procedures all aimed at promoting effective people-centred and coexistence environmental management practices for inclusive and sustainable natural resources utilisation for the benefits of all in today's times and tomorrow's Namibia.

Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD (Geoenvironmental Engineering and Artificial Intelligence) – Research Thesis: Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semiarid Environments (Namibia)), MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics), qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr. Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr. Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

WINDHOEK, AUGUST 2017

CONTENT LIST

| | |
|--|---------------|
| EXECUTIVE SUMMARY | VII |
| 1. PROJECT BACKGROUND | - 1 - |
| 1.1 Introduction | - 1 - |
| 1.2 Environmental Regulatory Requirements | - 1 - |
| 1.3 Project Location | - 1 - |
| 1.4 Summary Results of the EIA | - 2 - |
| 1.4.1 <i>Proposed Project Activities</i> | - 5 - |
| 1.4.2 <i>Summary and Assessment Results of the Key Issues</i> | - 5 - |
| 1.4.3 <i>Overall the Results of the Significant Impact</i> | - 6 - |
| 1.5 The Environmental Management Plan (EMP) | - 7 - |
| 2. ROLES AND RESPONSIBILITIES | - 9 - |
| 2.1 Introduction | - 9 - |
| 2.2 Roles and Responsibilities | - 9 - |
| 2.2.1 <i>Employer’s Representative (ER) / Project Manager</i> | - 9 - |
| 2.2.2 <i>Environmental Control Officer (ECO)</i> | - 10 - |
| 2.2.3 <i>Contractor</i> | - 11 - |
| 2.2.4 <i>Construction Supporting Teams</i> | - 12 - |
| 3. PRECONSTRUCTION AND CONSTRUCTION EMP | - 13 - |
| 3.1 Introduction | - 13 - |
| 4. OPERATIONAL AND MAINTENANCE STAGE | - 28 - |
| 4.1 Introduction | - 28 - |
| 5. DECOMMISSIONING AND CLOSURE STAGE | - 37 - |
| 5.1 Introduction | - 37 - |
| 6. ENVIRONMENTAL PERFORMANCE MONITORING | - 39 - |
| 6.1 Overview | - 39 - |
| 7. ENVIRONMENTAL OBLIGATIONS | - 44 - |
| 7.1 Okahandja Solar (Pty) Ltd Environmental Policy | - 44 - |
| 7.2 Environmental Personnel Register | - 44 - |
| 7.3 Environmental Awareness Guidance Materials | - 46 - |
| 7.3.1 <i>Key Principles Guidance</i> | - 46 - |
| 7.3.2 <i>Natural Environmental Management Guidance</i> | - 46 - |
| 7.3.3 <i>Vehicle Use and Access Guidance</i> | - 47 - |
| 7.3.4 <i>Control of Dust Guidance</i> | - 47 - |
| 7.3.5 <i>Health and Safety Guidance</i> | - 47 - |
| 7.3.6 <i>Preventing Pollution and Dangerous Working Conditions Guidance</i> | - 48 - |
| 7.3.7 <i>Saving Water Guidance</i> | - 48 - |
| 7.3.8 <i>Disposal of Waste Guidance</i> | - 48 - |
| 7.3.9 <i>Religious, Cultural, Historical and Archaeological Objects Guidance</i> | - 49 - |
| 7.3.10 <i>Dealing with Environmental Complaints Guidance</i> | - 49 - |
| 8. CONCLUSION AND RECOMMENDATIONS | - 50 - |
| 8.1 Summary of Conclusions | - 50 - |
| 8.2 Recommendations | - 50 - |

LIST OF FIGURES

| | | |
|-------------|--|-------|
| Figure 1.1: | Regional location of the proposed 10MW Okahandja Solar Park PV showing the distribution of solar radiation in Namibia..... | - 2 - |
| Figure 1.2: | Detailed location of the proposed 10MW Solar PV on a 20 Ha Portion (PTN), falling within the Okahandja Townlands..... | - 3 - |
| Figure 1.3: | Detailed layout of the proposed 10MW Okahandja Solar PV Park..... | - 4 - |
| Figure 2.1: | Okahandja Solar (Pty) Ltd organisational structure for the proposed 10MW Solar PV Park with respect to this implementation of this EMP. | - 9 - |

LIST OF TABLES

| | | |
|------------|--|--------|
| Table 3.1: | Environmental management plan for construction stage..... | - 14 - |
| Table 4.1: | Environmental management plan for the operational and maintenance stage..... | - 29 - |
| Table 5.1: | Environmental management plan for the decommissioning and closure stage..... | - 38 - |
| Table 6.1: | Monitoring of environmental performance implementation / environmental awareness training..... | - 40 - |
| Table 6.2: | Monitoring of environmental performance for the temporal and permanent structures. | - 40 - |
| Table 6.3: | Environmental data collection..... | - 41 - |
| Table 6.4: | Health, Safety and ENvionment (HSE)..... | - 41 - |
| Table 6.5: | Recruitment of labour. | - 41 - |
| Table 6.6: | Management of the natural habitat and surficial materials management | - 42 - |
| Table 6.7: | Tracks and off-road driving..... | - 42 - |
| Table 6.8: | Management of surface and groundwater..... | - 43 - |
| Table 6.9: | Public relations. | - 43 - |
| Table 7.1: | Environmental statement..... | - 44 - |
| Table 7.2: | Environmental personnel register..... | - 45 - |

EXECUTIVE SUMMARY

1. Introduction

Okahandja Solar (Pty) Ltd (the Proponent) is proposing to develop a 10MW Solar PV Park on a 20 ha Portion of land situated within the municipal townlands, west of the Town of Okahandja, along the B2 road to Karibib in the in the Otjozondjupa Region, central Namibia. The proposed solar park will be connected to the national grid through 22.5 km long, 22kV overhead powerline from the point of connection (POC) to the NamPower Osona Substation. The renewable electricity that will be generated will be sold through a long-term electricity supply contract known as a Power Purchase Agreement (PPA).

2. EMP Objectives

This Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The EMP also provides the management actions with roles and responsibilities requirements for implementation by the Okahandja Solar (Pty) Ltd (the proponent) through the contractor who will be undertaking the activities from preconstruction to decommissioning of the proposed 10MW Solar PV Park. The EMP gives commitments including financial and human resources provisions for effective implementation of the EMP and management of the likely environmental liabilities during and after the proposed 10MW Solar PV Park. Regular assessments and evaluation of the environmental liabilities during the operational stage will need to be undertaken and will ensure adequate provision of the necessary resources towards good environmental management at various stages of the project development.

3. Summary of the EMP

Based on the assessment of both negative and positive impacts undertaken and detailed in the Environmental Impact Assessment (EIA) Report (Vol. 2 of 3) the proposed 10MW Okahandja Solar PV energy project will have low negative impacts on the receiving environment (physical, biological and socioeconomic environments). Despite the low and localised likely negative impacts that the proposed project may have on the receiving environment, site-based mitigation measures that will enhance the positive impacts and minimise the negative impacts have been developed and management strategies are provided in this Environmental Management Plan (EMP) Report Vol. 3 of 3 covering the following key areas:

- (i) **Solar Park and powerline development (Preconstruction and construction stages):**
 - ❖ Socioeconomic and environmental performance;
 - ❖ Community, Health and Safety;
 - ❖ Change in land use to energy generation;
 - ❖ Visual, noise and vibrations;
 - ❖ Species (birds and bats) injury, disturbance (and potential alteration of behaviour), or mortality;

- ❖ Disturbance of fauna and flora and habitat alteration;
- ❖ Pollution of biophysical environment (air, soil and water);
- ❖ Occupational Health and Safety;
- ❖ Soil erosion;
- ❖ Possible loss of the seed bank in the topsoil;
- ❖ Air quality (dust or Particulate Matter (PM) pollution);
- ❖ Resource use / depletion of natural resources.

(ii) Solar Park and powerline operational and maintenance stage:

- ❖ Social and Environmental Performance;
- ❖ Community Health and Safety;
- ❖ Occupational Health and Safety;
- ❖ Air quality (dust or Particulate Matter (PM) pollution);
- ❖ Attraction of species (birds and bats) to the area due to open water and subsequent injury, disturbance, or mortality of species;
- ❖ Species injury, disturbance (and potential alteration of behaviour), or mortality;
- ❖ Pollution of biophysical environment (soil and water);
- ❖ Resource use / depletion of natural resources.

(iii) Solar Park and powerline rehabilitation stage:

- ❖ Social and Environmental Performance & Visual;
- ❖ Socioeconomic.

4. Roles and Responsibilities of the Proponent

The implementation of this EMP by Okahandja Solar (Pty) Ltd as a part of the management of the impacts covers the entire lifecycle (planning and permitting, preconstruction, construction, operational, decommissioning and closure stages) of the proposed project activities. All the responsibilities to ensure that the provisions of this EMP Report are implemented and monitored, rest with the proponent (**Okahandja Solar (Pty) Ltd**). The company must provide all appropriate resources requirements for the implementation and monitoring of this EMP. It is the responsibility of **Okahandja Solar (Pty) Ltd** to make sure that all members of the workforce including contractor and subcontractors are aware of the provisions of this EMP Report and its objectives.

1. PROJECT BACKGROUND

1.1 Introduction

Okahandja Solar (Pty) Ltd, **the proponent** is a Namibian registered company owned by Namibian shareholders and South African investors. The partnership brings together a pool of skills and experiences highly relevant to the proposed 10MW Okahandja Solar PV Park project. Okahandja Solar (Pty) Ltd is proposing to develop a 10MW Solar PV Park on a 20 ha Portion of land situated within the Okahandja municipal townlands, west of the Town of Okahandja, along the B2 road to Karibib in the Otjozondjupa Region, central Namibia (Fig. 1.1). The renewable electricity that will be generated will be sold through a long-term electricity supply contract known as a Power Purchase Agreement (PPA).

1.2 Environmental Regulatory Requirements

In accordance with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) the proponent is required to have undertaken an Environmental Impact Assessment (EIA) and an Environmental Management Plan (EMP) in order to support the application for the ECC for the proposed 10MW Solar PV Park.

In fulfilment of the regulatory requirements, Okahandja Solar (Pty) Ltd appointed Risk-Based Solutions (RBS) CC, as the environmental consultants for the proposed solar energy project. The Environmental Assessment has been led by Dr. Sindila Mwiya as the Environmental Assessment Practitioner (EAP).

1.3 Project Location

The proposed 10MW solar park site falls in an area with all the necessary supporting infrastructure close to the Town of Okahandja. The proposed solar park will be serviced by a new access road over a distance of 80 m to the B2 tarred road to Karibib and connected to the national grid through 22.5 km long 22kV new overhead powerline from the point of connection (POC) to the Osona NamPower Substation as shown in Figs. 1.2 and 2.3.

The site area has full mobile services and fixed telecommunication infrastructure. Water energy supply to support the preconstruction, construction and operational stages of the proposed development will be supplied from the local available resources through Okahandja municipal infrastructures.

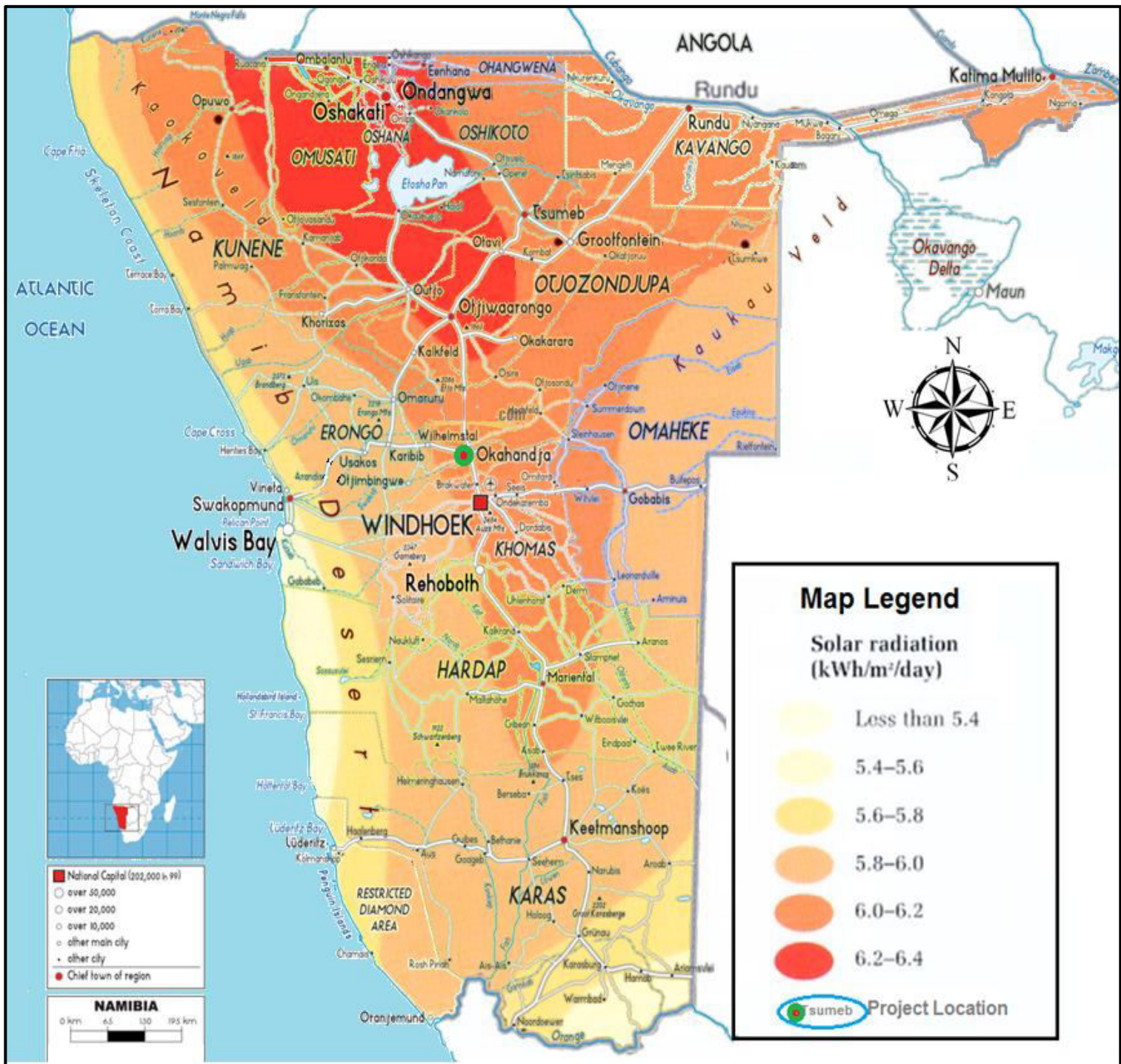


Figure 1.1: Regional location of the proposed 10MW Okahandja Solar Park PV showing the distribution of solar radiation in Namibia (Modified from Mendelsohn, *et. al.*, 2002).

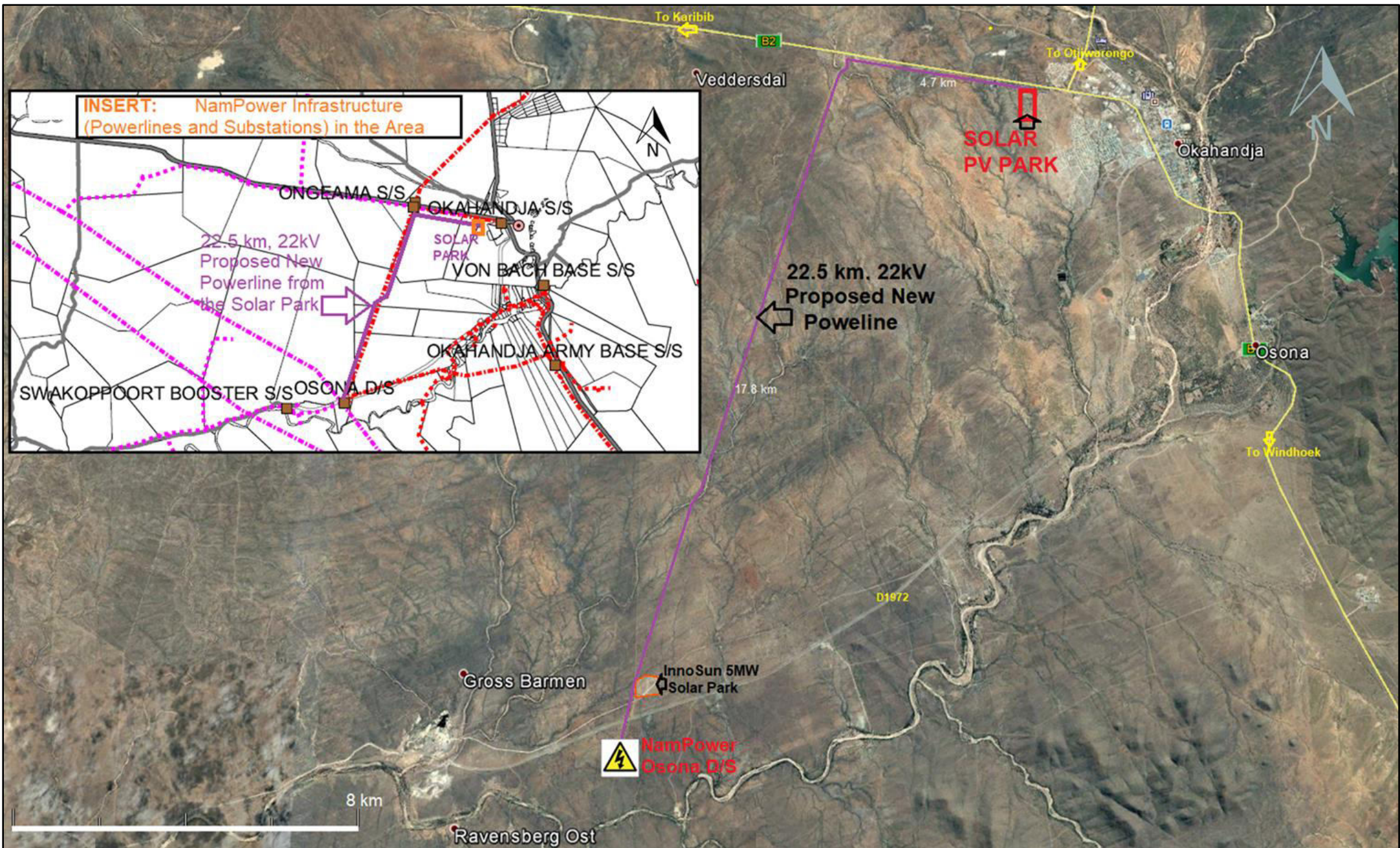


Figure 1.2: Detailed location of the proposed 10MW Solar PV on a 20 Ha Portion (PTN), falling within the Okahandja Townlands (Source: Google Earth, 2017).

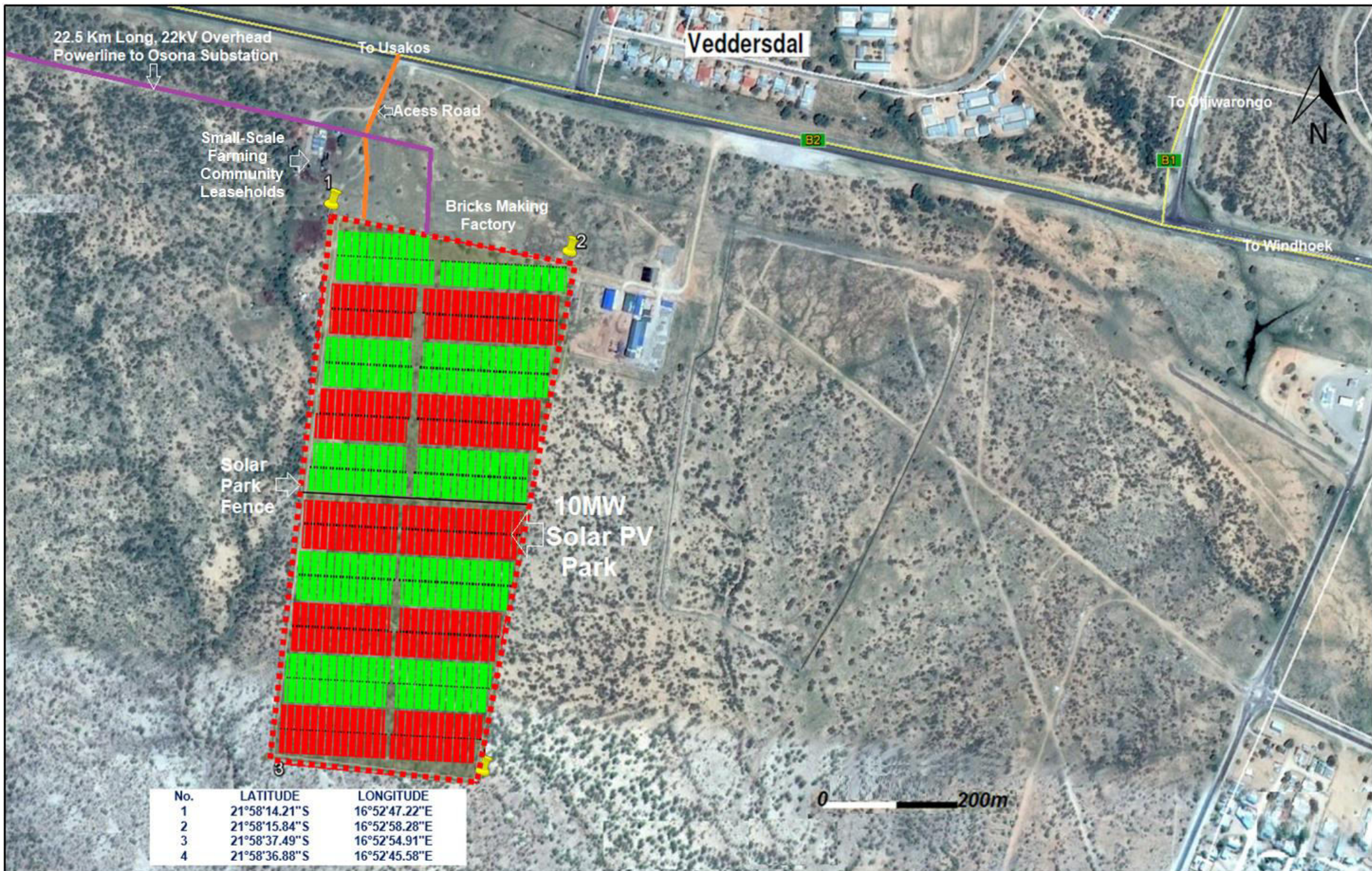


Figure 1.3: Detailed layout of the proposed 10MW Okahandja Solar PV Park (Base map Source: Google Map, 2017).

1.4 Summary Results of the EIA

1.4.1 Proposed Project Activities

The following is the summary of the activities associated with the preconstruction, construction, operational and rehabilitation stages of the proposed solar park and assessed in the Environmental Impact Assessment (EIA) (Vol. 2 of 3) with the mitigation measures presented in this Environmental Management Plan (EMP) (Vol. 3 of 3) report:

1. Access roads preparation (Impact: *Localised low*, Significant: *low*);
2. A single 22/11 kV power line servitude linking the proposed solar park to the substation (Impact: *Localised low*, Significant: *low*);
3. Underground cable trenching (Impact: Localised low, Significant: low);
4. Site clearing and preparation (Impact: *Localised low*, Significant: *low*);
5. Fencing (Impact: Localised low Significant: low);
6. Soil / Ground preparation (Impact: Localised low, Significant: low);
7. Power line connectivity (Impact: Localised low, Significant: low);
8. Foundation (Impact: Localised high, Significant: low);
9. Posts driving works (Impact: *Localised low*, *Significant: low*);
10. Structure mounting (Impact: Localised very low, Significant: Negligible);
11. Module clamping (Impact: Localised very low, Significant: Negligible);
12. DC wiring and electrical equipment installation (Impact: *Localised low*, *Significant: low*);
13. AC electrical works (Impact: *Localised low*, *Significant: low*);
14. Installation of Communication Monitoring (Impact: *Localised low*, *Significant: low*);
15. Commissioning (Impact: *Localised very low*, Significant: Negligible);
16. Soar Energy Generation and Maintenance (for 25 Years) (Impacts: *Localised very low*, Significant: *Negligible*);
17. Decommissioning (After 25 Years) / Upgrade of Facility (Impacts: Localised very low, Significant: *Negligible*).

1.4.2 Summary and Assessment Results of the Key Issues

The following is the summary of the key issues that have been considered in the EIA processes with respect to the likely impacts (without mitigations) that the proposed project activities will have during the preconstruction, construction, operation and decommissioning stages of the proposed 10MW Okahandja solar park:

1. Land Use Impacts (Impact: *Very low*, Significant: *Negligible*);
2. Surficial geology (Impact: *Localised high*, Significant: *Low*);
3. Water Use and Quality (Impact: *Very low*, Significant: *Negligible*);
4. Faunal loss (Impact: *Localised Very Low*, Significant: *Negligible*);
5. Flora loss (Impact: *Localised Very Low*, Significant: *Negligible*);
6. Landscape and Visual Change (Impact: *Localised low*, Significant: *Negligible*);
7. Light Reflection (Impact: *Very low*, Significant: *Negligible*);
8. Ground Conditions Contamination (Impact: *Localised low*, Significant: *Negligible*);
9. Noise and Vibration (Impact: *Localised low*, Significant: *Negligible*);
10. Air Quality (Impact: *Localised low*, Significant: *Negligible*);
11. Cultural and Paleontological Resources (Impact: *Very low*, Significant: *Negligible*);
12. Socioeconomic (Energy Security, Potential Employment, Knowledge Creation and Awareness Raising) (Impact: *High*, Significant: *High*);
13. Electrical Safety (Impact: *Localised low*, Significant: *Negligible*);
14. Occupational Health and Safety (Impact: *Localised low*, Significant: *Negligible*);
15. Public Access (Impact: *Localised low*, Significant: *Negligible*);
16. Waste Management (Impact: *Localised low*, Significant: *Negligible*).

1.4.3 Overall the Results of the Significant Impact

The assessment of significant impacts depended upon the degree to which the proposed project activities are likely to result in unwanted consequences on the receptor covering physical and biological environments. Overall, the assessment of significant impacts has focused on the ecosystem-based approach that considers potential impacts to the ecosystem. The main key sources of impacts that have been used in the determination of significant impacts posed by the proposed solar park comprised all the activities associated with the preconstruction, construction, operation and decommissioning stages. Each of the main areas of impact have been identified and assessed as follows:

- ❖ Positive Impacts are classified under a single category; they are then evaluated qualitatively with a view to their enhancement, if practical;
- ❖ Negligible or Low Impacts will require little or no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, or that the receptor is of low sensitivity);
- ❖ Medium or High Impacts require the adoption of management or mitigation measures;

- ❖ High Impacts always require further management or mitigation measures to limit or reduce the impact to an acceptable level.

Overall the results of the significant impact assessment matrix for the proposed solar park as shown in Table 5.29, EIA Vol. 2 of 3 Report to be of low impact [C2] significant impacts on the biological environmental (fauna, flora and habitat) with respect to the activities of the preconstruction and part of the constructions stage. The rest of the activities of the construction, operational and decommissioning stages will have negligible impact [B0] on the biological environment (Table 5.29 EIA Vol. 2 of 3 Report). In accordance with Table 5.29 in the EIA Vol. 2 of 3 Report, the following is the summary of the results of the significant impacts of the proposed solar park project activities on the physical environment:

- ❖ Natural Environment – Air, noise, water and green space with assessment of low impacts [C2] for preconstruction and part of the constructions stage, negligible impact [B1] for 1st parts of the construction stage and negligible impact [B0] for the rest of the construction, operational and decommissioning stages;
- ❖ Built Environment – Houses, roads, transport systems, buildings and infrastructure with assessment of negligible impact [B1] for preconstruction and the 1st parts of the construction stage and negligible impact [B0] for the rest of the construction, operational and decommissioning stages;
- ❖ Socioeconomic and Cultural –Characteristics of the local societies and communities with assessment of negligible impact [B1] for preconstruction and the 1st parts of the construction stage and negligible impact [B0] for the rest of the construction, operational and decommissioning stages.

1.5 The Environmental Management Plan (EMP)

Based on the findings of the EIA Vol. 2 of 3 Report, the mitigation measures that are provided in this Environmental Management Plan (EMP) Report Vol. 3 of 3 as detailed in Table 3.1 for the solar park and powerline development (preconstruction and construction stages), Table 4.1 for the solar park and powerline operation and Table 5.1 for the solar park and powerline rehabilitation stage. The following is the summary outline of the EMPs as detailed in Tables 3.1, 4.1 and 5.1:

- (i) **Solar Park and powerline development (Preconstruction and construction stages):**
 - ❖ Socioeconomic and environmental performance;
 - ❖ Community, Health and Safety;
 - ❖ Change in land use to energy generation;
 - ❖ Visual, noise and vibrations;
 - ❖ Species (birds and bats) injury, disturbance (and potential alteration of behaviour), or mortality;
 - ❖ Disturbance of fauna and flora and habitat alteration;
 - ❖ Pollution of biophysical environment (air, soil and water);

- ❖ Occupational Health and Safety;
- ❖ Soil erosion;
- ❖ Possible loss of the seed bank in the topsoil;
- ❖ Air quality (dust or Particulate Matter (PM) pollution), and;
- ❖ Resource use / depletion of natural resources.

(ii) Solar Park and powerline operational and maintenance stage:

- ❖ Social and Environmental Performance;
- ❖ Community Health and Safety;
- ❖ Occupational Health and Safety;
- ❖ Air quality (dust or Particulate Matter (PM) pollution);
- ❖ Attraction of species (birds and bats) to the area due to open water and subsequent injury, disturbance, or mortality of species;
- ❖ Species injury, disturbance (and potential alteration of behaviour), or mortality;
- ❖ Pollution of biophysical environment (soil and water), and;
- ❖ Resource use / depletion of natural resources.

(iii) Solar Park and powerline rehabilitation stage:

- ❖ Social and Environmental Performance & Visual, and;
- ❖ Socioeconomic.

2. ROLES AND RESPONSIBILITIES

2.1 Introduction

This section contains the roles and responsibilities with respect to the Environmental Management Plan (EMP) for the planning and permitting, preconstruction, construction, and operational stages of the proposed 10MW Solar PV Park by Okahandja Solar (Pty) Ltd. A generic organisation structure for Okahandja Solar (Pty) Ltd with respect to the roles and responsibilities for implementation of this EMP is shown in Fig. 2.1.

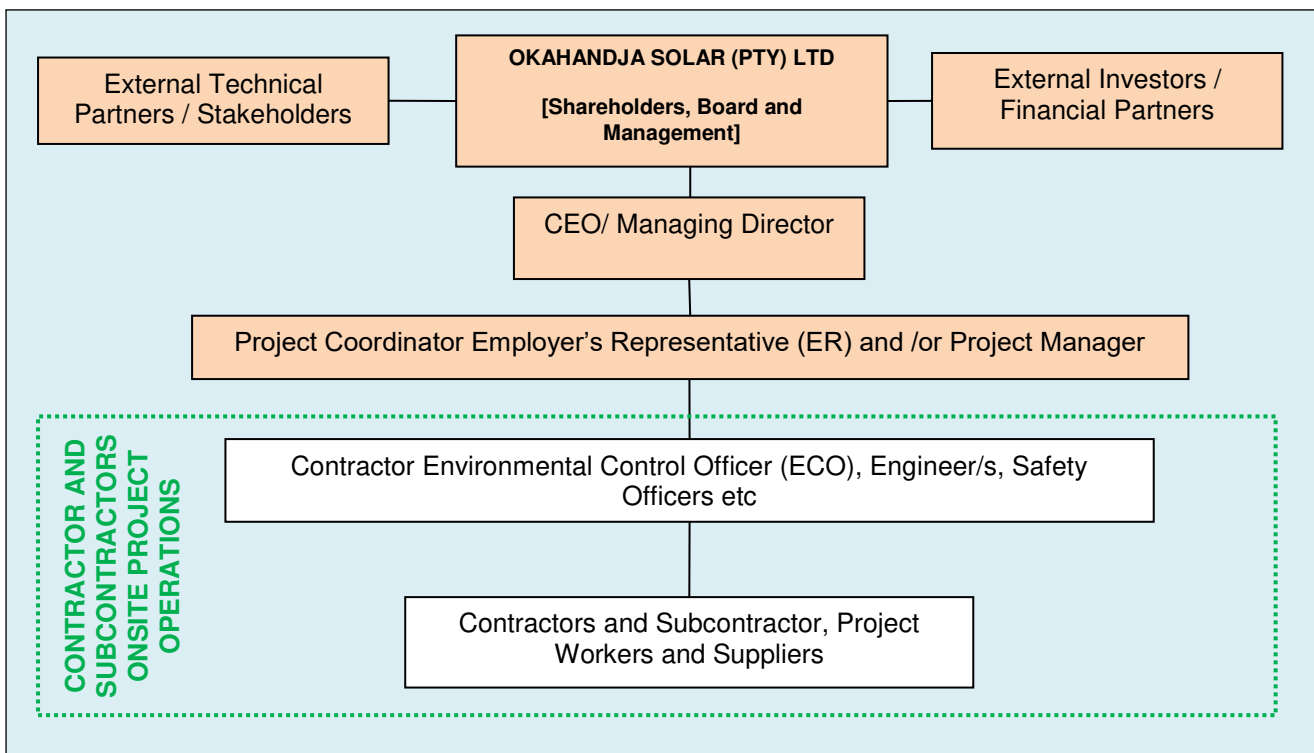


Figure 2.1: Okahandja Solar (Pty) Ltd organisational structure for the proposed 10MW Solar PV Park with respect to this implementation of this EMP.

2.2 Roles and Responsibilities

2.2.1 Employer's Representative (ER) / Project Manager

Okahandja Solar (Pty) Ltd is to appoint an **Employer's Representative (ER)** with the following responsibilities:

- ❖ Act as the Employer's (Okahandja Solar (Pty) Ltd) on-site project manager and implementing agent;
- ❖ Appoint the Environmental Control Officer (ECO);
- ❖ Ensure that the Employer's responsibilities are executed in compliance with the relevant legislation and this EMP;

- ❖ Ensure that all the necessary environmental authorisations and permits have been obtained;
- ❖ Assist the Contractor in finding environmentally responsible solutions to challenges that may arise (with input from the ECO);
- ❖ Should the ER be of the opinion that a serious threat to or impact on the environment may be caused by the construction operations, he/she may stop work; the Employer must be informed of the reasons for the stoppage as soon as possible;
- ❖ The ER has the authority to issue fines for transgressions of basic conduct rules and/or contravention of this EMP;
- ❖ Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the EMP, the ER can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied;
- ❖ Report to the Employer on the implementation of this EMP on site (with input from the ECO and/or independent environmental auditor);
- ❖ Maintain open and direct lines of communication between the Employer, ECO, Contractor and Interested and Affected Parties (I&APs) with regards to environmental matters, and;
- ❖ Attend regular site meetings and inspections.

2.2.2 Environmental Control Officer (ECO)

The **Environmental Control Officer (ECO)** has the following responsibilities:

- ❖ Assist the ER in ensuring that the necessary environmental authorisations and permits have been obtained;
- ❖ Assist the ER and Contractor in finding environmentally responsible solutions to challenges that may arise;
- ❖ Conduct environmental monitoring as per this EMP and other regulatory requirements ;
- ❖ Recommend on the issuing of fines for transgressions of basic conduct rules and/or contraventions of the EMP to the ER;
- ❖ Advise the ER on the removal of person(s) and/or equipment not complying with the specifications of this EMP;
- ❖ Carry out regular site inspections (on average once per week) of all construction / operational areas with regards to compliances to this EMP; report any non-compliance(s) to the ER as soon as possible;
- ❖ Organise for an independent internal audit on the implementation of and compliance to this EMP to be carried out half way through the construction period and one per year during the operational stage and the audit must be reports to be submitted to the ER who in turn must submit it to the management;

- ❖ Organise for an independent post-construction environmental audit to be carried out;
- ❖ Continuously review this EMP and recommend additions and/or changes to the EMP document;
- ❖ Monitor the Contractor's environmental awareness training for all new personnel coming onto site;
- ❖ Keep records of all activities related to environmental control and monitoring; the latter to include a photographic record of the construction / operational and environmental control and a register of all major incidents; and
- ❖ Attend regular site meetings.

2.2.3 Contractor

The responsibilities of the **Contractor** include:

- ❖ Comply with the relevant legislation and municipal by-laws;
- ❖ Preparation and submission to Okahandja Solar (Pty) Ltd of the following Management Plans:
 - Environmental awareness training and inductions;
 - Emergency preparedness and response;
 - Waste management, and;
 - Health, Safety and Environment (HSE).
- ❖ Ensure adequate environmental awareness training for senior site personnel;
- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement; the ECO is to provide the course content and the following topics, at least but not limited to, should be covered:
 - The importance of complying with the relevant Namibian, international and best practice legislation;
 - Roles and responsibilities, including emergency preparedness;
 - Basic rules of conduct (Do's and Don'ts);
 - EMP: aspects, impacts and mitigation;
 - Fines for failure to adhere to this EMP;
 - Health, Safety Environment (HSE) requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations, and;

- ❖ Attend regular site meetings and environmental inspection.

2.2.4 Construction Supporting Teams

The construction of the proposed 10MW Solar PV Park will require an array of specialist teams working very closely with their suppliers and core Okahandja Solar (Pty) Ltd onsite operations team. The following is a summary of some of the specialists that will be required during the preconstruction and construction phase as part of the team of contractors:

- ❖ All Suppliers, installer, mechanical and crane contractors, electrical contractors and civil / structural contractors, each with their respective subcontractors and suppliers, would report directly to the Employer's Representative (ER), acting as the onsite Project Manager.

3. PRECONSTRUCTION AND CONSTRUCTION EMP

3.1 Introduction

This section contains the Environmental Management Plan (EMP) for the preconstruction and construction related activities. The main activities of the preconstruction stage will be the grassy removal for the Solar Park area and minor bush clearing of the powerline route, upgrading and/or construction, including rehabilitation, of access road (s) to and from the proposed solar park development areas. The construction phase will cover the manufacture / building of the required structures such as the solar panels, foundation excavation, steel works and concrete casting. The EMP makes provisions for management of a wider array of preconstruction and construction related activities. Table 3.1 outlines the EMP framework for the preconstruction and construction related activities. Always, adhere to the regulations, rules, procedures, current and future regional and local land use plans.

Table 3.1: Environmental management plan for construction stage.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|-------------------|---|--|---|---|---|
| 1) All activities | <ul style="list-style-type: none"> Management and Monitoring | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Ensure that all aspects related to the EMP are implemented during the preconstruction and construction phase. Hold regular site meetings/inspections. Make provision in the minutes of the meetings for reporting on all aspects of the EMP related to the construction of the solar park. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing and Throughout the project life cycle |
| 2) All activities | <ul style="list-style-type: none"> Consultation and Disclosure | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Maintain open and direct lines of communication between the Employer (Okahandja Solar (Pty) Ltd), Contractor and I&APs with regards to environmental matters. Consult with project affected communities in a structured and culturally appropriate manner. Consultation should be "free" (<i>of external manipulation, interference or coercion, and intimidation</i>), "prior" (<i>timely disclosure of information</i>) and "informed" (<i>relevant, understandable and accessible information</i>). Adequately incorporate project affected communities' concerns. | | |
| 3) All activities | <ul style="list-style-type: none"> Grievance Mechanism | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Ensure a mechanism for receiving and resolving any concerns and grievances related to the project's social and environmental performance during the construction phase. Address concerns promptly and transparently and in a culturally appropriate manner. | | |
| 4) All activities | <ul style="list-style-type: none"> Training including awareness and inductions | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Train employees and contractors in matters related to the project's social and environmental performance, Namibia's regulatory requirements. Ensure adequate environmental awareness training for all senior site personnel. Give environmental induction presentations to all site personnel prior to work commencement. | | |

Table 3.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|-------------------|--|--|--|---|-----------------------------|
| 5) All activities | <ul style="list-style-type: none"> Labour and Working Conditions | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Establish, maintain and improve the worker-management relationship. Base the employment relationship on equal opportunity and fair treatment and no discrimination to be allowed. Comply with Namibia's labour and employment laws and prevent unacceptable forms of labour, i.e. harmful child and forced labour. Promote safe and healthy working conditions and the protection and promotion of worker health. Prepare a Human Resources Policy and document and communicate the Working Conditions and Terms of Employment. Respect Collective Agreements and the right of workers to organize and bargain collectively. Prepare a Retrenchment Plan. Implement a Grievance Mechanism. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 6) All activities | <ul style="list-style-type: none"> Employment and procurement opportunities | <ul style="list-style-type: none"> Socioeconomic | <ul style="list-style-type: none"> Ensure local recruitment (of registered contractors or qualified and certified personnel, registered and certified with the appropriate statutory authority as per Electricity Control Board (ECB) licensee duty) and procurement to maximize benefit to the local area and region. | | Ongoing |
| 7) All activities | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Prepare and submit an Emergency Preparedness and Response Plan. Adhere to all Namibian Health and Safety Regulations. Occupational Health and Safety Training to be provided to all employees. Ensure that qualified first aid can be provided at all times. Provide and ensure the active use of Personal Protective Equipment (PPE). | | Pre-construction Ongoing |
| 8) All activities | <ul style="list-style-type: none"> Community Health and Safety | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Prevent communicable disease (e.g sexually transmitted diseases (STDs) such as HIV/AIDS transmission): provide surveillance and active screening and treatment of employees; prevent illness among employees in local communities (through health awareness and education initiatives); ensure ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers; and promote immunization. | | Ongoing |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|-----------------------------------|--|---|--|---|------------------------------|
| 9) All activities | <ul style="list-style-type: none"> Unauthorized public access | <ul style="list-style-type: none"> Community Safety | <ul style="list-style-type: none"> Use gates on the access road(s) and the entire solar park site must be fenced off. Solar Park should not be accessible to anyone from the public. Notice or information boards relating public safety hazards and emergency contact details should be put up at the gate(s) and at the solar park. Create a viewpoint area, possibly including an information centre, for the public/tourists if required. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Pre- and during construction |
| 10) All activities | <ul style="list-style-type: none"> Construction of solar park | <ul style="list-style-type: none"> Change in land use from "Agriculture" to "Energy Generation". | <ul style="list-style-type: none"> Restrict construction activities to demarcated areas; all other areas will be regarded as "no go" zones in order to minimize the impact on the surrounding remaining land which can still be used for agriculture; Adhere to the regulations, rules, procedures, current and future regional and local land use plans. | | During construction |
| 11) Solar park layout planning | <ul style="list-style-type: none"> Solar park layout | <ul style="list-style-type: none"> Visual | <ul style="list-style-type: none"> Minimize the presence of secondary structures: minimize number of access roads, and bury intra-project power lines. Adhere to the regulations, rules, procedures, current and future regional and local land use plans. | | Pre-construction |
| 12) Solar park sitting and layout | <ul style="list-style-type: none"> Electromagnetic interference (aviation radar and telecommunications) | <ul style="list-style-type: none"> Community Health and Safety | <ul style="list-style-type: none"> <u>Aviation radar:</u> <ul style="list-style-type: none"> Consider the designs of the components; Investigate the use of radar-absorbent surface treatments (to minimize electrical disturbance); Consider the geometric layout and location of the solar park in relation to air traffic routes; Consider radar design alterations, i.e. relocation of the affected radar, radar blanking of the affected area, or the use of alternative radar systems to cover the affected area. <u>Telecommunication systems:</u> <ul style="list-style-type: none"> Avoid direct physical interference of point-to-point communication systems; Modify the existing aerial; Install a directional antenna; Boost the signal by installing an amplifier. | | Pre-construction |

Table 3.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--|--|---|---|---|-----------------------------|
| Solar park sitting and layout (<i>Cont.</i>) | | | <ul style="list-style-type: none"> Television broadcasts: <ul style="list-style-type: none"> Site the solar park away from the line-of-sight of the broadcaster transmitter; Make use of more non-metallic material in the construction of the solar park | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Pre-construction |
| | <ul style="list-style-type: none"> Configuration of solar park | <ul style="list-style-type: none"> Species (birds and bats) injury, disturbance (and potential alteration of behaviour), or mortality. | <ul style="list-style-type: none"> Solar park panels to be grouped (rather than spreading the panels widely). | | Pre-construction |
| | <ul style="list-style-type: none"> Aircraft navigation safety (potential collision or the alteration of flight paths) | <ul style="list-style-type: none"> Community Safety | <ul style="list-style-type: none"> Consult the air traffic authorities so that the installation of the solar park will conform to air traffic safety regulations regarding solar park if any regulations exists. | | Pre-construction |
| 13) Solar park design specifications | <ul style="list-style-type: none"> Solar park appearance | <ul style="list-style-type: none"> Visual | <ul style="list-style-type: none"> Solar park, height and colour must be kept uniform; Solar park installation may be painted with a non-reflective coating to avoid high reflections from the park; Avoid using graphics or lettering on the solar park installation. | | Pre-construction |
| 14) All activities | <ul style="list-style-type: none"> Onsite construction camp, assumes that it will only be a daily (tented) temporary camp and that no buildings, etc. will be constructed as all the key workers will utilise existing accommodation and camping facilities in Okahandja Town | <ul style="list-style-type: none"> Disturbance of fauna and flora and habitat alteration | <ul style="list-style-type: none"> Except the security personnel of up to two (2) personnel, all the key workers will utilise existing accommodation and camping facilities in Okahandja Town The planning and design to ensure minimum impact to the environment. No trees or natural vegetation may be removed for the making of fires. No animal may be injured, fed, trapped, hunted or harmed in any way. No off-road driving will be allowed. No trespassing on adjoining properties is allowed and no livestock, game or vegetation are to be interfered with. | | Pre-construction Ongoing |

Table 3.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|----------------------------------|--------|--|--|---|-------------|
| All activities (14) <i>Cont.</i> | | <ul style="list-style-type: none"> • Pollution of biophysical environment (air, soil and water) | <ul style="list-style-type: none"> • No fires will be allowed, unless a specific area has been identified and set aside by the ER for the cooking of food. • Vehicle maintenance/servicing/washing not to be allowed anywhere on site/at the camp. • Portable toilets to be provided and used at the camp. • Sanitary wastewater to be released into a French drain System in the absence of municipal sewage system. • Use bio-degradable detergents on site. • Enforce proper waste (hazardous and non-hazardous) management practices (as per Waste Management Plan) – waste and litter to be disposed of in scavenger and weatherproof bins and the refuse to be collected by the contractor and disposed of at least once a week. | <ul style="list-style-type: none"> • Okahandja Solar (Pty) Ltd • Contractor • Subcontractors | Ongoing |
| | | <ul style="list-style-type: none"> • Occupational Health and Safety | <ul style="list-style-type: none"> • No fires will be allowed, unless a specific area has been identified and set aside by the ER for the cooking of food. • Ensure that employees are trained in the use of appropriate firefighting equipment and ensure that such equipment is on hand at all times. • Comply with all safety regulations regarding electricity supply. • Supply potable water for human consumption and other domestic uses; conduct chemical testing of water samples on a monthly basis (if applicable). • Make suitable arrangements, as far as practicable, for the maintenance of health, the prevention and overcoming of outbreaks of disease and of adequate first aid services. • Ensure that security arrangements are in place. | | Ongoing |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|---------------------------------|---|---|---|---|------------------------------|
| 15) Site preparation | <ul style="list-style-type: none"> Clearing of areas for construction | <ul style="list-style-type: none"> Disturbance of fauna and flora and habitat alteration | <ul style="list-style-type: none"> Restrict construction activities to previously demarcated areas; all other areas will be regarded as "no go" zones in order to minimize the impact on the surrounding land. Minimize the removal of native plant species; no vegetation may be removed/damaged without direct instructions from the onsite manager. No off-road driving will be allowed. No animal may be injured, fed, trapped, hunted or harmed in any way. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| | | <ul style="list-style-type: none"> Soil erosion | <ul style="list-style-type: none"> <u>Sediment mobilization and transport</u>: reduce or prevent soil erosion (schedule activities to avoid heavy rainfall periods; contour and minimize length and steepness of slopes; mulching to stabilize exposed areas; re-vegetate areas promptly; and design channels and ditches for post-construction flow). <u>Structural (slope) stability</u>: provide effective short-term measures for slope stabilization, sediment and subsidence control until long-term measures (during operations) can be implemented; provide adequate drainage systems to minimize and control infiltration. | | Ongoing |
| | | <ul style="list-style-type: none"> Possible loss of the seed bank in the topsoil | <ul style="list-style-type: none"> The upper layer of soil (10-20 cm), where alluvial, to be stripped and stockpiled separately (1-2 m high piles to allow for proper aeration). Install drainage to protect the topsoil pile from (water) erosion and cover it to protect it from (wind) erosion. | | Pre- and during construction |
| 16) Infrastructure construction | <ul style="list-style-type: none"> Increased traffic, presence and movement of machinery, and the establishment of soil stockpiles | <ul style="list-style-type: none"> Air quality (dust or Particulate Matter (PM) pollution) | <ul style="list-style-type: none"> Minimize the area in which the movement of construction machines will take place to reduce the effects of dust pollution. Minimize dust from material handling sources (e.g. conveyors and bins) by using covers and/or control equipment (e.g. water suppression). Minimize dust from open area sources, including storage piles, by using control measures (install enclosures and covers, and increase the moisture content). Avoid the excavation, handling and transport of erodible materials under high wind conditions or when a visible dust plume is present. | | Ongoing |

Table 3.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|---|---|---|--|---|------------------------------|
| Infrastructure construction (16) <i>cont.</i> | <ul style="list-style-type: none"> Increased traffic/vehicle movement | <ul style="list-style-type: none"> Air quality (dust or Particulate Matter (PM) pollution) | <ul style="list-style-type: none"> Maintain the road surface to preserve surface characteristics (e.g. texture and roughness). Use dust control/suppression methods, such as applying water or non-toxic chemicals to minimize dust (oil and oil by-products is not a recommended measure to control road dust). | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| | <ul style="list-style-type: none"> Increased traffic, presence and movement of machinery (exhaust from diesel engines) | <ul style="list-style-type: none"> Air quality & Occupational Health and Safety | <ul style="list-style-type: none"> Fleet owners/operators to implement manufacturer recommended engine maintenance programs (to control vehicle emissions: Carbon Monoxide (CO), Nitrogen Oxide (NO_x), Sulphur Dioxide (SO₂), Particulate Matter (PM) and Volatile Organic Compounds (VOCs)). | | Ongoing |
| | <ul style="list-style-type: none"> Presence of machinery, construction workers, infrastructure (solar panels and transmission towers) and associated equipment | <ul style="list-style-type: none"> Visual and noise | <ul style="list-style-type: none"> Avoid critical habitats (for site transmission and distribution rights of way, lines, towers and substations) through using existing utility and transport corridors (transmission and distribution) where possible. | | Pre- and during construction |
| | <ul style="list-style-type: none"> Increased traffic, movement of machinery | <ul style="list-style-type: none"> Occupational and Community Safety | <ul style="list-style-type: none"> Adopt best transport safety practices by implementing the following measures: emphasize safety aspects among drivers; improve driving skills and require licensing of drivers; adopt limits for trip duration; avoid dangerous routes and times of day; and use speed control devices. Regularly maintain vehicles and use manufacturer approved parts. Use locally sourced materials (where possible) to minimize transport distances. Employ safe traffic control measures, including the use of traffic and safety warning signs and flag persons to warn of dangerous conditions. | | Ongoing |
| | <ul style="list-style-type: none"> Solar panels foundations | <ul style="list-style-type: none"> Occupational Safety | <ul style="list-style-type: none"> Ensure that all excavations are properly performed and in accordance with Occupational, Health and Safety (OH&S) regulations. Ensure that the handling of concrete follow health and safety precautions (as per Material Safety Data Sheets (MSDS)). | | During construction |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|---------------------------------------|--|---|---|---|---------------------|
| 17) Assembly of solar park components | <ul style="list-style-type: none"> Working at heights | <ul style="list-style-type: none"> Occupational Safety | <ul style="list-style-type: none"> Test integrity of structure(s) before work commences. Implement a fall protection program (including training in climbing techniques and the use of fall protection measures; inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers). Establish criteria for use of 100% fall protection (the system should be fitting for the solar park structure and movements (ascent, descent, and moving from point to point)). Install fixtures on tower components to facilitate the use of fall protection systems. Provide an adequate work-positioning device system to workers (with connectors on positioning systems compatible with the solar park components to which they are attached). Ensure proper rating and maintenance of hoisting equipment and training of hoist operators. Use safety belts of not less than 15.8 mm two in one nylon or material of equivalent strength; replace rope safety belts before signs of aging or fraying of fibres become evident. Workers to use a second (backup) safety strap when operating power tools at height. Remove signs/other obstructions from poles/structures before work commences. Use approved tool bags for lowering/raising tools/materials to workers on elevated structures. Avoid conducting tower installation during poor weather conditions (especially where there is a risk lightning strikes). | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | During construction |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|---|--|--|--|---|------------------------------|
| 18) Power transmission and distribution | <ul style="list-style-type: none"> Underground cables (Solar park to transformer station; transmission lines) | <ul style="list-style-type: none"> Habitat alteration & Occupational and Community Health | <ul style="list-style-type: none"> Restrict excavation activities to previously demarcated areas; all other areas will be regarded as "no go" zones in order to minimize the impact on the surrounding land. Ensure that all excavations are properly performed and in accordance with Occupational, Health and Safety (OH&S) regulations. Restrict trench excavation to a pace that matches cable installation and backfill. No more than 300 m of open trench to exist at any time. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Pre- and during construction |
| 19) Power transmission and distribution | <ul style="list-style-type: none"> Habitat alteration | <ul style="list-style-type: none"> Bird and bat collisions and electrocutions | <ul style="list-style-type: none"> Align transmission corridors to avoid critical habitats. Maintain 1.5 m spacing between, or cover energized components and grounded hardware. Consider the installation of underground transmission and distribution lines (sensitive areas). Install visibility enhancement object (marker balls, bird deterrents, or diverters). | | Pre- and during construction |
| 20) Power transmission and distribution | <ul style="list-style-type: none"> Electric and Magnetic Fields (EMF) | <ul style="list-style-type: none"> Occupational and Community Health | <ul style="list-style-type: none"> Ensure that average and peak exposure levels remain below the reference levels developed by the Commission of Non-Ionizing Radiation Protection (ICNIRP). Reduce the EMF (from power lines, substations, or transformers) by applying engineering techniques (if levels are expected or confirmed above the recommended levels): shielding with specific metal alloys; burying transmission lines; increasing the height of the transmission towers; or modifications to size, spacing and configuration of conductors. | | Pre- and during construction |
| 21) Power transmission and distribution | <ul style="list-style-type: none"> Hazardous materials management | <ul style="list-style-type: none"> Pollution of biophysical environment (soil and water) | <ul style="list-style-type: none"> Minimize the use of SF6 (greenhouse gas). The use of PCBs has largely been discontinued (see <i>IFC EHS Guidelines for Electric Power Transmission and Distribution</i> for the management of PCBs should it be used). All activities, Hazardous materials management. Wood preservatives? Needed? | | Ongoing |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|---|--|--|--|---|-------------|
| 22) Power transmission and distribution | <ul style="list-style-type: none"> Live power lines | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> Allow only trained/certified employees to install, maintain, and repair electrical equipment. Deactivate and properly ground live power distribution lines before work is conducted on, or close to, distribution lines. Ensure that live-wire work is conducted by qualified workers and in accordance to the specific safety and insulation standards. Do not approach an exposed energized or conductive part (even if the worker is trained) unless: the person is properly insulated from the energized part (e.g. gloves) and <i>vice versa</i>; the worker is properly isolated and insulated from any other conductive part (live-line work). Implement a Health and Safety Plan, detailing specific training, safety measures, personal safety devices and other precautions, where maintenance and operation is required within minimum setback distances. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 23) Power transmission and distribution | <ul style="list-style-type: none"> Working at heights on poles/structures | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> See Assembly of solar park components, working at heights. | | Ongoing |
| 24) Power transmission and distribution | <ul style="list-style-type: none"> EMF | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> Prepare and implement an EMF Safety Program containing information on: potential exposure levels in the workplace and the use of personal monitors; training of workers to identify EMF levels and hazards; the identification and establishment of safety zones (areas acceptable for public exposure vs. those with expected elevated EMF levels and that only properly trained workers may access); action plans dealing with potential or confirmed exposure of levels that exceed those developed by the International Commission on Non-ionizing Radiation Protection (ICNIRP) and Institute of Electrical and Electronics Engineers (IEEE). | | Ongoing |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|---|--|---|--|---|------------------------------|
| 25) Power transmission and distribution | <ul style="list-style-type: none"> Electrocution | <ul style="list-style-type: none"> Community Health and Safety | <ul style="list-style-type: none"> Use signs, barriers, and education to prevent public contact with potentially dangerous equipment. Ground conducting objects installed near power lines. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 26) All activities | <ul style="list-style-type: none"> Water Management | <ul style="list-style-type: none"> Resource use / depletion of natural resources | <ul style="list-style-type: none"> Implement a water conservation program, promoting the continuous reduction in water consumption and achieving savings in water pumping, treatment and disposal costs, commensurate with the magnitude and cost of water use. | | Pre- and during construction |
| 27) All activities | <ul style="list-style-type: none"> Hazardous materials management Maybe this can come out; important, but more to do with overall hazardous materials management | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Establish hazardous materials management priorities (based on hazard analysis of risky operations). Avoid, or minimize the use of hazardous materials. Prevent uncontrolled releases of hazardous materials to the environment or uncontrolled reactions that may result in fire or explosion. Make us of engineering controls (containment, automatic alarms and shut-off systems); implement management controls (procedures, inspections and training, communication and drills) to address residual risks not prevented or controlled through engineering controls. | | Pre- and during construction |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------|--|---|--|---|------------------------------|
| 28) All activities | <ul style="list-style-type: none"> Hazardous materials management (of mainly fuels and lubricating and hydraulic oils for construction and operating vehicles and equipment; substation transformer insulating oil; other chemicals used during solar park construction, including concrete admixture chemicals such as surface active agents, plasticizers and form release oil (mineral); equipment coolants and maintenance chemicals such as solvent cleaners and paints) | <ul style="list-style-type: none"> Pollution of biophysical environment (soil and water) | <ul style="list-style-type: none"> Implement prevention and control measures for the use, handling and storage of hazardous materials: <ul style="list-style-type: none"> <u>Materials transfer</u>: regularly inspect, maintain and repair fittings/pipes/hoses; make use of drip trays/other drip containment measures at connection/possible overflow points; <u>Overfill protection</u>: use trained filling operators; install gauges on tanks to measure the volume inside; make use of dripless hose connections (vehicle tanks) and fixed connections (storage tanks); use a catch basin/drip tray around the fill pipe to collect spills; <u>Reaction, fire, and explosion prevention</u>: hazardous materials to be stored in marked containers and separate (from non-hazardous materials); incompatible hazardous materials (acids, bases, flammables, oxidizers, reactive chemicals) to be stored in separate areas and with containment facilities separating material storage; smoking or working with open flames not to be permitted in the presence of these substances; limit access to hazardous waste storage areas and clearly label and demarcate the area; conduct regular inspections of the areas and document the findings; prepare and implement spill response and emergency plans; train employees in the use of appropriate firefighting equipment and ensure that such equipment is on hand at all times. Train workers on the correct transfer and handling of fuels and chemicals and the response to spills. Immediately report and clean up any accidental hydrocarbon spill: Spill-Sorb, Drizzat Pads, Enretech Powder or Peat Moss can be used to clean up small spills; in case of larger spills, the spill together with the polluted soil should be removed and disposed of at e.g. a biological remediation site. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Pre- and during construction |

Table 3.1: Cont.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------|---|--|--|---|------------------|
| 29) All activities | <ul style="list-style-type: none"> Hazardous materials management | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> Implement hazard communication and training programs (including information on Material Safety Data Sheets (MSDS)) to make employees aware of workplace chemical hazards and how to respond to these. Provide and ensure the active use of Personal Protective Equipment (PPE). | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 30) All activities | <ul style="list-style-type: none"> Waste management: solid | <ul style="list-style-type: none"> Air quality | <ul style="list-style-type: none"> Avoid the open burning of waste (whether hazardous, or non-hazardous). | | Ongoing |
| 31) All activities | <ul style="list-style-type: none"> Waste management: non-hazardous and hazardous | <ul style="list-style-type: none"> Pollution of biophysical environment | <ul style="list-style-type: none"> Prepare and submit a Waste Management Plan before construction commences. The generation of waste should be avoided or minimized as far as practicable; where it cannot be avoided, but has been minimized, waste should be recovered and reused; where waste cannot be recovered/reused, it should be treated, destroyed and disposed of in an environmentally sound manner. Institute and maintain good housekeeping and operating practices; littering is not allowed. Non-hazardous and hazardous waste to be collected and stored separately: Non-hazardous waste to be transported to and disposed at an approved waste disposal site. Hazardous waste: recycle petroleum (fuels and lubricants) waste products and collect and recycle batteries and print cartridges. The remainder to be transported to a recognized hazardous waste disposal site. | | Pre-construction |
| 32) All activities | <ul style="list-style-type: none"> Waste management: sanitary | <ul style="list-style-type: none"> Pollution of biophysical environment | <ul style="list-style-type: none"> Portable toilets (1 toilet per 30 employees; preferred 1:15) to be provided on the site; contents to be collected by an approved contractor and disposed of at an approved sewage site. | | Ongoing |

Table 3.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------|---|--|--|---|----------------|
| 33) All activities | <ul style="list-style-type: none"> Waste water management - waste water treatment | <ul style="list-style-type: none"> Pollution of biophysical environment | <ul style="list-style-type: none"> Ensure that the discharge of process wastewater and/or sanitary wastewater and/or wastewater from utility operations and/or storm water to land conform to the regulatory requirements. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 34) All activities | <ul style="list-style-type: none"> Waste water management - storm water management | <ul style="list-style-type: none"> Soil erosion | <ul style="list-style-type: none"> Regular inspection and maintenance of permanent erosion and runoff control features. | | Ongoing |
| 35) Rehabilitation | <ul style="list-style-type: none"> Rehabilitation | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Remove all equipment, waste, temporary structures, etc. from the camp and work sites. Reshape all disturbed areas to their original contours. Cover disturbed areas with previously collected topsoil and spread evenly. Manually rip disturbed areas, where compaction has taken place, and cover the areas with previously collected topsoil. Replant any previously removed native plant species in disturbed areas; Adhere to the regulations, rules, procedures, current and future regional and local land use plans. | | Rehabilitation |

4. OPERATIONAL AND MAINTENANCE STAGE

4.1 Introduction

Once the construction and installation of the solar park and the connecting powerline have been completed, only specialised and maintenance workforce will be required to run and maintain the solar park and the powerline. Okahandja Solar (Pty) Ltd will be responsible for fulfilling the requirements in the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the operational stage of the proposed 5 MW solar park facility. A Project / Site / Health Safety and Environmental (HSE) Manager / Engineer shall be appointed by Okahandja Solar (Pty) Ltd to oversee all the site operation as well as management of the occasional cleaning and two (2) security site personnel. Table 4.1 outlines the Environmental Management Plan for the operational stage of the proposed solar park. Adherence to the regulations, rules, procedures, current and future regional and local land use plans must be observed at all time by the operational staff.

Table 4.1: Environmental management plan for the operational and maintenance stage.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|-------------------|---|--|---|---|-------------|
| 1) All activities | <ul style="list-style-type: none"> Management and Monitoring | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Ensure that all aspects related to the EMP are implemented during the operations phase. Adhere to the regulations, rules, and procedures as well as current and future regional and local and use plans. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 2) All activities | <ul style="list-style-type: none"> Consultation and Disclosure (EP 5) | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Consult with project affected communities in a structured and culturally appropriate manner throughout the operations phase. Consultation should be "free" (<i>of external manipulation, interference or coercion, and intimidation</i>), "prior" (<i>timely disclosure of information</i>) and "informed" (<i>relevant, understandable and accessible information</i>). Adequately incorporate project affected communities' concerns. | | Ongoing |
| 3) All activities | <ul style="list-style-type: none"> Grievance Mechanism (EP 6) | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Ensure a mechanism for receiving and resolving any concerns and grievances related to the project's social and environmental performance during the operations phase. Address concerns promptly and transparently and in a culturally appropriate manner. | | Ongoing |
| 4) All activities | <ul style="list-style-type: none"> Training including awareness and inductions | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Train employees and contractors in matters related to the project's social and environmental performance, Namibia's regulatory requirements. Ensure adequate environmental awareness training for all personnel. Give environmental induction presentations to all new personnel prior to work commencement. | | Ongoing |
| 5) All activities | <ul style="list-style-type: none"> Labour and Working Conditions | <ul style="list-style-type: none"> Social and Environmental Performance | <ul style="list-style-type: none"> Establish, maintain and improve the worker-management relationship. Base the employment relationship on equal opportunity and fair treatment and no discrimination to be allowed. Comply with Namibia's labour and employment laws and prevent unacceptable forms of labour, i.e. harmful child and forced labour. Promote safe and healthy working conditions and the protection and promotion of worker health. Document and communicate the Working Conditions and Terms of Employment. Respect Collective Agreements and the right of workers to organize and bargain collectively. | | Ongoing |

Table 4.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------|--|---|---|---|-------------|
| 6) All activities | <ul style="list-style-type: none"> • Employment and procurement opportunities | <ul style="list-style-type: none"> • Socio-economic | <ul style="list-style-type: none"> • Ensure local recruitment (of registered contractors or qualified and certified personnel, registered and certified with the appropriate statutory authority as per Electricity Control Board (ECB) licensee duty) and procurement to maximize benefit to region. | <ul style="list-style-type: none"> • Okahandja Solar (Pty) Ltd • Contractor • Subcontractors | Ongoing |
| 7) All activities | <ul style="list-style-type: none"> • Occupational Health and Safety | <ul style="list-style-type: none"> • Social and Environmental Performance | <ul style="list-style-type: none"> • Adhere to all Namibian Health and Safety Regulations. • Occupational Health and Safety Training to be provided to all employees. • Ensure that qualified first aid can be provided at all times. • Provide and ensure the active use of Personal Protective Equipment (PPE). | | Ongoing |
| 8) All activities | <ul style="list-style-type: none"> • Community Health and Safety | <ul style="list-style-type: none"> • Social and Environmental Performance | <ul style="list-style-type: none"> • Prevent communicable disease (e.g sexually transmitted diseases (STDs) such as HIV/AIDS transmission): provide surveillance and active screening and treatment of employees; prevent illness among employees in local communities (through health awareness and education initiatives); ensure ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers; and promote immunization. | | Ongoing |
| 9) All activities | <ul style="list-style-type: none"> • Unauthorized public access | <ul style="list-style-type: none"> • Community Safety | <ul style="list-style-type: none"> • Use gates on the access road(s) and the entire site must be fenced off. • Solar Park should not be accessible to anyone from the public. • Notice or information boards relating public safety hazards and emergency contact details should be put up at the gate(s) and at the solar park. • Create a viewpoint area, possibly including an information centre, for the public/tourists. | | Ongoing |
| 10) All activities | <ul style="list-style-type: none"> • Increased traffic/vehicle movement | <ul style="list-style-type: none"> • Air quality (dust or Particulate Matter (PM) pollution) | <ul style="list-style-type: none"> • Maintain the road surface to preserve surface characteristics (e.g. texture and roughness). • Use dust control/suppression methods, such as applying water or non-toxic chemicals to minimize dust (oil and oil by-products is not a recommended measure to control road dust). | | Ongoing |

Table 4.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------|--|--|--|---|-------------|
| 11) All activities | <ul style="list-style-type: none"> Increased traffic/vehicle movement (exhaust from diesel engines) | <ul style="list-style-type: none"> Air quality & Occupational and Community Health and Safety | <ul style="list-style-type: none"> Fleet owners/operators to implement manufacturer recommended engine maintenance programs (to control vehicle emissions: Carbon Monoxide (CO), Nitrogen Oxide (NO_x), Sulphur Dioxide (SO₂), Particulate Matter (PM) and Volatile Organic Compounds (VOCs)). | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor | Ongoing |
| 12) All activities | <ul style="list-style-type: none"> Increased traffic/vehicle movement | <ul style="list-style-type: none"> Occupational and Community Safety | <ul style="list-style-type: none"> Adopt best transport safety practices by implementing the following measures: emphasize safety aspects among drivers; improve driving skills and require licensing of drivers; adopt limits for trip duration; avoid dangerous routes and times of day; and use speed control devices. Regularly maintain vehicles and use manufacturer approved parts. Use locally sourced materials (where possible) to minimize transport distances. Employ safe traffic control measures, including the use of traffic and safety warning signs and flag persons to warn of dangerous conditions. | <ul style="list-style-type: none"> Subcontractors | Ongoing |
| 13) All activities | <ul style="list-style-type: none"> Storm water management | <ul style="list-style-type: none"> Attraction of species (birds and bats) to the area due to open water and subsequent injury, disturbance, or mortality of species | <ul style="list-style-type: none"> Implement appropriate storm water management measures so as to avoid the presence of open water in the area. | | Ongoing |

Table 4.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|------------------------------------|--|---|---|---|-----------------------------|
| 14) Operational solar park | <ul style="list-style-type: none"> Solar park components | <ul style="list-style-type: none"> Species injury, disturbance (and potential alteration of behaviour), or mortality | <ul style="list-style-type: none"> Implement monitoring programmes to study the potential impact(s) of the solar park on birds and bats. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | At the start of operations. |
| | <ul style="list-style-type: none"> Hazardous waste management | <ul style="list-style-type: none"> Pollution of biophysical environment (soil and water) | <ul style="list-style-type: none"> Solar Park to be equipped with oil absorption and collection systems. | | Ongoing |
| | <ul style="list-style-type: none"> Electromagnetic interference (television broadcasts) | <ul style="list-style-type: none"> Community Health and Safety | <ul style="list-style-type: none"> Install a higher quality or directional antenna or relocate/direct the antenna towards an alternative broadcast transmitter; or install an amplifier; or construct a new repeater station if a wide area is affected. | | When required |
| 15) General solar park maintenance | <ul style="list-style-type: none"> Cleaning of panels to prevent dust and insect build-up | <ul style="list-style-type: none"> Resource use / depletion of natural resources | <ul style="list-style-type: none"> Ensure all wash water is recycled. Ensure there are no leaks from all taps, pipes and fittings. | | Ongoing |
| | <ul style="list-style-type: none"> Periodic painting of tower structures | <ul style="list-style-type: none"> Pollution of biophysical environment (soil and water) | <ul style="list-style-type: none"> Conform to ISO 12944:1998 Paints and varnishes - Corrosion protection of steel structures by protective paint systems- Part 4: Types of surface and surface preparation. | | <i>Ad hoc</i> |
| | <ul style="list-style-type: none"> Working at heights | <ul style="list-style-type: none"> Occupational Safety | <ul style="list-style-type: none"> Test integrity of structure(s) before work commences. Implement a fall protection program (including training in climbing techniques and the use of fall protection measures; inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers). Establish criteria for use of 100% fall protection (the system should be fitting for the tower structure and movements (ascent, descent, and moving from point to point)). Install fixtures on tower components to facilitate the use of fall protection systems. Provide an adequate work-positioning device system to workers (with connectors on positioning systems compatible with the tower components to which they are attached). Ensure proper rating and maintenance of hoisting equipment and training of hoist operators. | | Ongoing |

Table 4.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--|---|---|--|---|-------------|
| General solar park maintenance (15) <i>Cont.</i> | | | <ul style="list-style-type: none"> Material of equivalent strength; replace rope safety belts before signs of aging or fraying of fibres become evident. Workers to use a second (backup) safety strap when operating power tools at height. Remove signs/other obstructions from poles/structures before work commences. Use approved tool bags for lowering/ raising tools/materials to workers on elevated structures. Avoid conducting maintenance during poor weather conditions (especially where there is a risk lightning strikes). | | |
| 16) Power transmission and distribution | <ul style="list-style-type: none"> Electric and Magnetic Fields (EMF) | <ul style="list-style-type: none"> Occupational and Community Health | <ul style="list-style-type: none"> Ensure that average and peak exposure levels remain below the reference levels developed by the Commission of Non-Ionizing Radiation Protection (ICNIRP). Reduce the EMF (from power lines, substations, or transformers) by applying engineering techniques (if levels are expected or confirmed above the recommended levels): shielding with specific metal alloys; burying transmission lines; increasing the height of the transmission towers; or modifications to size, spacing and configuration of conductors. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 17) Power transmission and distribution | <ul style="list-style-type: none"> Hazardous materials management (insulating oils / gases (Polychlorinated Biphenyls (PCB) and sulphur hexafluoride (SF6)) and fuels) | <ul style="list-style-type: none"> Pollution of biophysical environment (soil and water) | <ul style="list-style-type: none"> Minimize the use of SF6 (greenhouse gas). The use of PCBs has largely been discontinued (see <i>IFC EHS Guidelines for Electric Power Transmission and Distribution</i> for the management of PCBs should it be used). All activities, Hazardous materials management. Wood preservatives? Needed? | | Ongoing |

Table 4.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|---|--|--|---|---|-------------|
| 18) Power transmission and distribution | <ul style="list-style-type: none"> Live power lines | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> Allow only trained/certified employees to install, maintain, and repair electrical equipment. Deactivate and properly ground live power distribution lines before work is conducted on, or close to, distribution lines. Ensure that live-wire work is conducted by qualified workers and in accordance to the specific safety and insulation standards. Do not approach an exposed energized or conductive part (even if the worker is trained) unless: the person is properly insulated from the energized part (e.g. gloves) and <i>vice versa</i>; the worker is properly isolated and insulated from any other conductive part (live-line work). Implement a Health and Safety Plan, detailing specific training, safety measures, personal safety devices and other precautions, where maintenance and operation is required within minimum setback distances | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 19) Power transmission and distribution | <ul style="list-style-type: none"> Working at heights on poles/structures | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> See General solar panel / park maintenance, working at heights. | | Ongoing |
| 20) Power transmission and distribution | <ul style="list-style-type: none"> EMF | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> Prepare and implement an EMF Safety Program containing information on: potential exposure levels in the workplace and the use of personal monitors; training of workers to identify EMF levels and hazards; the identification and establishment of safety zones (areas acceptable for public exposure vs. those with expected elevated EMF levels and that only properly trained workers may access); action plans dealing with potential or confirmed exposure of levels that exceed those developed by the ICNIRP and Institute of Electrical and Electronics Engineers (IEEE). | | Ongoing |
| 21) Power transmission and distribution | <ul style="list-style-type: none"> Electrocution | <ul style="list-style-type: none"> Community Health and Safety | <ul style="list-style-type: none"> Use signs, barriers, and education to prevent public contact with potentially dangerous equipment. Ground conducting objects installed near power lines. | | Ongoing |

Table 4.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------|--|---|---|---|-------------|
| 22) All activities | <ul style="list-style-type: none"> Water Management | <ul style="list-style-type: none"> Resource use / depletion of natural resources | <ul style="list-style-type: none"> Implement a water conservation program, promoting the continuous reduction in water consumption and achieving savings in water pumping, treatment and disposal costs, commensurate with the magnitude and cost of water use. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 23) All activities | <ul style="list-style-type: none"> Hazardous materials management | <ul style="list-style-type: none"> Pollution of biophysical environment (soil and water) | <ul style="list-style-type: none"> Implement prevention and control measures for the use, handling and storage of hazardous materials. Train workers on the correct transfer and handling of fuels and chemicals and the response to spills. Immediately report and clean up any accidental hydrocarbon spill: Spill-Sorb, Drizzat Pads, Enretech Powder or Peat Moss can be used to clean up small spills; in case of larger spills, the spill together with the polluted soil should be removed and disposed of at e.g. a biological remediation site. | | Ongoing |
| | | <ul style="list-style-type: none"> Occupational Health and Safety | <ul style="list-style-type: none"> Implement hazard communication and training programs (including information on Material Safety Data Sheets (MSDS)) to make employees aware of workplace chemical hazards and how to respond to these. Provide and ensure the active use of Personal Protective Equipment (PPE). | | Ongoing |
| 24) All activities | <ul style="list-style-type: none"> Waste management: solid | <ul style="list-style-type: none"> Air quality | <ul style="list-style-type: none"> Avoid the open burning of waste (whether hazardous, or non-hazardous). | | Ongoing |

Table 4.1: *Cont.*

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------|---|--|--|---|-------------|
| 25) All activities | <ul style="list-style-type: none"> Waste management: non-hazardous and hazardous | <ul style="list-style-type: none"> Pollution of biophysical environment | <ul style="list-style-type: none"> As per Waste Management Plan. Institute and maintain good housekeeping and operating practices; littering is not allowed. Non-hazardous and hazardous waste to be collected and stored separately: Non-hazardous waste to be transported to and disposed off at an approved waste disposal site. Hazardous waste: recycle petroleum (fuels and lubricants) waste products and collect and recycle batteries and print cartridges. The remainder to be transported to a recognized hazardous waste disposal site, with prior permission from the site operator / owner. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | Ongoing |
| 26) All activities | <ul style="list-style-type: none"> Waste management: sanitary | <ul style="list-style-type: none"> Pollution of biophysical environment | <ul style="list-style-type: none"> Portable toilets (1 toilet per 30 employees; preferred 1:15) to be provided on the site; contents to be collected by an approved contractor and disposed of at an approved sewage site. Unless there will be a sewage plant? | | |
| 27) All activities | <ul style="list-style-type: none"> Waste water management | <ul style="list-style-type: none"> Pollution of biophysical environment | <ul style="list-style-type: none"> Ensure that the discharge of process wastewater and/or sanitary wastewater and/or wastewater from utility operations and/or storm water to land conform to the regulatory requirements. | | |

5. DECOMMISSIONING AND CLOSURE STAGE

5.1 Introduction

The decommissioning and closure stages of the proposed solar park will cover all the activities that aim at restoring the proposed solar park site to the state before the solar park was developed, therefore restore the land back to crop farming. The decommissioning and closure stage will only be implemented once the solar park has reached its useful life span estimated to be 25 years. The electrical and electronic components of a solar park can also be replaced once they reach their useful life span thereby extending the operational stage of the solar park without decommissioning the entire solar park structures such as transformers, internal cabling and powerline.

The decommissioning and closure stage will cover the removal of all structures such as the foundation, steel works and concrete casted to hold all structures that were constructed to support the proposed solar park. If the powerline also need to be removed, all individual poles and cables shall be removed. The EMP makes provisions for management of a wider array of activities that will be associated with decommissioning of the proposed solar park and powerline. Table 5.1 outlines the EMP framework for the decommissioning and closure stage of the proposed development.

Table 5.1: Environmental management plan for the decommissioning and closure stage.

| ACTIVITY/PROCESS | ASPECT | IMPACT | MANAGEMENT ACTIONS | RESPONSIBLE PERSON(S) | TARGET DATE |
|--------------------------------|---|---|---|---|------------------------|
| 1) Decommissioning and Closure | <ul style="list-style-type: none"> Decommissioning | <ul style="list-style-type: none"> Social and Environmental Performance & Visual | <ul style="list-style-type: none"> Isolate (electrically) the solar park from the substation. Disassemble the steel tower sections and cut off at the top of the foundation concrete; rehabilitate the hardstand area. Remove all above-ground substation infrastructure and re-use, recycle or dispose of it. Conduct a site contamination assessment; remove any contaminated material and dispose of at an appropriate disposal facility. Break up foundations in the substation and remove for disposal. Dig up below-ground substation infrastructure and remove. Conduct a validation survey to ensure that all contaminated material at the substation has been removed; remove any contaminated material and dispose of at an appropriate disposal facility. Rehabilitate access tracks not required for ongoing land use activities. Remove all other equipment, waste, etc. from the area. Reshape all disturbed areas to their original contours. Cover disturbed areas with previously collected topsoil and spread evenly. Manually rip disturbed areas, where compaction has taken place, and cover the areas with previously collected topsoil. Replant any previously removed native plant species in disturbed areas. | <ul style="list-style-type: none"> Okahandja Solar (Pty) Ltd Contractor Subcontractors | During decommissioning |
| 2) Closure | <ul style="list-style-type: none"> Loss of jobs and income | <ul style="list-style-type: none"> Socioeconomic | <ul style="list-style-type: none"> Implement a skills training programme during the operations phase. | | During operations |

6. ENVIRONMENTAL PERFORMANCE MONITORING

6.1 Overview

The monitoring process of the EMP performances for the proposed solar park project is divided into two parts and these are:

- (i) Monitoring / auditing of activities;
- (ii) Preparation of an Environmental Monitoring Report covering all activities related to the Environmental Management Plan throughout the life cycle of the proposed solar park project as may be required by relevant laws.

As part of the provisions of this EMP and the conditions of the Environmental Clearance Certificate (ECC) that will be issued by the Office of the Environmental Commissioner (OEC) in the Ministry of Environment and Tourism continuous environmental monitoring and reporting must be undertaken as may be required. The reporting process will form part of the ongoing environmental monitoring programme. Environmental monitoring programme is part of this EMP performances assessments and will need to be compiled and submitted as determined by the regulator (OEC). The process of undertaking appropriate monitoring as per specific topic and tracking performances against the objectives and documenting all environmental activities is part of internal and external auditing to be coordinated by the Environmental Control Officer (ECO) / External Consultant / Suitable qualified in-house resource person. Tables 6.1 – 6.9 outline the type of information that shall need to be recorded on a regular by as part of the monitoring process of the activities and the effects.

The second part of the monitoring of the EMP performance will require a report outlining all the activities related to effectiveness of the EMP at the end of the proposed solar park to be undertaken by the Environmental Control Officer (ECO). The types of the data sets to be used in the preparation of such a report are outlined in Tables 6.1 - 6.9. The objective will be to ensure that corrective actions are reviewed and steps are taken to ensure compliance for future EIA and EMP implementation. The report shall outline the status of the environment and any likely environmental liability after completion of the proposed project. The report shall be submitted to the OEC in the Ministry of Environment and Tourism.

Table 6.1: Monitoring of environmental performance implementation / environmental awareness training.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|---|------------|---------------------------|---------|---------|-----------|
| Is there an Environmental awareness training programme? | | | | | |
| How many people have been given environmental awareness training? | | | | | |
| Is a copy of the EMP on site? | | | | | |
| How effective is the awareness training? Do people understand the contents of the EMP? Where are the weaknesses? Ask 3 people at random various questions about the EMP. | | | | | |

Table 6.2: Monitoring of environmental performance for the temporal and permanent structures.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|--|------------|---------------------------|---------|---------|-----------|
| Are the temporal and permanent structures positioned to avoid sensitive zones, ephemeral river channels and potential sensitive sites? | | | | | |
| Has new infrastructure been created? If so, what, and how well planned / built with respect to environment? | | | | | |
| Have pit latrines been provided? Where are they situated? | | | | | |
| Do receptacles for waste have scavenging animal proof lids? | | | | | |
| What litter is there – who is littering? | | | | | |
| Are there facilities for the disposal of oils / etc and how often is it removed to an approved disposal site? | | | | | |
| Is there evidence of oil / diesel spills? Bunding or not? | | | | | |
| What fuel source is being provided for cooking? | | | | | |
| Housekeeping | | | | | |

Table 6.3: Environmental data collection.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|--|------------|---------------------------|---------|---------|-----------|
| Are records being kept? | | | | | |
| Birds' mortality records as result of collision with the solar park associated infrastructure? | | | | | |
| Birds nesting activities around the solar park? | | | | | |
| Noise level? | | | | | |
| Air Quality? | | | | | |
| Have archaeological sites been found / disturbed / described? | | | | | |
| Other key environmental data sets? | | | | | |

Table 6.4: Health, Safety and ENvironment (HSE).

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|---|------------|---------------------------|---------|---------|-----------|
| Is there First Aid Kit containing anti-histamines etc? | | | | | |
| Are dangerous areas clearly marked off? | | | | | |
| Do vehicles appear to maintain the recommended speed limits? | | | | | |
| Do vehicles drive with headlights on along the gravel roads at all times? | | | | | |

Table 6.5: Recruitment of labour.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|---|------------|---------------------------|---------|---------|-----------|
| What labour source is used? | | | | | |
| How has the recruitment practice been done? | | | | | |

Table 6.6: Management of the natural habitat and surficial materials management.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|--|------------|---------------------------|---------|---------|-----------|
| Has there been any development done on or very close sensitive areas? | | | | | |
| Has anyone been caught with plants or animals in their possession? | | | | | |
| Has there been wilful or malicious damage to the environment? | | | | | |
| Has topsoil / seed bank layer been removed from demarcated development areas and appropriately stored? | | | | | |

Table 6.7: Tracks and off-road driving.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|--|------------|---------------------------|---------|---------|-----------|
| Are existing tracks used and maintained? | | | | | |
| What new tracks have been developed and are they planned? | | | | | |
| What evidence is there of off-road driving? Who appears to be responsible? | | | | | |
| Are corners being cut, what type of turning circle are there? Three point turns vs. U turns? | | | | | |
| Have unnecessary tracks been rehabilitated and how well? | | | | | |
| Comments | | | | | |

Table 6.8: Management of surface and groundwater.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|---|------------|---------------------------|---------|---------|-----------|
| How is potable water supplied and how often? Position of tanks? | | | | | |
| Is water being wasted? | | | | | |
| Is there any leakage from pipes or taps? | | | | | |
| Has casing been left when boreholes hit water and have any records of water strikes been kept? Were water samples taken and RWL measured? | | | | | |

Table 6.9: Public relations.

| Mitigation | Compliance | Follow-up Action Required | By Whom | By When | Completed |
|--|------------|---------------------------|---------|---------|-----------|
| Have any complaints been made about the solar park construction and or operational activities by the different I&APs? If so, what, and how was the issue resolved? | | | | | |

7. ENVIRONMENTAL OBLIGATIONS

7.1 Okahandja Solar (Pty) Ltd Environmental Policy

Table 7.1 summarises the environmental statement with respect to environmental commitment that Okahandja Solar (Pty) Ltd will implement as part of the company environmental policy.

Table 7.1: Environmental statement.

| Okahandja Solar (Pty) Ltd Environmental Statement |
|--|
| <p style="text-align: center;">Okahandja Solar (Pty) Ltd is Committed to:</p> <ol style="list-style-type: none">1. Being an equal employer;2. Fully comply with all applicable environmental regulations in force in Namibia;3. Committed to precautionary approach in all our environmental strategies;4. Exercising appropriate environmental care in accordance with the provisions of this EMP.5. Committed to promoting the development of open and constructive partnerships with all the relevant stakeholders to address environmental concerns and advance necessary protection measures.6. The advancement of scientific knowledge to be applied in the identification and effective resolution of real environmental challenges associated with Solar PV development in Namibia.7. Continuously encouraging Pollution Prevention (P2), Cleaner Production (CP), Waste Minimisation, Reuse and Recycling efforts.8. Conducting regular internal and external audits of all our operations to ensure adherence to this policy and compliance to all relevant regulations throughout the lifecycle of the proposed 10MW Solar PV Park. |

7.2 Environmental Personnel Register

Table 7.2 shows the Environmental Personnel Register to be signed by every person who receives or attends the Environmental Awareness Training or who has the training material explained to him or her or in possession of the training material.

7.3 Environmental Awareness Guidance Materials

7.3.1 Key Principles Guidance

The following is the summary of the key principles of the environmental awareness guidance materials usage and application thereof:

- (i) The Environmental Rules apply to EVERYBODY. This includes all permanent, contract, or temporary workers as well as any other person who visits the solar park area. Any person who visits the solar park area will be required to adhere to the company Environmental Code of Conduct;
- (ii) The Site Manager will issue warnings and will discipline ANY PERSON who breaks anyone of the Environmental Rules and Procedures. Repeated and continued breaking of the Rules and Procedures will result in a disciplinary hearing and which may result in that person being asked to leave the site permanently;
- (iii) The ENVIRONMENT means the whole surroundings around us. The environment is made-up of the soil, water, air, plants and animals; and those characteristics of the soil, water, air, plant and animal life that influence human health and wellbeing;
- (iv) If any member of the WORK FORCE does not understand, or does not know how to keep any of Environmental Rule or Procedure, that PERSON must seek advice from the ENVIRONMENTAL CONTROL OFFICER (ECO), SITE MANAGER or CONTRACTOR. The PERSON that does not understand must keep asking until she/he is able to keep to the all the Environmental Rules and Procedures.

7.3.2 Natural Environmental Management Guidance

- ❖ Never feed, tease or play with, hunt, kill, destroy or set devices to trap any wild animal (including birds, reptiles and mammals), livestock or pets. Do not bring any wild animal or pet to the solar park area;
- ❖ Do not pick any plant or take any animal out of the solar park area EVER. You will be prosecuted and asked to leave the project area;
- ❖ Never leave rubbish and food scraps or bones where it will attract animals, birds or insects. Rubbish must be thrown into the correct rubbish bins or bags provided;
- ❖ Protect the surface material by not driving over it unnecessarily;
- ❖ Do not drive over, build upon, or camp on any sensitive habitats for plants and animals;
- ❖ Do not cut down any part of living trees / bushes for firewood;
- ❖ Do not destroy bird nest, dens, burrow pits, termite hills etc or any other natural objects in the area.

7.3.3 Vehicle Use and Access Guidance

- ❖ Never drive any vehicle without a valid licence for that particular vehicle and do not drive any vehicle that appears not to be road-worthy;
- ❖ Never drive any vehicle when under the influence of alcohol or drugs;
- ❖ DO NOT make any new roads without permission. Stay within demarcated areas;
- ❖ Avoid U-Turns and large turning circles. 3-point turns are encouraged. Do not ever drive on rocky slopes or vegetated dune areas;
- ❖ Stay on the road, do not make a second set of tracks and do not cut corners;
- ❖ DO NOT SPEED - keep to less than 60 km per hour on the tracks and site roads;
- ❖ No off-road driving is allowed;
- ❖ Vehicles may only drive on demarcated roads;
- ❖ Adhere to speed limits and drive with headlights switched on along any gravel road.

7.3.4 Control of Dust Guidance

- ❖ Do not make new roads or clear any vegetation unless instructed to do so by your Contractor or the Environmental Control Officer / Site Manager;
- ❖ Try to disturb the surface of the natural landscape as little as possible.

7.3.5 Health and Safety Guidance

- ❖ Drink lots of water every day, but only from the fresh water supplies;
- ❖ Take the necessary precautions to avoid contracting the HIV/AIDS virus;
- ❖ Only enter or exit the solar park area at the demarcated gates / or road;
- ❖ Always keep the access area as you found them;
- ❖ Any damage to any existing infrastructure in the area must be report to the Environmental Control Officer / Project Manager who will then inform the owner of any damage with all the repairs done to the satisfaction of the owner or Environmental Control Officer;
- ❖ Never enter any area that is out of bounds, or demarcated as dangerous or wander off without informing or permission of team leader;
- ❖ Report to your Contractor or the Site Manager if you see a stranger or unauthorised person in the solar park area;
- ❖ Do not remove any vehicle, machinery, equipment or any other object from the solar park area /site without permission of your Contractor or the Site Manager;

- ❖ Wear protective clothing and equipment required and according to instructions from your Contractor or the Site Manager;
- ❖ Never enter or work in the solar park area when under the influence of alcohol or drugs.

7.3.6 Preventing Pollution and Dangerous Working Conditions Guidance

- ❖ Never throw any hazardous substance such as fuel, oil, solvents, etc. into streams or onto the ground;
- ❖ Never allow any hazardous substance to soak into the soil;
- ❖ Immediately tell your Contractor or Environmental Control Officer / Site Manager when you spill, or notice any hazardous substance being spilled anywhere in the solar park area;
- ❖ Report to your Contractor or Environmental Control Officer / Site Manager when you notice any container, which may hold a hazardous substance, overflow, leak or drip;
- ❖ Immediately report to your Contractor or Environmental Control Officer / Site Manager when you notice overflowing problems or unhygienic conditions at the ablution facilities;
- ❖ Vehicles, equipment and machinery, containers and other surfaces shall be washed at areas designated by the Contractor or Environmental Control Officer/ Site Manager;
- ❖ If you are not sure how to transport, use, store or dispose any hazardous substance - ASK your Contractor or Environmental Control Officer / Site Manager for advice.

7.3.7 Saving Water Guidance

- ❖ Always use as little water as possible. Reduce, reuse and re-cycle water where possible;
- ❖ Report any dripping or leaking taps and pipes to your Contractor or Environmental Control Officer or Site Manager;
- ❖ Never leave taps running. Close taps after you have finished using them.

7.3.8 Disposal of Waste Guidance

- ❖ Learn to know the difference between the two main types of waste, namely:
 - ✓ General Waste; and
 - ✓ Hazardous Waste.
- ❖ Learn how to identify the containers, bins, drums or bags for the different types of

wastes. Never dispose of hazardous waste in the bins or skips intended for general waste or construction rubble;

- ❖ Never burn or bury any waste on the solar park area;
- ❖ Never overfill any waste container, drum, bin or bag. Inform your Contractor or the Environmental Control Officer / Site Manager if the containers, drums, bins or skips are nearly full;
- ❖ Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping;
- ❖ Littering is prohibited.

7.3.9 Religious, Cultural, Historical and Archaeological Objects Guidance

- ❖ If you find any suspected religious, cultural, historical or archeologically object or site around the solar park area, you must immediately notify your Contractor or Environmental Control Officer / Site Manager;
- ❖ Never remove, destroy, interfere with or disturb any religious, cultural, historical or archaeological object or site around the solar park area.

7.3.10 Dealing with Environmental Complaints Guidance

- ❖ If you have any complaint about dangerous working conditions or potential pollution to the environment, immediately report this to your Contractor or the Environmental Control Officer / Site Manager;
- ❖ If any person complains to you about noise, lights, littering, pollution, or any other harmful or dangerous condition, immediately report this to your Contractor or the Environmental Control Officer / the Site Manager.

8. CONCLUSION AND RECOMMENDATIONS

8.1 Summary of Conclusions

Mitigation measures for both positive and negative impacts have been proposed and management strategies are provided in this Environmental Management Plan (EMP Vol. 3 of 3) for the following development stages:

- (i) Planning and permitting;
- (ii) Preconstruction;
- (iii) Construction, and;
- (iv) Operational.

This Environmental Management Plan (EMP) Report Vol. 3 of 3 incorporating all the constraints, relevant mitigation measures with respect to likely positive and negative impacts and recommendations have been prepared for implementation by the developer / operator. This EMP implementation and monitoring activities covers all the stages of the proposed 10MW Solar PV Park lifecycle.

8.2 Recommendations

The following are the recommended actions to be implemented by the Okahandja Solar (Pty) Ltd as a part of the management of the impacts through implementations of the EMP covering the entire lifecycle (permitting and planning, preconstruction, construction and operational stages) of the proposed project activities:

- (i) The proponent must obtain all other necessary permits, licenses and land consents / ownership as may be applicable before implementation of the project;
- (ii) The proponent must implement and adopt a precautionary approach by developing and implementing measures aimed at protection of the physical, biological and socioeconomic receiving environments;
- (iii) The proponent must contract an Environmental Control Officer/ Consultant / suitable in-house resources person to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and subcontractors;
- (iv) The proponent / Environmental Control Officer/ Consultant / suitable in-house resources person MUST work with the local experts in making sure that mitigation measures to minimise the impacts on receiving environment (physical, biological and socioeconomic environments) are fully implemented and monitoring measures are put in place;
- (v) Before undertaking detailed site-specific activities (implementing the actual physical disturbance of the land surface) such as creating access routes, powerline route and selection of actual location of the proposed 10MW Solar PV Park, the proponent / Environmental Control Officer/ Consultant / suitable in-house resources person should consider the sensitivity of the local area in terms

of the local flora and fauna or relocation process and may work with or get advice from the fauna and flora specialist consultant / local experts as may be required;

- (vi) The proponent must provide human and financial resources, for the implementation of the proposed mitigations measures and effective environmental management and monitoring thereof throughout the lifecycle of the proposed project activities;
- (vii) The proponent must develop a simplified environmental induction and awareness programme for all the workforce, contractors and subcontractors and where contracted service providers are likely to cause negative environmental impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities;
- (viii) The proponent must develop and implement a monitoring programme that will fit into the overall company's Environmental Policy and Management Systems (EMS);
- (ix) The proponent must /Environmental Coordinator / Consultant / Suitable in-house resource person must regularly (as may be required by the regulators) prepare and submitted to the regulators environmental monitoring reports as maybe required by law.

All the responsibilities to ensure that the recommendations of this EMP Report are executed accordingly, rest with the proponent (**Okahandja Solar (Pty) Ltd**). The company must provide all appropriate resource required for the effective implementation of this EMP. It is the responsibility of **Okahandja Solar (Pty) Ltd** to make sure that all members of the workforce including contractors and subcontractors are aware of the provisions of this EMP Report and its objectives.

END