


# **ENVIRONMENTAL MANAGEMENT PLAN FOR LIU ENERGY SOLAR PHOTOVOLTAIC PLANT NEAR SPRINGBOK IN THE NAMA KHOI LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE**

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<p><b>Prepared for:</b> <b>Liu Energy (Pty) Ltd</b> Postnet Suite 401 Private Bag x 121 Halfway House 1685 Telephone: (010) 11 00305 Email: <a href="mailto:bongani@liuenergy.co.za">bongani@liuenergy.co.za</a></p>	<p><b>Prepared by:</b> <b>4 Degrees Consulting</b> International Business Gateway 113 Elizabeth Road Midridge Park Midrand, 1685 Tel: (011) 238 6300 Email: <a href="mailto:projects@4degrees.co.za">projects@4degrees.co.za</a></p>
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## TABLE OF CONTENTS

1. INTRODUCTION .....	3
1.1. Objectives of the Environmental Management Plan .....	3
1.2. Scope of the Environmental Management Plan.....	3
1.3. General Conditions of the EMP .....	4
1.4. Environmental Assessment Practitioner Details .....	4
1.5. Requirements for an Environmental Management Plan in terms of Annexure 4 of the EIA Regulations .....	5
2. PROJECT LOCATION AND SITE DETAILS .....	7
3. LEGAL REQUIREMENTS.....	9
4. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT.....	11
4.1. General Accountability .....	11
4.2. General Manager / Project Developer .....	11
4.3. Environmental Control Officer .....	11
4.4. Contractor.....	12
5. ENVIRONMENTAL MANAGEMENT ACTIONS.....	13
5.1. Key Environmental Impacts.....	13
5.2. Training and Awareness .....	14
5.3. Emergency Planning and Response.....	14
6. ENFORCEMENT, MONITORING AND REPORTING.....	21
6.1. Site Inspections and Environmental Audits.....	21
6.2. Non-compliance with Environmental Requirements .....	21
6.3. Document Control .....	22
6.4. Method Statements.....	22
6.5. Environmental Incident Register .....	23
6.6. Photographic Register .....	23

6.7. Complaints Register.....	24
6.8. Communication with Affected Parties .....	25
7. AMENDMENTS TO THE EMP.....	25

## **1. INTRODUCTION**

### **1.1. Objectives of the Environmental Management Plan**

The objective of the environmental management plan (EMP) is to provide information on mitigation measures that will be implemented during the construction, operational and decommissioning phases of the Liu Energy Solar Photovoltaic facility and associated infrastructure, to minimize negative environmental impacts and enhance positive environmental impacts.

The primary objectives of the EMP are to:

- Identify and describe actions to be undertaken to reduce the negative impact on the environment
- Identify mitigation measures, allocate responsibilities and target dates for implementing remedial action
- Highlight procedures for environmental control in the event of an incident

The EMP also provides a framework for environmental management and monitoring during the different phases of the facility.

### **1.2. Scope of the Environmental Management Plan**

This EMP is only applicable the Liu Energy Solar PV facility and associated infrastructure on Farm Varsputs 564 near Springbok. The EMP is meant to outline mitigation measures that will reduce negative environmental impacts and enhance positive impacts on the surrounding environment, businesses and communities. The EMP covers the three (3) phases of project, Construction Phase, Operational Phase and Decommissioning Phase.

### **1.3. General Conditions of the EMP**

- The EMP is binding on all parties involved in the construction, operational and decommissioning phases of the project, and shall be enforceable at all levels of contract and operational management.
- Work undertaken on site shall at all times be approached with due regard for the natural and social environment.
- Management, site policies and procedures shall be developed with the objective of minimizing the negative environmental impacts and enhancing positive ones.
- Execution of the work that forms part of the EMP, Environmental Authorization and Environmental Specifications shall be carried out in accordance with the Method Statement where required by the General Manager and/or in consultation with the Environmental Control Officer (ECO).
- The General Manager or ECO may, at their discretion, stop any work, activity or process not in accordance with this directive.
- Once accepted by the Department of Environment, Forestry and Fisheries (DEFF), the EMP shall become enforceable. The document is dynamic and may be amended in consultation with the General Manager. Any substantial changes shall be submitted to the Department for acceptance before any changes may be affected.
- The Project and Site Management personnel shall establish appropriate management structures, liaison and communication forums to integrate all construction activities into existing environmental management programmes.

### **1.4. Environmental Assessment Practitioner Details**

The EMP was compiled by 4 Degrees, an environmental management and sustainability professional services company. The details of the Environmental Assessment Practitioner (EAP) responsible for compiling the EMP are outlined below:

4 Degrees Consulting

International Business Gateway

113 Elizabeth Road

Midridge Park, Midrand, 1685

Tel: 011 238 6300

Email: [reetsang@4degrees.co.za](mailto:reetsang@4degrees.co.za)

Email2: [projects@4degrees.co.za](mailto:projects@4degrees.co.za)

### 1.5. Requirements for an Environmental Management Plan in terms of Annexure 4 of the EIA Regulations

Requirement of Appendix 4	Section in EMP
1. An EMP must comply with Section 24N of the Act and include a. details of – i. the EAP who prepared an EMP; and ii. the expertise of that EAP to prepare an EMP, including a curriculum vitae	1.4
b. A detailed description of the aspects of the activity that are covered by the EMP as identified by the project description	1.2; 5.1
c. A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	2
d. A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including – i. Planning and design ii. Pre-construction activities iii. Construction activities iv. Rehabilitation of the environment after construction and where applicable post closure; and v. Where relevant, operation activities	5
e. A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to –	5

Requirement of Appendix 4	Section in EMP
<ul style="list-style-type: none"> <li>i. Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation</li> <li>ii. Comply with any prescribed environmental management standards or practices</li> <li>iii. Comply with any applicable provisions of the Act regarding closure, where applicable; and</li> <li>iv. Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable</li> </ul>	
f. The method of monitoring the implementation of the impact management actions contemplated in paragraph (e)	6
g. The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (e)	Table 2
h. An indication of the persons who will be responsible for the implementation of the impact management actions	Table 2
i. the time periods within which the impact management actions contemplated in paragraph (e)	Table 2
j. the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (e)	6.1
k. a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	6
l. An environmental awareness plan describing the manner in which -	
<ul style="list-style-type: none"> <li>i. The applicant intends to inform his or her employees of any environmental risk which may result from their work; and</li> </ul>	5.2
<ul style="list-style-type: none"> <li>ii. Risk must be dealt with in order to avoid pollution or degradation of the environment; and</li> </ul>	5.3
m. Any specific information that may be required by the competent authority	N/A

## 2. PROJECT LOCATION AND SITE DETAILS

The project is located on farm Varsputs 564 near Springbok in the Northern Cape. Access to the facility will be from the N14, between Springbok and Aggeneys, and there is an existing road on the farm. No additional roads will be constructed for the purpose of the farm. The nearest town to the proposed facility is the town of Springbok which is approximately fifty (50) meters from the proposed site, refer to the Locality and site Layout Maps below.

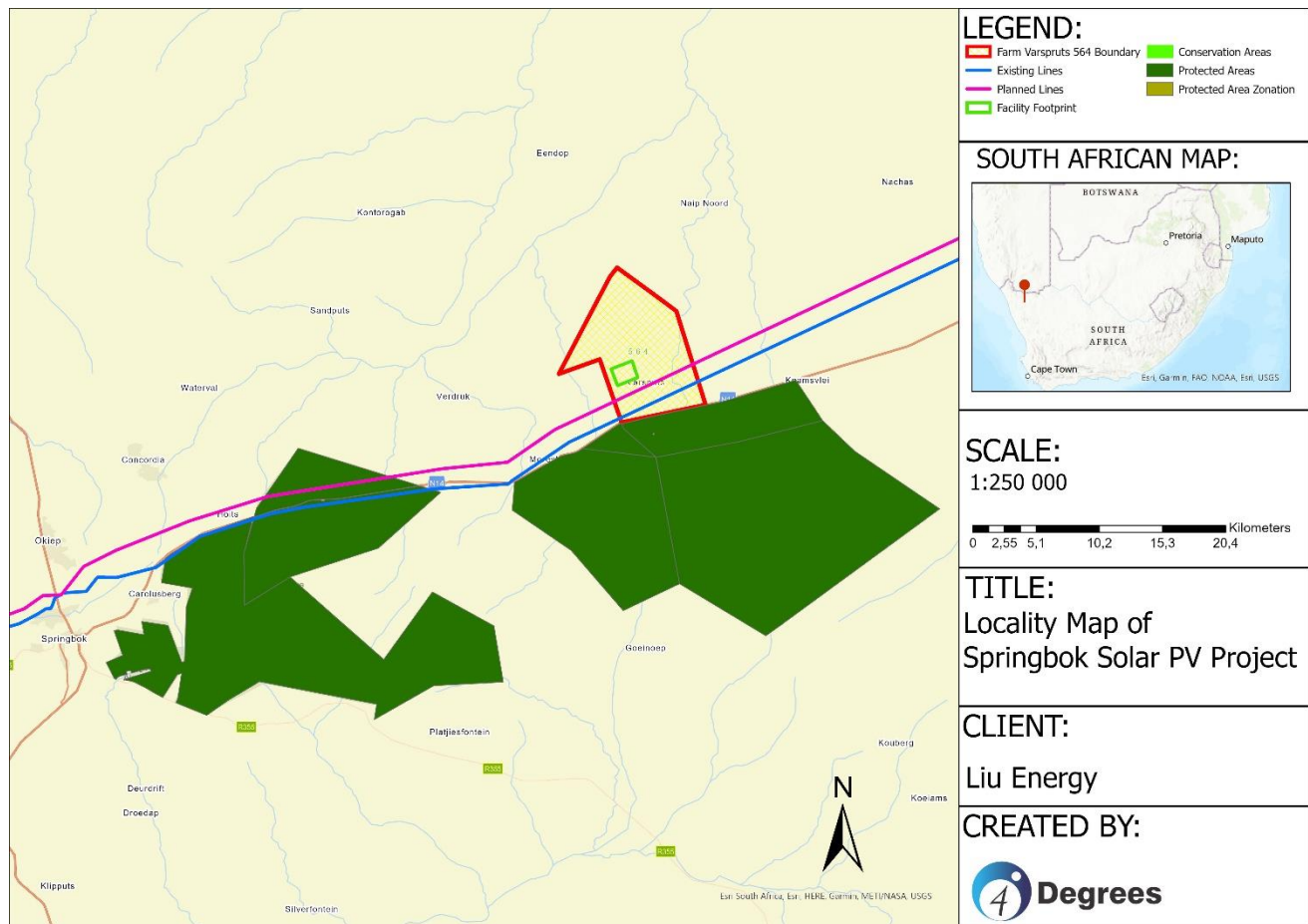


Figure 1: Locality Map of Liu Energy Solar Facility

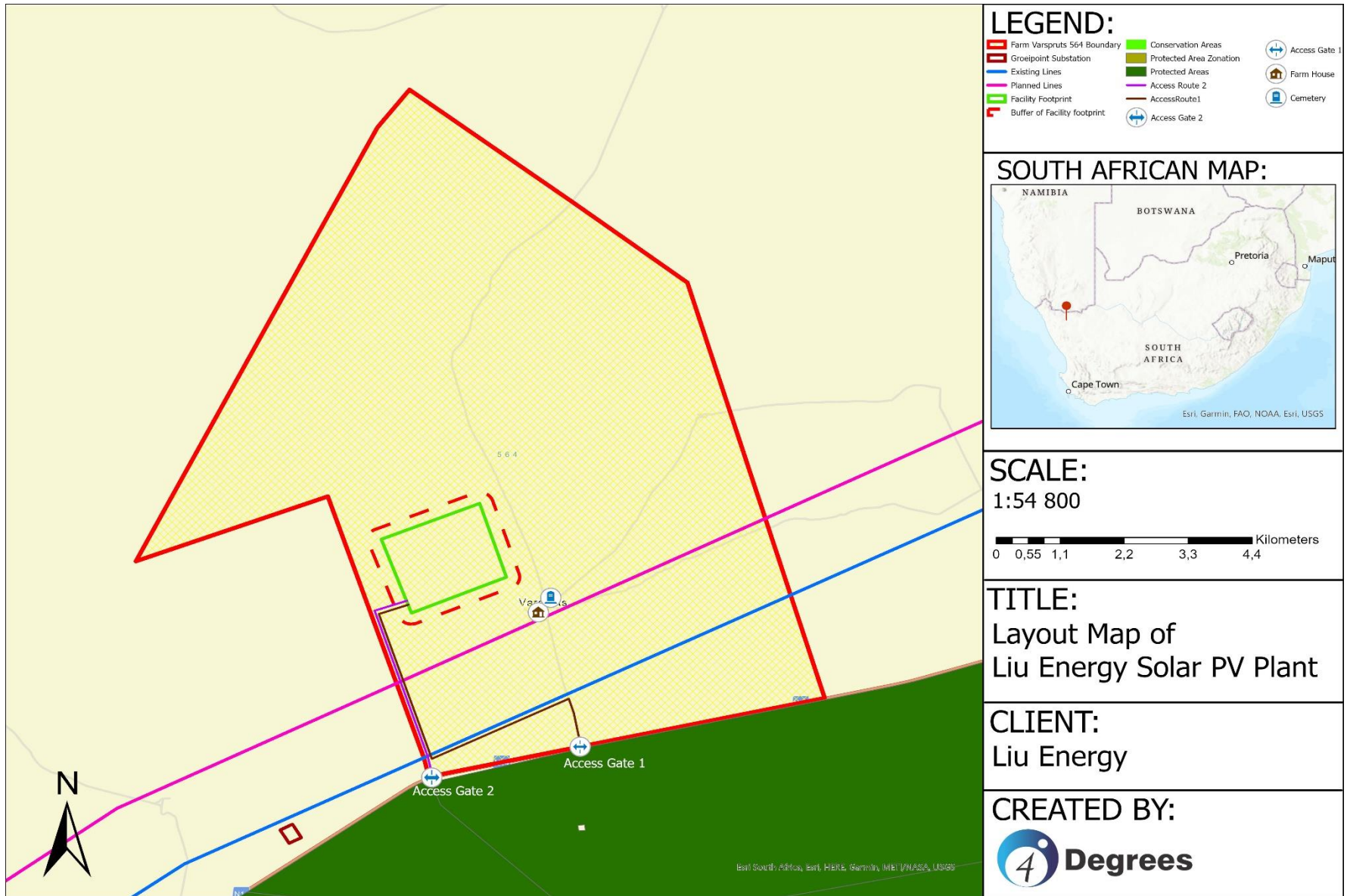


Figure 2: Layout Map



### 3. LEGAL REQUIREMENTS

The Basic Assessment Process and Environmental Management plan has been informed by the legislation, regulations, protocols, and guidelines outlined in the table below.

Table 1: Summary of Legal Framework

Title of Legislation or Regulation	Applicability
National Environmental Management Act (Act 107 of 1998) as amended	Implementation of the environmental management principles and duty of care provisions
NEMA EIA Regulations of 2014 as amended on the 7 April 2017	Provides procedures to be followed when undertaking the assessment. All the activities triggered by the Regulations are listed in the report
NEM: Waste Act (Act 59 of 2008)	Aimed at protecting the health and environment by providing reasonable measures for prevention of pollution and ecological degradation. Liu Energy will produce waste that will need to be managed in line with the requirements of the Act and municipal by-laws
NEM: Biodiversity Act (Act 10 of 2004)	Provides for the management of Biodiversity in the country. The Liu Energy is located in an agricultural land with biodiversity.
National Water Act (Act 36 of 1998) as amended	The Act provides for the reform in water use in the country. It is aimed at addressing the sustainability, equity, and efficiency to guide the protection, use, development, conservation, management, and control of water resources.
Water Services Act (Act 108 of 1997)	The Act provides for the basic water supply and basic sanitation. The basic supply of water and sanitation is the function of the Local Municipality
National Heritage Resources Act (Act 25 of 1999)	The Act is aimed at introducing the integrated and interactive system for the management of natural heritage resources. Of relevance to the project, the archaeological and cultural resources for the area has been rated low.
Spatial Planning and Land Use Management Act (Act 16 of 2013)	The objective of the act is to provide for spatial planning and land-use in the country. The proposed project is located in an area designated for agriculture. No land-use change, or rezoning will be required for the project.
National Development Plan: A Vision for 2030	The Plan was developed by the government with the objective of eliminating poverty and reducing inequality.

Title of Legislation or Regulation	Applicability
	The Plan has culminated in a number of programmes and initiatives that Liu Energy will directly and indirectly benefit from.
<p>Department of Environmental Affairs</p> <p>Guidelines on:</p> <ul style="list-style-type: none"> <li>- Public Participation</li> <li>- Need and Desirability</li> </ul>	<p>The guidelines outline the measures to be implemented for prospective projects to meet the requirements of NEMA.</p> <p>The public participation process was undertaken in line with the requirements of the guidelines as far as practically feasible.</p> <p>The project meets the needs and desirability criteria – it is located in an area with low ecological sensitivity and the implementation of the project will meet the socio-economic objectives by contributing to the local GDP.</p>

## **4. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT**

### **4.1. General Accountability**

The overall accountability of environmental management function is the responsibility of Liu Energy General Manager, who is responsible for ensuring that measures identified in the EMP are complied with at all phases of the development. The General Manager is also responsible for ensuring that there are sufficient resources, both human and financial resources, for the successful implementation of the EMP and compliance with conditions of authorization.

### **4.2. General Manager / Project Developer**

Roles and responsibilities of the General Manager specific to the EMP are:

- Implement, manage and maintain the construction aspects of the EMP for the duration of the project
- Designate from his/her team personnel who will be responsible for implementation of different aspects of the EMP
- Assign appropriate authority, accountability and responsibility to designated personnel for the implementation of the EMP
- Ensure that all Sub-contractors and employees appointed by the Principal Contractor are aware of their environmental management responsibilities
- Ensure that all sub-contractors and employees appointed by the Principal Contractor are well trained and comply with the relevant SHE policies, plans and standards.

### **4.3. Environmental Control Officer**

Liu Energy should appoint an Environmental Control Officer (ECO) prior to the implementation of the project to ensure the overall responsibility for environmental management. The ECO shall be responsible for the implementation and compliance to the conditions of the Environmental Authorization issued by the Department of Environment, Fisheries and Forestry (DEFF). The duties and responsibilities of the ECO shall include the following:

- Overseeing the implementation of the conditions of environmental authorization issued by DEFF and any other authorities responsible for environmental aspects of the project
- Implementation of the Nama Khoi Local Municipality environmental management requirements

- Implementation and monitoring of the conditions of the EMP and environmental specifications in the document
- Ensuring compliance with the policies, procedures and standards, in line with objectives of the EMP
- Development and facilitation of environmental awareness of employees on:
  - i. Environmental management commitments in the EMP
  - ii. Environmental roles and responsibilities
  - iii. Environmental management issues related to the project
  - iv. Any aspects of the project that may have an impact on the environment
  - v. Waste management and pollution control procedure
- Where training is developed by the external parties, the ECO shall review the training material to ensure that it is in line with the requirements of EMP
- Determination and enforcement of environmental “no-go” areas in consultation with the General Manager.

#### **4.4. Contractor**

The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMP and that the Method Statements are implemented as described. The Contractor shall as a minimum be responsible for the following activities:

- Project delivery and quality control for the development services as per appointment
- Employ a suitably qualified persons to monitor and report to the Project Developer on environmental performance of their activities during the construction period
- Implement safe, environmentally acceptable working methods and practices
- Ensure that the Contractor’s employees and sub-contractor are adequately trained on the contents of the EMP.

## 5. ENVIRONMENTAL MANAGEMENT ACTIONS

### 5.1. Key Environmental Impacts

Key environmental impact associated with the activity are:

- Air Emissions
- Noise
- Soil and Land Capability
- Waste Management
- Traffic Impact
- Water Management
- Ecological Disturbance
- Training and Awareness
- Health and Safety

The purpose of this section is to ensure a pro-active rather than re-active approach to environmental performance by addressing potential problems before they occur. Therefore, the purpose of an EMP is to provide management measures that must be implemented by Liu Energy Management and Contractors to ensure that potential impacts of the proposed development are minimized. It must also be ensured that the EMP is maintained and upheld as a dynamic document for the project team to add or improve on issues that might be considered left out or not relevant to the project.

The table below form the core mitigation measures appropriate to all the phases of the project. The tables present the objectives to be achieved and the management actions that need to be implemented to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria/targets and timeframes are clearly specified.

The planning and design section of this EMP refers to the period of time leading up to and prior to commencement of construction activities, and is included to ensure pro-active environmental management measures with the goal of identifying avoidable environmental damage at the offset and sustain optimal environmental performance throughout the construction phase. Most impacts will occur during the construction phase and must be mitigated through the contingency plans identified in the planning and design phase.

The following measures shall be implemented to minimize and mitigate potential environmental impacts that may be experienced during the construction and operational phases of the activity.

## **5.2. Training and Awareness**

The General Manager shall ensure that Environmental Management Awareness and Training for all his/her employees, sub-contractors and agents working on the site prior to commencing any work on site. The Contractors shall ensure that all construction personnel attend the environmental awareness sessions, and a copy of training records is maintained on site and shall be made available on request by relevant authority or interested and affected parties.

Employees and subcontractors appointed following commencement of the training shall also be required to undergo relevant training prior to commencing with their duties and records shall be kept accordingly.

- The General Manager must provide the SHE Official with a list of all sub-contractors, their scope of work and period on site before the environmental awareness session is conducted.
- No construction work shall take place under the supervision of a person who has not attended the environmental awareness session.
- The objective of the environmental training is to familiarize employees and contractors of their environmental roles and responsibilities as well as communicate the contents of this environmental management plan.
- The training register shall include the following information:
  - Name of the contractor or subcontractor
  - Name of the training facilitator
  - Training date, time and venue
  - Name of delegates
  - Identification number of delegates
  - Signature of each delegate

## **5.3. Emergency Planning and Response**

Liu Energy shall develop emergency preparedness response plans for management of emergency incidents. The objective of the plan is to:

- Identify possible risks and hazards that may be experienced on site
- Develop measures that should be implemented during an emergency
- Equip the Liu Energy team with relevant knowledge to prepare for a response in case of emergencies to prevent and/or minimize loss and injuries.

Table 2: Proposed Environmental Measures

ENVIRONMENTAL ASPECT	OBJECTIVE	ACTION	RESPONSIBILITY	FREQUENCY
<b>Planning and Design</b>				
<b>Electricity Consumption</b>	<ul style="list-style-type: none"> <li>Optimize electricity usage and use electricity efficiently</li> </ul>	<ul style="list-style-type: none"> <li>Renewable energy initiatives must be incorporated into the project design</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	Continuous
<b>Traffic Impact</b>	<ul style="list-style-type: none"> <li>Minimize negative impact on the existing road network</li> </ul>	<ul style="list-style-type: none"> <li>The timing for trucks should be planned to be outside peak hours</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	Continuous
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>Minimize potential dust impact</li> </ul>	<ul style="list-style-type: none"> <li>Incorporate dust abatement measurements into the planning phase of the project</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	Planning phase
<b>Geotechnical</b>	<ul style="list-style-type: none"> <li>Ensure soil stability in line with the requirements of the Geotechnical Report</li> </ul>	<ul style="list-style-type: none"> <li>Identify areas to source material for immaterial bonding</li> <li>Obtain relevant permits for borrowpit should that be required</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> <li>ECO</li> </ul>	Pre-construction
<b>Archaeology and Heritage</b>	<ul style="list-style-type: none"> <li>Ensure that Archaeological, Heritage and Cultural resources are managed responsibly and in line with the relevant legislation</li> </ul>	<ul style="list-style-type: none"> <li>Develop a Protocol for Archaeological and Heritage finds</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> <li>ECO</li> </ul>	Pre-construction
<b>Visual Impacts</b>	<ul style="list-style-type: none"> <li>Minimise potential visual impacts and glare on sensitive receptors</li> </ul>	<ul style="list-style-type: none"> <li>Design the solar panels in a way that the position and material used will reduce the glare and visual impacts</li> </ul>	<ul style="list-style-type: none"> <li>Technical Manager</li> </ul>	Design phase
<b>Stormwater Management</b>	<ul style="list-style-type: none"> <li>Management of stormwater on site</li> <li>Prevent soil erosion</li> </ul>	<ul style="list-style-type: none"> <li>Design a stormwater management plan to manage surface water</li> </ul>	<ul style="list-style-type: none"> <li>Technical Manager</li> </ul>	Design Phase

ENVIRONMENTAL ASPECT	OBJECTIVE	ACTION	RESPONSIBILITY	FREQUENCY
<b>Construction Activities</b>				
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>• Minimize waste generated</li> <li>• Manage waste disposal in an environmental sustainable manner</li> </ul>	<ul style="list-style-type: none"> <li>• Employees and contractors to be trained on waste management practices to be implemented on site</li> <li>• Have marked bins on site and encourage employees to use them at all times</li> <li>• Comply with Local Municipal Waste Management Bylaws</li> </ul>	<ul style="list-style-type: none"> <li>• Management and ECO</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-construction and during on-boarding the development</li> <li>• In line with the training plan</li> </ul>
<b>Socio-economic</b>	<ul style="list-style-type: none"> <li>• Contribute to the livelihoods of the community</li> </ul>	<ul style="list-style-type: none"> <li>• Source labor from local community as far as practically feasible</li> <li>• Award subcontracting opportunities to local communities as far as practically feasible</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• As and when required</li> <li>• Continuous where necessary</li> </ul>
<b>Occupational Health and Safety</b>	<ul style="list-style-type: none"> <li>• Prevent incidents and injuries</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct Safety, Health and Environmental (SHE) training at the beginning of the project to ensure that employees are aware of SHE responsibilities</li> <li>• Provide employees with suitable PPE where applicable</li> <li>• Medical Screening of employees in line with the Occupational Hygiene Programme</li> </ul>	<ul style="list-style-type: none"> <li>• Management; ECO; Health and Safety Officer</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-employment</li> <li>• Pre-employment</li> </ul>



ENVIRONMENTAL ASPECT	OBJECTIVE	ACTION	RESPONSIBILITY	FREQUENCY
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>• Ensure compliance with relevant waste management legislation and regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Make sure storage area is in line with the Local Municipal Waste Management Bylaws, and the Norms and Standards for Storage of Waste</li> <li>• No waste should be burned on site</li> </ul>	<ul style="list-style-type: none"> <li>• Management and ECO</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
<b>Noise Management</b>	<ul style="list-style-type: none"> <li>• Minimize potential impact on neighboring farming community</li> </ul>	<ul style="list-style-type: none"> <li>• Limit construction activities to daytime (07h00 – 18h00)</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> <li>• Construction Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Daily</li> </ul>
<b>Soil Contamination</b>	<ul style="list-style-type: none"> <li>• Prevent contamination and pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Regularly check vehicles, machinery and equipment for leaks or spillages of oil, diesel, grease or hydraulic fluid. Should a hydrocarbon or other chemical spill occur, clean up procedures must be implemented immediately in line with best practice prior to cementing of the site</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Daily / weekly</li> </ul>
<b>Archaeology and Heritage</b>	<ul style="list-style-type: none"> <li>• Management of archaeological, heritage and cultural resources</li> </ul>	<ul style="list-style-type: none"> <li>• Manage any archaeological, heritage and cultural finds in line with the relevant Protocol</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> <li>• ECO</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous</li> </ul>
<b>Vegetation Management</b>	<ul style="list-style-type: none"> <li>• Ensure minimal disturbance to sensitive vegetation</li> <li>• Management of alien and invasive species</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake groundtruthing prior to construction commencement to identify any sensitive vegetation that should be avoided</li> <li>• Implement an alien and invasive species</li> </ul>	<ul style="list-style-type: none"> <li>• ECO</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous</li> </ul>

ENVIRONMENTAL ASPECT	OBJECTIVE	ACTION	RESPONSIBILITY	FREQUENCY
		<p>management plan</p> <ul style="list-style-type: none"> <li>• Restrict removal of vegetation to an absolute minimum by only removing the vegetation where the solar panels will be installed and where associated infrastructure will be built</li> </ul>		
<b>Traffic Impact</b>	<ul style="list-style-type: none"> <li>• Minimise the traffic impacts on the N14</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that the delivery of large construction equipment is done outside peak periods</li> <li>• Implement traffic management measures during high peak periods</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Daily / Continuous</li> </ul>
<b>Operational</b>				
<b>Water Management</b>	<ul style="list-style-type: none"> <li>• Ensure that there is no contamination of stormwater channels on site</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with the Storm Water Management requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous</li> </ul>
<b>Socio-economic</b>	<ul style="list-style-type: none"> <li>• Provide employment opportunities</li> <li>• Skills development of community</li> </ul>	<ul style="list-style-type: none"> <li>• Provide opportunities to the community members if available</li> <li>• Implement an employee skills development programme to allow for enable them to take advantage of future employment opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous</li> </ul>

ENVIRONMENTAL ASPECT	OBJECTIVE	ACTION	RESPONSIBILITY	FREQUENCY
<b>Occupational Health and Safety</b>	<ul style="list-style-type: none"> <li>• Prevent injuries and incidents</li> </ul>	<ul style="list-style-type: none"> <li>• A health and safety programme that will include the training and awareness for employees should be implemented</li> <li>• Daily and Weekly toolbox talks to educate employees on safety at work</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> <li>• ECO</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous</li> </ul>
<b>General Waste</b>	<ul style="list-style-type: none"> <li>• Effectively manage waste generated by the facility</li> <li>• Ensure waste is stored at the correct places</li> </ul>	<ul style="list-style-type: none"> <li>• Implement the waste management programme for the correct disposal of waste generated by the facility</li> <li>• Have visible waste bins and signs</li> <li>• Comply with Local Municipal Waste Management Bylaws</li> </ul>	<ul style="list-style-type: none"> <li>• ECO</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly</li> </ul>
<b>Chemicals and Hazardous Waste</b>	<ul style="list-style-type: none"> <li>• Prevent potential soil and water contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Temporarily stored on site for safe disposal at a licensed hazardous landfill site</li> </ul>	<ul style="list-style-type: none"> <li>• ECO</li> </ul>	<ul style="list-style-type: none"> <li>• Bi-monthly</li> </ul>
<b>Safety and Security</b>	<ul style="list-style-type: none"> <li>• Increase the level of safety and security at the site</li> </ul>	<ul style="list-style-type: none"> <li>• There will be active surveillance to the site, which is access control and security personnel</li> <li>• Have emergency safety measures putting in place and all employees training in case of emergency on site</li> </ul>	<ul style="list-style-type: none"> <li>• Management</li> <li>• Environmental Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Daily</li> </ul>
<b>Solar Panels Waste</b>	<ul style="list-style-type: none"> <li>• Reduction of waste to landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the recycling opportunities for solar panels</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Manager</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>

ENVIRONMENTAL ASPECT	OBJECTIVE	ACTION	RESPONSIBILITY	FREQUENCY
<b>Decommissioning</b>				
<b>Health and Safety</b>	<ul style="list-style-type: none"> <li>To ensure that all employees and personal is in good health and safe post decommission</li> </ul>	<ul style="list-style-type: none"> <li>All employees involved in the decommission process should wear appropriate PPE (safety hat, boots, reflective vest, mask etc.)</li> <li>Conduct exit medicals for employees</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> <li>SHE Manager</li> </ul>	<ul style="list-style-type: none"> <li>Decommission</li> </ul>
<b>Solar PV Infrastructure</b>	<ul style="list-style-type: none"> <li>Equipment is safely removed</li> </ul>	<ul style="list-style-type: none"> <li>Employ reputable contractors to remove the solar PV infrastructure and dispose of it appropriately</li> <li>Where possible, recycling and re-use opportunities should be explored</li> <li>Equipment can be sold to other business in alignment with the production process</li> <li>Production facility must be evacuated and be left an empty space</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Once off</li> </ul>
<b>Socio- Economic</b>	<ul style="list-style-type: none"> <li>Employees will lose employment, therefor, appropriate measures need to be in place</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate processes need to be followed, in line with regulations from Labor Relations</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Decommissioning</li> </ul>
<b>Waste Management</b> (General, hazardous and carcass)	<ul style="list-style-type: none"> <li>To ensure appropriate disposal of waste. Including corroded equipment and layers of cement that will be removed</li> </ul>	<ul style="list-style-type: none"> <li>All waste to be safely disposed of at an appropriately licensed landfill site</li> </ul>	<ul style="list-style-type: none"> <li>Management</li> </ul>	<ul style="list-style-type: none"> <li>Once off</li> </ul>

## **6. ENFORCEMENT, MONITORING AND REPORTING**

To ensure accountable and demonstrated implementation of the EMP, a number of reporting systems, documentation controls and compliance mechanisms shall be developed and implemented for the proposed Liu Energy project. The compliance and monitoring initiatives to be implemented by the project are outlined in the section below.

### **6.1. Site Inspections and Environmental Audits**

Regular inspections shall be conducted by the ECO, in addition, an environmental audit shall be conducted at least once a month. Should non-conformances to the conditions of environmental authorization and other licenses be identified, the non-conformances shall be recorded, and a copy of the record kept on site. The ECO shall make recommendation of measures to be implemented to correct the non-conformances and specify the timeframes to address the non-conformance.

The ECOs must prepare a monthly Environmental Audit Report and present it to the monthly project meetings and a copy of the report must be kept in the Environmental Management file.

As a minimum the monthly Environmental Audit Report shall include the following:

- Weekly Environmental Checklists
- Deviations and non-compliances with the checklists
- Non-compliances issued
- Completed and reported corrective actions
- General environmental findings and actions

The Environmental Audit Reports must be submitted to the Competent Authority at the interval specified in the Environmental Authorisation.

### **6.2. Non-compliance with Environmental Requirements**

- The conditions for compliance shall be deemed to be breached if:
  - Environmental damage ensues due to non-compliance of EMP requirements

- The Liu Energy or its Contractors fail to comply with corrective or other instructions issued by the authorities or authorized persons within a specific time, and
- Liu Energy fails to respond adequately to complaints from the public in line with requirements of this EMP

### **6.3. Document Control**

Liu Energy is responsible for ensuring the contents of the EMP file is accurate and up to date. The file shall as a minimum include the following contents and be made available to authorities and auditors for review upon request.

- i. A copy of the signed Environmental Authorisation
- ii. A copy of the Environmental Management Plan
- iii. Method Statements
- iv. Completed environmental checklists
- v. Minutes and attendance register of environmental site meetings
- vi. An up-to-date environmental incident register
- vii. Copies of all non-compliances issued
- viii. Copies of all directives issued by the relevant authorities
- ix. A corrective action signed off by the relevant manager
- x. Complaints Register

### **6.4. Method Statements**

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMP. The method statement must cover applicable details with regard to:

- i. Development procedures
- ii. Materials and equipment to be used
- iii. How equipment will be transported to and from site
- iv. How the equipment/ material will be moved while on site

- v. Material storage on site
- vi. Containment measures in case of a spillages
- vii. Project timelines
- viii. Compliance/ non-compliance with the EMP; and
- ix. Any other information deemed necessary by the ECO

The ECO shall monitor and ensure that the contractors perform in accordance with the approved method statements.

#### **6.5. Environmental Incident Register**

The Environmental Control Officer should maintain an Environmental Incident Register which shall include a record of all environmental incidents on site as well as non-compliance notice issued. The environmental incident register shall as a minimum include the following:

- i. The date and time of the incident
- ii. Description of the incident
- iii. The name of the Contractor responsible
- iv. The incident must be listed as significant or minor
- v. If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log
- vi. Remedial or corrective action taken to mitigate the incident
- vii. Record of repeat minor offences by the same contractor or staff member

#### **6.6. Photographic Register**

A digital photographic record will be kept on record. The photographic record will be used for the purpose of showing the before, during and post rehabilitation details of the proposed project. Each image must be dated, and a brief description note attached. The Contractor and/or Site Manager shall allow the Environmental Control Officer to take photographs of all areas and activities being undertaken.

An electronic database of photographic records shall include the following details as a minimum:

- i. Pictures of all areas designated as work areas, development sites and storage areas taken before these areas are set up
- ii. All bunding and fencing
- iii. Road conditions
- iv. Condition of all farm fences
- v. Topsoil storage areas
- vi. All areas to be cordoned off during construction
- vii. Waste management sites
- viii. Ablution facilities (inside and out)
- ix. Any non-conformances deemed to be “significant”
- x. All completed corrective actions for non-compliances
- xi. All required signage
- xii. Photographic recordings of incidents
- xiii. All areas before, during and post rehabilitation; and
- xiv. Include relevant photographs in the Final Environmental Audit Report.

#### **6.7. Complaints Register**

The Environmental Control Officer shall keep a current and up-to-date Complaints Register. The complaints register shall include a record of all complaints received from communities, stakeholders and individuals. The Complaints Register shall include the following details as a minimum:

- i. Record the name and contact details of the complainant
- ii. Record the time and date of the complaint
- iii. Contain a detailed description of the complaint
- iv. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs)
- v. Contain a copy of the written response to each complaint received and keep a record of any further correspondence with the complainant.



#### **6.8. Communication with Affected Parties**

Open, transparent and good relations with affected landowners, communities and employees is important for the successful management and mitigation of environmental impacts. The Environmental Control Officer shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept on record
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
4. Ensure that contact with affected parties is courteous.

#### **7. AMENDMENTS TO THE EMP**

Reasonable changes to the EMP can be made where required to ensure that the document is applicable to the project and in line with relevant legislation. The amendments shall be made in consultation with the General Manager and/or Project Developer.