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# 11 Environmental and Social Management Plan

## 11.1 Introduction

The environmental and social management plan (ESMP) consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation, operation and decommissioning to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The plan also includes the actions needed to implement these measures.

The purpose of this section is to provide a framework that gathers the recommended mitigation measures, to enable the preparation of a comprehensive environmental management plan that can be used during the construction and operation activities to ensure impacts to the environment are kept to an absolute minimum.

"Environmental Management is a tool for an organisation to keep aware of the interactions that its products and activities have with the environment and to achieve and continuously improve the desired level of environmental performance." (Fredericks, et. al, 1995)

The EPC Contractor shall provide a complete ESMP for the Lamu Coal Power Plant and shall update it thereafter. The project environmental management plan shall be based on the ISO 14001 standard as a way of demonstrating environmental leadership, commitment to continual improvement and environmental responsibility to all project stakeholders to ensure the development and maintenance of a complete and effective ESMP in compliance with the requirements of the ISO 14001 international standard. The ESMP shall be a central document for identifying and controlling all environmental management system (EMS) related information and material based on the ISO 14001 standard, and provides reference to all supporting documents. The EMS model is built on the "Plan, Do, Check, Review" model introduced by Stewart and Deming. The ISO 14001 standard has developed some guidelines that organisations can use to help companies to develop appropriate environmental management practices, and where appropriate seek registration with a certification entity. The following outline is based on the general requirements of an environmental management plan that would satisfy the requirement of the ISO 14001 standard.

1. Environmental policy
2. Planning
   - 2.1 Environmental aspects
   - 2.2 Legal and other requirements
   - 2.3 Objectives and targets
   - 2.4 Environmental management program(s)
3. Implementation and operation
   - 3.1 Structure and responsibility
   - 3.2 Training, awareness and competence
   - 3.3 Communication
   - 3.4 Environment management system documentation

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3.7 Emergency preparedness and response

4. Checking and corrective action

4.1 Monitoring and measurement

4.2 Non-conformance and corrective and preventative action

4.3 Records

4.4 Environmental management system audit

5. Management review

Once an approval for the proposed development has been granted, a detailed environmental management plan will be developed that addresses all components of the system. This will include all legal and regulatory requirements, specific performance targets, measurement systems and reporting requirements.

## 11.2 Key Principles

Environmental excellence is a primary management objective and the responsibility of every APCL team member. The project team should commit to achieving environmental excellence in all of its business practices and operations through the key principles outlined below:

- Commitment - Management at all levels will be actively committed to the achievement of environmental excellence in the conduct of our business. Through communication with the project team members, the commitment to environmental excellence should be reflected in the day to day work;
- Organization - A project team wide organizational structure and culture will be established that recognizes and encourages the full and active participation of all employees in the systematic identification, assessment and management of environmental issues.
- Accountability - Responsibility for the protection of the environment is a matter of corporate policy and is a matter of law, with potentially severe consequences for failure to comply. Management at all levels is responsible for ensuring that operations are conducted in accordance with this policy and that appropriate environmental programs, procedures and systems of work have been developed and implemented for the project.
- Management Systems and Standards - The project team should develop, implement and continuously improve the project environmental management systems and develop environmental management standards using company documented standards where available, ensuring that they reflect best industry practices.
- Risk Management - The project team shall ensure that potential environmental risks associated with all our designs and activities are assessed as early as is practicable in order to minimize and manage adverse effects and to identify opportunities for improvement.
- Legislative Compliance - The project team should operate to standards that will comply with the requirements of applicable local and appropriate national and international

legislation and codes of practice and will strive beyond compliance and recognize these principles as a valued way of life.

- Training - Health, safety, and environmental managers and staff should be qualified by reason of education or experience to discharge their responsibilities and should participate in a program of continuing professional development. In addition, the project team is committed to provide training and development on environmental matters that is appropriate to each employee's job duties and responsibilities. The project team should be proactive in the management of third party contractors to ensure they are fully aware of the environmental issues and to ensure that their actions are aligned with project environmental standards.
- Environmental Aspects - The project team should continuously evaluate the environmental aspects of the project activities through all of its phases. The goal will be to develop and provide products and services that have minimal environmental impact and are safe in their intended use, efficient in their consumption of energy and natural resources and can be recycled, reused or disposed of safely.
- Continuous Improvement - The project team should be committed to continuous improvement of environmental management practices.
- Monitor, Audit and Review - Effective management requires on-going assessment and review, accordingly, an on-going assessment, self-evaluation and audit program shall be implemented and maintained for the project activities.

## 11.3 Objectives of the ESMP

This ESMP seeks to manage and keep to a minimum the negative impacts of a development and at the same time, enhance the positive and beneficial impacts.

The objectives of the ESMP are to:

- Identify the legislative and regulatory requirements governing environmental matters.
- Summarize the project environmental management structure and processes to be implemented by the EPC Contractor for Lamu coal power project.
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels.
- To identify measures that could optimize beneficial impacts.
- To establish a method of monitoring and auditing environmental management practices during all phases of development.
- Ensure that the construction and operational phases of the project continue within the principles of Integrated Environmental Management.
- Specific actions deemed necessary to assist in mitigating the environmental impact of the project.
- Ensure compliance with the safety recommendations.
- Propose mechanisms for monitoring compliance with the ESMP and reporting thereon.
- Specify time periods within which the measures must be implemented, where appropriate.

Emphasis of the ESMP

- Avoiding impacts by not performing certain actions.

- Minimising impacts by limiting aspects of an action.
- Rectifying impacts through rehabilitation, restoration, etc. of the affected environment.
- Compensating for impacts by providing substitute resources or environments.
- Minimising impacts by optimising processes, structural elements and other design
- Provide on-going monitoring and management of environmental impacts of a development and documenting of any digressions /good performances.
- The ESMP is a legally binding document that all parties involved in the project must be made aware of.

## 11.4 Project Responsibilities

Several professionals will form part of the construction team. The most important from an environmental perspective are the Project Manager, the EPC Contractor' Environmental Control Officer (ECO), the EPC Contractor and the Owner (APCL).

The Project Manager is responsible for the implementation of the ESMP on the site during the pre-construction and construction phases of the project.

The ECO is responsible for monitoring the implementation of the ESMP during the design, pre-construction and construction phases of the project.

The Contractor is responsible for abiding by the mitigation measures of the ESMP which are to be implemented by the Project Manager during the construction phase.

The Owner is responsible for the implementation of the ESMP during the operational and decommissioning phases of the project. Decommissioning will however entail the appointment of a new professional team and responsibilities will be similar to those during the design, pre-construction and construction phases.

### 11.4.1 The EPC Contractor

All contractors (including subcontractors and staff) and service providers are ultimately responsible for:

- Ensuring the implementation and compliance with recommendations and conditions of the ESMP.
- Submitting an obligatory Methods Statement for approval by the Owner before any work is undertaken.
- Submitting a report at each site meeting which will document all incidents that have occurred during the period before the site meeting.
- Maintaining an environmental register which keeps a record of all incidents which occur on the site during construction. These incidents include:
    - Public involvement / complaints.
    - Health and safety incidents.
    - Incidents involving hazardous materials stored on site
    - Noncompliance incidents.

Assuring that all his employees and those of his subcontractors receive training before the commencement of construction.

### 11.4.2 The Contractor's Project Manager

The Project Manager is responsible for overall management of the project and ESMP implementation. The following tasks will fall within his responsibilities:

- Be conversant with the findings of the Environmental Impact Assessment for the project and the conditions of all relevant environmental legislation.
- Be familiar with the recommendations and mitigation measures of this ESMP and implement these measures.
- Ensure that all stipulations within the ESMP are communicated and followed by the Owner.
- Monitor the implementation of the ESMP throughout the project by means of site inspections and meetings. This effect will be documented as part of the site meeting minutes.
- Monitor site activities on a daily basis for compliance.
- Conduct internal audits of the construction site against the ESMP.
- Confine the construction site to the demarcated area.
- Rectify transgressions through the implementation of corrective action.

### 11.4.3 The Contractor's Environmental Control Officer

The ECO is responsible for the implementation of the ESMP during the construction phase and liaison between the Owner, Contractor and the Authorities. The following tasks will fall within the responsibilities of the ECO:

- Be aware of the findings and conclusions of the Environmental Impact.
- Assessment and the conditions stated within the ESIA report.
- Be familiar with the recommendations and mitigation measures of this ESMP.
- Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them.
- Undertake regular and comprehensive site inspections / audits of the construction site according to the ESMP and EIA in order to monitor compliance with the ESMP
- Educate the construction team about the management measures of the ESMP and EIA.
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- In consultation with the Project Manager/Site Manager, order the removal of person(s) and/or equipment in contravention of the specifications of the ESMP.
- Regular liaison with the construction team and the project leader.
- Recommend corrective action for any non-compliance incidents on the construction site.

- Compile a regular report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the ESMP.
- All negotiations for any reason shall be between the Owner, the affected parties and the Contractor. No verbal agreements shall be made. All agreements shall be recorded in writing and all parties shall co-sign the relevant documentation.
- The affected parties shall always be kept informed about any changes to the construction programme should they be involved. If the ECO is not on site the Contractor shall keep the affected parties informed. The contact numbers of the ECO shall be made available to the affected parties. This effort will ensure open channels of communication and prompt response to queries and claims.

### 11.4.4 Environmental Liaison Officer

The Environmental Liaison Officer (ELO) will be appointed by the Contractor to monitor activities on site on a daily basis. The ELO will be the ECO's representative on the site and will report back on all audit trips. The ELO must report any major incidents immediately to the Owner.

### 11.4.5 Independent Auditor

The independent auditor will conduct an environmental audit during the construction phase of the project (quarterly audits are needed for the duration of the construction phase) according to the provisions of the Environmental Management Plan.

## 11.5 Environmental Management Plan

The EPC Contractor shall develop an environmental management plan to, (a) identify the set of responses to potentially adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements.

More specifically, the ESMP should address the aspects described below.

### 11.5.1 Description of the Proposed Activity(s)

This section will describe the technical detail pertaining to the Lamu coal power project. Details on the location of the project and a description of the proposed works during the all project phases will be provided

### 11.5.2 Description of the Existing Environment

A summary of the existing marine and terrestrial environments of the Development footprint (primary and secondary) will be provided which generally covers the following areas:

a) physical environment;

b) biological environment;

c) socio-economic environment; and

d) particular values and sensitivities.

### 11.5.3 Identification and Assessment of Environmental Effects and Risks

The environmental assessments shall include:

- Air emissions;
- Water intake and discharge;
- Waste characterization and inventory;
- Consumption of chemicals, and other raw materials; and
- Labour and social issues.

The aspect, source, potential and predicted impact, management measures and residual risk will be detailed covering the following activities:

• *Environmental Objectives, Standards and Criteria:*

Objectives and standards will be set to measure environmental effects and risks, to determine if an activity is meeting its environmental objectives and standards, and to assess the performance and implementation of the CEMP. The performance objectives and standards will be consistent with SEC's Environmental Objectives and reducing environmental risks and effects to 'as low as reasonably practicable' (ALARP).

• *Environmental Management Techniques:*

This will provide a description of the proposed safeguards and mitigation measures to be put in place for all activities that may affect the local environment. Safeguards and mitigation measures will be developed to ensure that all significant environmental effects associated with the proposal are minimized and or avoided altogether.

### 11.5.4 Compliance with Laws/Regulations

Approvals / permits / consents / licenses relating to the environment will be in place prior to construction and operational phases and will be stored in a location which is easily accessible to appropriate staff. The approvals / permits / licenses will include - but not limited to - the following:

- Planning permission;
- Environmental approvals (discharge to air, transport of waste, etc.)
- Water intake permits; and
- Contract with special and approved contractor for transport of hazardous material.

Should any other approvals or permits be required for new activities, these will be obtained prior to the commencement of the activities. The facility will comply with relevant legislation.

### 11.5.5 Setting Environmental Objectives and Targets

One of the most important components of the environmental management systems is the Environmental Performance Review. The true significance of a frequent performance review is that it goes beyond compliance with Kenyan Government requirements and APCL ESMS Policy.

This creates a number of specific environmental objectives that relate to the construction and operation of the plant. As such, in terms of key environmental objectives, APCL and its contractors in compliance to the Kenya Government environmental laws and APCL health and safety regulations will strictly apply the following measures:

- Design, construct and operate its activities in a manner that protects human health and minimizes the impact of its operations on the environment.
- Strive for an injury-free work force and minimize environmental impact through implementation of programmes in its project area that reduce risks to employees and the environment;
- Encourage and promote waste minimization, the sustainable use of natural resources, recycling, energy efficiency, resource conservation and resource recovery;
- Actively participate with the governmental agencies and other appropriate groups to ensure that the development and implementation of environmental policies, laws, regulations and practices serving the public interest based on sound scientific judgment;
- The implementation of the Project Environmental Policy is accomplished through organized environmental management systems;
- Directing all employees to work in a safe manner and comply with the company's Environmental policies and procedures. The Project Team will encourage and expect each employee to be environmentally responsible;
- Each component will comply with or exceed all applicable environmental laws of Kenya and regulations. Where existing laws and regulations are deemed inadequate, the contractors and/or APCL will adopt its own Environmental Standards;
- Each component will develop and maintain written safety policies and programmes to address known hazards in the project workplace. Policy and programme effectiveness and compliance will be regularly assessed;
- Each component will provide a means for appropriate environmental safety communication with its employees, contractors, and visitors;
- Safe behaviour and judgment to be considered as essential measures of performance at all levels;
- Frequency of audits is determined by the complexity of the activities and the potential environmental risk;
- When an audit is completed, the audit report the findings to the site environmental management team and in case of any deficiencies found, work with them to develop action plans to correct them;

- Facilitate for the Saudi government and local environmental agencies to perform inspections of the project area to determine compliance with environmental regulations and permits;
- Despite APCL commitment to complying with every applicable regulation and conducting its own internal inspections, occasional violations may be noted, some of which result in the assessment of penalties. In the event that a violation is discovered, the team will immediately report the violation to the appropriate authorities and work quickly to correct the situation;
- The project team will recognize and respond to the community's questions about its operations.
- Following the waste disposal management plan to ensure that all kinds of wastes are properly managed allowing recycling efforts to be seen showing that reusing materials is not only environmentally friendly, but also cost effective; and Also in case of hazardous solid wastes/specialized waste streams, following the same theme of waste management, wastes are sent to third-party leading to proper treatment before final disposal.

Performance standards during construction and operation will be driven by:

- Permits, approvals and resource use consents;
    - Targets set by the O&M Company; and
    - Other external drivers (e.g., sensitive species, unique site conditions).
    - Environmental performance at the site will be monitored regularly by the O&M Company and regulatory agencies.

### 11.5.6 Roles and Responsibilities

Key roles and responsibilities of personnel with respect to meeting environmental management and performance objectives during the works shall be identified.

### 11.5.7 Environmental Monitoring Program

A monitoring programme should be implemented for the duration of all phase of the project. This programme will include:

- Monthly audits will be conducted by the Environmental Control Officer for the duration of the construction phase. These audits can be conducted randomly and do not require prior arrangement with the Project Manager.
- Compilation of an audit report with a rating of the compliance with the EMP. This report will be submitted to the Owner and to the relevant environmental authorities. The ECO shall keep a photographic record of any damage to areas outside the demarcated site area. The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable. The Contractor shall be held liable for all unnecessary damage to the environment. A register shall be kept of all complaints from the Authorities and / or the Local Community. All complaints / claims shall be handled immediately to ensure timeous rectification by the responsible party
- It shall provide details of the proposed monitoring of the effectiveness of remedial measures against the agreed performance criteria in consultation with relevant government agencies. Environmental monitoring during project implementation

provides information about key environmental aspects of the project, particularly the environmental impacts of the project and the effectiveness of mitigation measures. Such information enables evaluating the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. Therefore, the ESMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the EIA report and the mitigation measures described in the ESMP. Specifically, the monitoring section of the ESMP provides:

a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and

b) monitoring and reporting procedures to:

   i.) ensure early detection of conditions that necessitate particular mitigation measures, and

   ii.) furnish information on the progress and results of mitigation.

It should be noted that it is difficult to outline a formal monitoring protocol for specific environmental parameters and key impacts until such time as the detailed plant design and final alignment for the overhead power line have been completed. A formal monitoring protocol will be included within the revised ESMP once the detailed plant design and final alignments for the overhead power line have been completed, and once recommendations and conditions from the decision-making authority have been received.

### 11.5.8 Compliance with the ESMP

- A copy of the ESMP must be kept on site during the construction period at all times.
- The ESMP will be made binding on all contractors operating on the site and must be included as Contractual Clauses in any contractual agreement between the Owner and the EPC Contractor.
- All persons employed by the Contractor or his sub-contractors will abide by the requirements of the ESMP.
- Contract conditions to include measures to be taken in the event of a construction workforce found to be in breach of any of the specifications contained within the ESMP.
- The Contractor will not direct a person to undertake any activity which would place them in contravention of the specifications contained within the ESMP.
- Should the Contractor be in breach of any of the specifications contained in the ESMP, the Project Manager will, in writing, instruct the Contractor responsible for the incident of non-compliance regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions and/or indicate that work could be suspended should non-compliance continue.
- Should non-compliance continue, further written notification will be forwarded to the Contractor responsible for the incident of non-compliance outlining the required corrective and/or remedial action, the timeframe for implementation, penalties and/or work could be suspended as specified previously.
- An appropriate reporting schedule for frequent reporting (of compliance with the EIA/ESMP) to the Owner and the relevant Authorities will be developed. The process to be followed for the auditing of the EIA conditions/ESMP, as well as the reporting procedure to be followed, will be outlined in this document.

- The Project Manager must notify the Owner and any other relevant authority, in writing, within 24 hours or as the NEMA may specify, thereof if any condition of the EIA is not adhered to.
- Departmental officials will be given access to the property referred to in the ESIA authorization for the purpose of assessing and/or monitoring compliance with the conditions contained in the EIA License, at all reasonable times.

### 11.5.9 Non-Conformance and Corrective Action

The EPC Contractor is deemed not to have complied with the ESMP if:

- Within the boundaries of the site, site extensions and haul/access roads, there is evidence of contravention of clauses.
- Environmental damage ensues due to negligence.
- Failure to comply with corrective or other instructions issued by the Owner's Engineer or his representative within a specified time.
- Failure to respond adequately to complaints from the public.

The Owner is deemed not to have complied with the ESMP if:

- Within the boundaries of the site, there is evidence of contravention of clauses.
- If environmental damage ensues due to negligence.
- Failure to respond adequately to complaints from the public.

### 11.5.10 Environmental Management Programme(s)

Specific environmental management programmes and procedures will be developed and implemented by the EPC contractor prior to the commencement of construction or operation activities. Procedures may include:

- Safety Management for operations;
- Solid Waste Management Programme (disposal and reuse procedures);
- Emergency Response Procedures;
- Environmental and Security Management;
- Effluents and Emissions Monitoring Procedures; and
- Air Emission Monitoring Procedures.

A full list will be created by APCL prior to commencement of works. The programmes are reviewed according to the frequency specified in the document control system, or on an as-required basis following an incident, or non-compliance.

### 11.5.11 Mitigation

To meet the requirements of APCL, Government agencies and regulatory authorities, the management of environmental issues will be carried out in such a way that all stakeholders will be left with no doubt that hazards to the environment have been identified and appropriately managed. This will be achieved by:

- Setting and documenting clear and measurable environmental targets, goals, standards and performance objectives at the outset;
- Defining clear accountabilities and responsibilities;
- Rigorously identifying, assessing and eliminating/preventing/mitigating environmental risks;
- Assessing constructability, operability and decommissioning at the design stage to minimise environmental risk;
- Identifying environmental values and enhancing options and solutions;
- Utilizing the best available tools and human resources;
- Meeting the current and anticipated future legislative requirements; and
- Achieving clarity, transparency and auditability.

In this respect many environmental risk assessment approaches are similar to those used for Safety Risk Assessment (eg HAZID, HAZOP and Job Hazard Assessment) and most efficiently carried out as part of integrated HSE studies. However, some are uniquely different, given the variability in facility emissions and discharges and in receiving environments, cultural and socio economic circumstances, at a local, national and international level and appropriate approaches need to be identified and adopted by the project.

The ESMP should provide detailed prevention, minimisation and mitigation strategies or action programs (including design standards) for controlling environmental impacts at site. The ESMP shall identify feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. The plan shall include compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient. Specifically, the ESMP:

a) Identifies and summarizes all anticipated significant adverse environmental impacts

b) Describes with technical details each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate;

c) Estimates any potential environmental impacts of these measures; and

d) Provides linkage with any other mitigation plans required for the project.

### 11.5.12 Capacity Development and Training

To support timely and effective implementation of environmental project components and mitigation measures. The ESMP provides a specific description of institutional arrangements that is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, the ESMP should cover the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

### 11.5.13 Emergency Events and Contingency Planning

The implementation strategy will establish and provide for maintenance of an up-to-date emergency response manual with detailed response arrangements. It will be recommended that contingency plans must be approved before work can commence.

### 11.5.14 Implementation Schedule

For all three aspects (mitigation, monitoring, and capacity development), the ESMP should provide (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates for implementing the ESMP. These figures are also integrated into the total project cost tables.

### 11.5.15 Integration of ESMP with Project

The ESMP should be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the ESMP within the project so that the plan will receive funding and supervision along with the other components.

### 11.5.16 Documentation and Reporting

The following documentation must be kept on site in order to record compliance with the ESMP:

- Record of Complaints.
- Monitoring Results.
- Notification of Emergencies and Incidents.

### 11.5.17 Environmental Register

The EPC contractor shall:

- Report incidents involving contractor employees and/or the public that could potentially cause negative sentiment and perception towards the project.
- Report environmental complaints and correspondence.
- Record and report incidents that cause harm or may cause harm to the environment.
- Record all hazardous materials used on site.
- Maintain a record of all Waste Disposal Manifests in accordance with Kenyan waste regulations detailing the nature of the waste disposed of, the waste classification and the location of the site to which such waste was sent.

### 11.5.18 Public Communication and Liaison with Interested and Affected Parties

The communication plan will link into the roles and responsibilities component to ensure clear and effective communications are maintained between contractors, consultants, regulators and APCL.

The adjacent land owners should be kept informed and updated throughout the construction and operational phases.

Sufficient signage should be erected around the site (including at the entrance) in compliance with the Physical Planning department within the County Government, informing the public of the construction activities taking place. The signboards should include among other things, the following information:

- The name of the contractor.
- The name and contact details of the site representative to be contacted in the event of emergencies or complaint registration.

### 11.5.19 Distribution of the ESMP

The plan will be distributed as a controlled copy to APCL, Owner's Engineer, Government Agencies, EPC contractor, the Project Manager, the HSE Manager and or the Environmental Control Officer (ECO), and will be freely available to all Project Team members and Subcontractors.

## 11.6 Layout of the Environmental Management Plan

This ESMP seeks to manage and keep to a minimum the negative impacts of a development and at the same time, enhance the positive and beneficial impacts. The purpose of this ESMP is to gather the recommended mitigation measures as a guideline. For each mitigation measure, the EPC Contractor should identify the responsibility and the frequency/monitoring requirements.

The ESMP framework is separated into four phases. Each phase has specific issues unique to that period of the development and operation of the proposed Lamu coal power plant and associated infrastructure.

The impact is identified and given a brief description. The four phases of the development are identified as below:

- Pre-Construction Phase.
- Construction Phase and associated rehabilitation of affected environment.
- Operational Phase (Post-Construction).
- Closure and Decommissioning.

After analysing the criteria such as extent, duration, intensity, etc. under each phase, a discussion is presented where appropriate. The Environmental Management Plan framework is then shown and the mitigation measures in each development phase identified.

### 11.6.1 Environmental Management Plan for Pre-Construction Phase

Requirements for the pre-construction phase:

- Proper timeous and continuous liaison between the Owner, the Contractor and Interested and Affected Parties (I&APs) to ensure all parties are appropriately informed at all times.
- I&APs must be informed of the starting date of construction as well as the phases in which the construction shall take place.
- The EPC contractor must adhere to all conditions of contract including the Environmental Management Programme and landowner special conditions.
- Adequate planning of the construction programme to allow for disruptions due to rain and wet conditions.
- Where existing private roads are in a bad state of repair, such roads' condition shall be documented before they are used for construction purposes.
- All manmade as well as natural (vegetation) structures outside the boundary of the servitude shall be protected against damage at all times and any damage shall be rectified immediately.
- Proper documentation and record keeping of all complaints and actions taken.
- Regular site inspections by the ECO and good control over the construction process throughout the construction period.
- Appointment of an ECO on behalf of the Contractor to implement this ESMP as well as deal with all I&APs related matters.
- Independent Environmental Audits to be performed during and upon completion of construction.

A formal communications protocol should be set up during this phase. The aim of the protocol should be to ensure that effective communication on key issues that may arise during construction be maintained between key parties. The protocol should also ensure that concerns / issues raised by I&APs are formally recorded and considered and where necessary acted upon. The communications protocol should be maintained throughout the construction phase.

**Table 11-1: Pre-construction phase environment and social management plan**

| Impact | Environmental Mitigation Measure/Monitoring Plan | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| **Pre-construction phase impacts** | 1) The EPC contractor shall comply with the conditions of the EIA License for the project;<br>2) Maintain records of environmental incidents and avail a copy of these records to relevant agencies on request throughout the construction phase;<br>3) Identify and confirm suitable sites for the storage areas for materials;<br>4) Store construction equipment in construction camps. Ensure oil changes take place on an impermeable surface such as reinforced concrete slab;<br>5) Provide as much as possible, opportunities for employment to persons from the local areas within Kwasasi, Magogoni, Hindi and Lamu County in general;<br>6) Train site staff on the following areas of environmental management;<br>a) Environmental awareness training for construction staff, concerning the prevention of accidental spillage of hazardous chemicals and oil; pollution of water resources (both surface and groundwater), air pollution and litter control and identification of archaeological artifacts;<br>b) Project Manager shall ensure that the training and capabilities of the Contractor's site staff are adequate to carry out the designated tasks;<br>c) Operators of construction equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitized to any potential hazards associated with their tasks;<br>d) No operator shall be permitted to operate critical items of mechanical equipment without having been trained by the Contractor and assured competent;<br>e) Staff should be educated as to the need to refrain from indiscriminate waste disposal and/or pollution of local soil and water resources and receive the necessary safety training. | EPC Contractor | Weekly |

### 11.6.2 Environmental Management Plan for Construction Phase

The boundaries of the construction site shall be clearly identified on site during the construction process. The method of identification shall be either permanent fencing, temporary fencing or construction / safety barricades or high visibility tape. Where existing or new permanent fencing is used to identify construction boundaries high visibility warning tape should be interwoven in the fence. All works and storage of materials and equipment shall be restricted to this area during the construction phase.

**Site clearing**

Site clearing must take place in phased matter, as and when required. Areas which are not to be constructed on within two months of time must not be cleared to reduce erosion risks. The area to be cleared must be clearly demarcated and this footprint strictly maintained. Spoil that is removed from the site must be removed to an approved spoil site / licensed landfill site.

The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent. These include watercourses and steep areas.

**Site establishment**

Site establishment shall take place in an orderly manner and all required amenities shall be installed at camp sites before the main workforce move onto site. The construction camp shall have the necessary ablution facilities with chemical toilets at commencement of construction.

The Contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate sanitary activities be allowed other than in supplied facilities.

The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of in accordance with the requirements of L.N. 121 titled Environment Management and Coordination (Waste Management) Regulations 2006. A certificate of disposal shall be obtained by the Contractor and kept on file. Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management. The disposal of waste shall be in accordance with Kenyan waste legislation as a minimum.

Under no circumstances may solid waste be burnt on site.

**Dredging**

If dredging is required, it should be evaluated and managed with the consideration to minimize adverse environmental effects, whilst still maximizing the economic and environmental benefits.

Impacts are:

- Disturbance to seabed communities from the placement of seabed equipment
- Smothering of seabed communities due to drill cutting discharges
- Disturbance to local marine fauna from noise and vibration and or light from the facilities
- Greenhouse gas emissions during installation.
- Introduction of marine pest species from ballast water discharges
- Adverse aesthetic impacts associated with the structure
- Removal of vegetation for onshore installations

- Reduction of water quality and impacts to marine flora and fauna and their habitat in the event of an accidental oil spill

There are existing best available practices (BAPs) which are generally considered to effectively avoid and/or minimize the environmental impact potential associated with the dredging and its disposal operations. However, dredging has become more of a scientific process with greater emphasis being placed on continuous survey on the channels to minimize dredged volumes. Positive changes in the dredging practices and its operations have greatly reduced the amounts of material dredged over the past decade.

Improved dredging technology and position fixing equipment allows more precision techniques which result in real reductions of the amounts of materials dredged and deposited.

International regulations and well managed dredging practice techniques are sufficient to avoid the potential impacts. Where adverse effects are identified on the site or as a precautionary approach is considered necessary, the following actions should be taken to avoid and/or minimize impacts, many of which are already in the present dredging operation practice:

- Conduct benthic study and choose the best location of channels to minimize coral reef damage or loss;
- Avoid sensitive areas;
- Selection of the Best Available Technique (BAT) dredging methods;
- Reducing amounts of dredging;
- Avoid trenching activities where there is nearby aquaculture;
- Best timing of dredging and disposal operations according to site specifics;
- Best equipment and barge used in the operation;
- Proper planning and scheduling on the dredging and disposal to avoid strong wind, current and tides that will further add to widen the effect of spreading of sediments;
- Control spread of sediments;
- Minimize spreading of silt plume;
- Limit the volume of offshore disposal and instead plan to use large volume inland productively, i.e. for beautification , land reclamation, and backfilling;
- Testing and analyzing the water column at upstream and downstream from all the dredging activities;
- Selection of best possible disposal sites;
- Monitoring and record keeping;
- Monthly data collection and reporting.

**Table 11-2: Construction phase environment and social management plan**

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| **Inconsistent traffic and access management during construction** | **Construction traffic**<br>1) Clearly define construction routes and required access roads;<br>2) Use the minimum number of trips for delivering construction plant and equipment;<br>3) Strictly control the access of all construction and material delivery vehicles especially during wet weather to avoid compaction and damage to the topsoil structure;<br>4) Traffic flows in/out of the project site will be carefully controlled through the use of trained site staff positioned at key entry and exit points;<br>5) All construction vehicles should be serviced regularly to avoid contamination of soil from oil and hydraulic fluid leaks, etc. Servicing of vehicles and equipment must be done off-site and on an impermeable surface such as concrete.<br>**Access**<br>1) Undertake a route hazard survey of the road from Mombasa to the project site. Based on the results of the route hazard survey, incorporate the relevant elements of hazard areas in the journey management plan and procedure for use during the construction and operational phases<br>2) Position entry and exit points strategically to ensure minimal effects on traffic;<br>3) Clearly signpost primary routes to the site and issue to all suppliers and Sub-Contractors.<br>4) Where new access roads are constructed, this must be done according to approved design. Drainage channels shall be suitably designed to ensure erosion does not occur, especially at the outflow points. The new access road shall be designed to allow for the natural flow of water where required. Crossing of eroded areas on access routes to new sites shall be thoroughly planned and installed according to design. All areas susceptible to erosion shall be protected with suitable erosion control measures from the onset of the project. Prevention is the ultimate aim, as restoration is normally difficult and costly. | EPC Contractor, | Bi-weekly |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | **Road maintenance**<br>1) All damaged roads shall be rehabilitated using suitable measures. In the event of rehabilitation work being required on private roads, such work will be done to the original specifications of the private road;<br>2) Access roads should be maintained in good condition by attending to potholes, corrugations and stormwater damage as soon as these develop.<br>**General**<br>1) Safety requirements shall be complied with at all times during the construction phase. All equipment transported shall be clearly labeled as to their potential hazards according to specifications. All the required safety labeling on the containers and trucks used shall be in place;<br>2) The Contractor shall ensure that all the necessary precautions against damage to the environment and injury to persons are taken. | | |
| **Improper setup and operation of Contractor's work area** | **Site of construction camp**<br>1) The EPC contractor to seek approval from the Owner's Engineer for locating their construction camp. Factors to consider during siting of the construction camp include location of local residents and/or ecologically sensitive areas, including flood zones and slip/unstable zones. If the EPC contractor chooses to locate the camp site on private land, he must get prior permission from both the Project Manager and respective landowner;<br>2) Minimize the size of the construction camp (especially where natural vegetation or grassland has had to be cleared for its construction);<br>3) Provide adequate drainage around the construction camp site to avoid standing water and/or sheet erosion.<br>**Storage of materials (including hazardous materials)** | EPC Contractor | Bi-weekly |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 1) Choose storage area location by considering prevailing winds, general onsite topography and water erosion potential of the soil. Impervious surfaces must be provided where necessary;<br>2) Designate, demarcate, fence off and secure all storage areas to minimize the risk of crime; storage areas should be safe from access by unauthorized persons;<br>3) Provide fire prevention facilities at all storage locations;<br>4) Store all hazardous materials such as oils, paints, thinners, fuels, chemicals, etc. in properly constructed and impermeable bunded areas. Hazardous materials must not be allowed to contaminate the subsurface or enter into drainage systems. Siting of hazardous material storage areas must be approved by the Project Manager.<br>5) The EPC contractor will acquire Material Safety Data Sheets (MSDSs) for all chemicals and hazardous substances used on site. Training on environmental impacts of chemicals and hazardous substances and PPE required to worn must be provided to the users.<br>6) Hazardous material storage areas must be signposted clearly<br>7) Use a NEMA licensed waste handler for disposal of all used oils from the camp site. A waste tracking sheet must be completed as required by L.N. 121: Waste Management Regulations 2006 whenever used oils are being disposed.<br>8) Dispose of any excess concrete mixes in consultation with the Project Manager.<br>9) Immediately contain, recover and cleanup any spillages that may occur during the construction phase. All spillages must be reported to the Owner's Engineer and Project Manager.<br>**Drainage of construction camp**<br>1) Ensure that all potentially contaminated run-offs from the construction camp meet the discharge limits set under Legal Notice 120: Water Quality Regulations. Run-off from the camp site must NOT discharge into neighbors' properties or into adjacent wetlands, rivers, | | |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | streams or the sea without a valid Effluent Discharge License (EDL) issued to the EPC Contractor by NEMA.<br>**End of construction**<br>1) Rehabilitate all areas after construction has been completed on site and all excess material has been removed. Any spilled concrete shall be removed and soil compacted during construction shall be ripped, leveled and re-vegetated;<br>2) Store construction materials, soil stockpiles, machinery and other equipment in designated areas;<br>3) The construction camp must be kept clear of litter at all times. Spillages within the construction camp need to be cleaned up immediately and disposed of in the hazardous skip/bin for correct disposal. No open fires are allowed within the construction camp and no wood from surrounding vegetation may be used to create a fire. | | |
| **Lack of EHS training for construction staff** | **Environmental training**<br>1) Ensure that all site personnel have a basic level of environmental awareness training. The EPC contractor must submit a proposal for this training to the Owner's Engineer for approval.<br>Topics covered should include:<br>• What is meant by "Environment";<br>• Why the environment needs to be protected and conserved;<br>• How construction activities can impact on the environment;<br>• What can be done to mitigate against such impacts;<br>• Awareness of emergency and spills response provisions; and<br>• Social responsibility during construction e.g. being considerate to local residents. | EPC Contractor, Owner's HSE Consultant | Monthly |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 1) It is the EPC contractor's responsibility to provide a site foreman with no less than 1 hour's environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff;<br>2) Training should be provided to the staff members on the use of the appropriate fire-fighting equipment. Translators are to be used where necessary;<br>3) Use should be made of environmental awareness posters on site;<br>4) The need for a "clean site" policy also needs to be explained to the workers;<br>5) Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitized to any potential hazards associated with their tasks.<br>**Monitoring of environmental training**<br>1) The EPC contractor must monitor the performance of construction workers to ensure that the points relayed during their induction have been properly understood and are being followed. Toolbox talks are recommended. | | |
| **Impacts related to soils and geology** | **Soil erosion**<br>1) Provide wind screening and stormwater control to prevent soil loss from the site;<br>2) Use silt fences and/or sand bags in areas that are susceptible to erosion;<br>3) Sensitive areas need to be identified prior to construction so that the necessary precautions can be implemented.<br>4) Regularly maintain all erosion control mechanisms;<br>5) Retain vegetation where possible to avoid soil erosion. Vegetation clearance should be phased to ensure that the least area of soil is exposed to potential erosion at any one time;<br>6) Re-vegetate disturbed surfaces after construction activities are completed; | EPC Contractor | Monthly |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | **Soil contamination**<br>1. The EPC contractor will arrange to remove all construction related contaminated topsoil to the full depth of pollution and replace it at his own expense with approved topsoil;<br>2. The EPC contractor will be responsible for remediating any polluted topsoil. | | |
| **Impacts related to surface water and groundwater** | **Sanitation**<br>1) Provide adequate sanitary facilities for male and female construction workers in accordance with the Public Health Act requirements;<br>2) Ensure that sanitary facilities are regularly serviced and emptied to reduce the risk of surface or groundwater pollution.<br>**Hazardous materials**<br>1) Place all hazardous materials in bunded containment areas with sealed surfaces;<br>2) All hazardous substances must be stored at least 50m from any water body on site;<br>3) Contaminated wastewater must be managed by the EPC Contractor to ensure existing water resources on the site are not contaminated. All wastewater from general activities in the work area shall be collected, treated and removed from the site for appropriate disposal.<br>**Public areas**<br>1) Food preparation areas should be provided with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis;<br>2) The EPC Contractor should take steps to ensure that littering by construction workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines;<br>3) No washing or servicing of vehicles will be allowed on permeable surfaces. | EPC Contractor | Weekly |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | **Water resources**<br>1) Treated water (or another source approved by the Environmental Manager) should instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, compacting, etc.<br>2) An Effluent Discharge License (EDL) shall be acquired from NEMA for the camp site to ensure effluent discharge compliance in accordance with the discharge limits stated in L.N. 120: Water Quality Regulations, 2006. | | |
| **Impacts related to air quality** | **Dust control**<br>1) Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of dust into neighboring areas;<br>2) The EPC contractor shall be responsible for dust control on site to ensure no nuisance is caused to a Landowner or neighboring communities;<br>3) A speed limit of 40km/h should be observed in the study area and 20km/h within the project site;<br>4) Any complaints emanating from the lack of dust control shall be attended to immediately by the EPC Contractor.<br>**Rehabilitation**<br>1) The EPC contractor will commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks.<br>**Fire prevention**<br>1) No open fires shall be allowed on site. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires;<br>2) The EPC contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated thorough a fire risk assessment process. | EPC Contractor | Daily |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| **Impacts related to noise in surrounding areas** | 1) The Contractor should comply with applicable sections of Legal Notice 61: Noise and Vibration Pollution Control Regulations, 2009 for environmental noise and Legal Notice 25: Noise Prevention and Control Regulations, 2005 for occupational noise; where necessary hearing protection should be worn;<br>2) Construction site yards, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Truck traffic should be routed away from noise sensitive areas, where possible;<br>3) Construction activities are to be contained to reasonable hours during the day and evening. Night-time activities near noise sensitive areas should not be allowed;<br>4) With regard to unavoidable very noisy construction activities in the vicinity of noise sensitive areas, the Contractor and his EHS Officer should liaise with local residents on how best to minimize impact, and the local population should be kept informed of the nature and duration of intended activities;<br>5) Noise from laborers must be controlled;<br>6) Noise suppression measures must be applied to all construction equipment. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from site;<br>7) The Contractor must take measures to discourage laborers from loitering in the area and causing noise disturbance. Where possible, labor shall be transported to and from the site by the EPC contractor or his sub-contractors. | EPC Contractor | Daily |
| **Impacts on ecology** | **Existing vegetation**<br>1) Existing indigenous vegetation must be retained where possible. Vegetation will be removed as it becomes necessary; | EPC Contractor | Weekly |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 2) Materials should not be delivered to the site prematurely which could result in additional areas being cleared or affected;<br>3) No vegetation to be used for firewood.<br>**Rehabilitation**<br>1) All damaged areas shall be rehabilitated upon completion of the construction to as near pre-construction conditions;<br>2) All natural areas impacted during construction must be rehabilitated with locally indigenous vegetation typical of the representative botanical unit;<br>3) Rehabilitation must take place as soon as construction is complete to avoid the infiltration of alien species and soil erosion;<br>**Permits**<br>1) Permits for removal of any protected species such as mangroves must be obtained from Kenya Forestry Services (KFS) or other relevant lead agency should such species be affected.<br>2) The construction workspace must be well demarcated and no construction activities must be allowed outside of the demarcated footprint;<br>3) Only vegetation within the construction footprint area to be excavated must be removed. Vegetation removal must be phased in order to reduce impact of construction;<br>4) Construction site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.<br>5) Construction areas must be well demarcated and these areas strictly adhered to.<br>6) Soils must be kept free of petrochemical solutions that may be kept on site during construction. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora. | | |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | **Utilization of resources**<br>1) Gathering of firewood or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the Project Manager. | | |
| **Impacts arising from inconsistent waste management** | **Litter management**<br>1) Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site;<br>2) A housekeeping team should be appointed to regularly maintain the litter and rubble situation on the construction site;<br>3) Waste disposal will need to take place in accordance with Legal Notice 121: Waste Management Regulations, 2006;<br>4) Littering by the employees of the Contractor shall not be allowed under any circumstances. The EPC Contractor's EHS Officer shall monitor the neatness of their work area as well as the Contractor's campsite;<br>5) Receptacle containers should be maintained on site. These should be kept covered and arrangements made for them to be disposed regularly from the site;<br>6) Waste Tracking Sheets shall be provided for inspection by the Owner's Engineer.<br>**Hazardous waste**<br>1) All hazardous materials must be carefully stored and disposed offsite in accordance with the Waste Management Regulations 2006 using NEMA approved waste handlers;<br>2) Contaminants will be stored safely to avoid spillage;<br>3) Machinery must be properly maintained to keep oil leaks in check.<br>**Sanitation**<br>1) The Contractor shall install mobile chemical toilets at the site; | EPC Contractor,<br>Contractor EHS Officer | Weekly |

| Potential impact | Environmental and Social Management Plan – construction phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 2) Staff shall be sensitized to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed;<br>3) There should be enough toilets available to accommodate the workforce in accordance with the Public Health Act requirements. Male and female toilets must be accommodated separately;<br>4) Toilets shall be serviced regularly and the Contractor's EHS Officer shall inspect toilets;<br>5) Under no circumstances may open areas, neighbors fences or the surrounding bush be used as a toilet facility;<br>6) Potable water must be provided for all construction staff.<br>**Remedial actions**<br>1) Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site;<br>2) Excavation of contaminated soil will involve careful removal of soil using appropriate tools/machinery to storage containers until disposed of using NEMA approved waste handlers;<br>3) If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials;<br>4) If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.<br>5) Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.<br>6) Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriately disposed of. | | |

**Table 11-3: Operational phase environment and social management plan**

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| **Impacts related to water management** | **Surface water**<br>1. Correct drainage of the site should ensure that contaminants do not impact upon surface water. No sensitive surface water features are present on the site.<br>**Management**<br>2. Management must ensure that solid waste collection and sanitation is managed effectively in order to avoid any chances of ground and surface water pollution.<br>3. The ash yard must be designed with an impermeable layer and retainer walls to prevent pollutant run-off into the Manda Bay;<br>4. All runoff water from fuel deposits, workshops, vehicles washing areas and other equipment must be collected and directed through oil traps to settlement ponds. These ponds must be suitably lined.<br>5. All water discharged from the works including effluent from wash water and stormwater from workshops and refueling areas, as well as all runoff from areas with pollution potential will comply with national effluent standards.<br>6. All chemical/hydrocarbon storage areas must be bunded. This bund water must be removed from site by a licensed contractor.<br>7. All plant and chemical usage areas must be paved.<br>8. Potentially contaminated water must be directed to an oil/water separator. Oily water must be removed from the site by a licensed contractor.<br>9. Any run-off that is discharged from the site must be uncontaminated.<br>10. All vehicle transfers of materials must be conducted within a bunded area to minimize the potential for spills to enter the stormwater. | O&M Company | Bi-annually |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 11. Spills of potential contaminants must be immediately cleaned up and neutralized. Such spills must be handled with consideration to health and safety considerations.<br>12. The use of water to clean up spills must be avoided except where absolutely necessary.<br>13. Movement of vehicles on and off site is to be through approved access points only.<br>14. Spill kits must be made available on site for the clean-up of spills and leaks of contaminants.<br>15. Spill response procedures to include removal/disposal of potentially contaminated water and any used absorbent materials.<br>16. In the event of a major spill or leak of contaminants, the administering authority must be contacted immediately as per incident reporting procedures.<br>17. No ground water or surface water must be polluted by any activities on site.<br>18. Should any negative effects on the supply of groundwater to neighboring users in the area become apparent these must immediately be reported to the O&M Company.<br>**Stormwater**<br>19. Any rehabilitation undertaken or future development should ensure that stormwater flows do not cause erosion to water courses in close proximity to the coal power plant and associated infrastructure. Accordingly excessive stormwater flows should not be directed into water courses.<br>**Roads**<br>20. No roads related to operational maintenance of the site should be constructed through watercourses. | | |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | **Monitoring and Reporting**<br>21. A formal monitoring and reporting strategy/protocol should be developed for monitoring the integrity of the different water resources likely to be affected by the coal power plant. This should include any ongoing rehabilitation measures initiated in the construction phase.<br>22. Monitoring should include fixed-point photographs at specific intervals and after large flood events.<br>23. Specific activities that should be monitored include:<br>• Erosion potential (specifically in and around roads and storm-water discharge points).<br>• Stormwater management and design.<br>• Water quality upstream and downstream of the pump station.<br>24. It is recommended that the operational area of the power station must be paved with concrete material which will be inspected on a regular basis for cracks and leaks.<br>25. It is further recommended that four monitoring/observation boreholes be drilled on site during the construction phase of the project. The existence of these boreholes will assist in the early detection of any leakage of contaminants into the groundwater system.<br>26. The optimum drilling positions for these boreholes must be selected by a professional hydrogeologist. It is important that the topographic setting, possible geological structures, etc., are considered during this phase.<br>27. Groundwater levels can be measured on a monthly basis and initial water quality samples can be collected and analysed for reference purposes. Thereafter on-going sampling of groundwater can be conducted on quarterly basis. The chemical analysis of water should include the all parameters listed in the Kenyan Water Quality Regulations of 2006 as a minimum. | | |
| **Impacts on air quality** | **Dust management**<br>1. Dust control mechanisms must be utilised to reduce the amount of dust being released. | O&M Company | Annually |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 2. Any dirt roads that are utilised by the O&M Company and its contractors to access the site must be regularly maintained to ensure that dust levels are controlled.<br>3. The coal power plant's equipment must be performance tested during the commissioning phase to ensure that the manufacturer's standard has been delivered in respect of air emissions. This applies to the FGD, low NOx burners, ESP and CEMS | | |
| **Impacts on fauna** | **Fauna management**<br>1. An operational phase monitoring programme should be developed to monitor the impacts of the construction of the coal power plant on Avifauna. This monitoring programme should be set up in conjunction with the NMK ornithologists.<br>2. Monitor the movement of small and medium size mammals through fences. In the event that an animal becomes trapped within the facility, procedures need to be developed in order to facilitate their removal. | | |
| **Impacts of noise** | **Noise from the coal power plant**<br>1. The design of the coal power plant is to incorporate all the necessary acoustic design aspects required in order that the overall generated noise level from the new installation does not exceed a maximum equivalent continuous daytime rating level (LReq,d), namely a noise level of 70 dBA (just inside the property projection plane, namely the property boundary). Notwithstanding this provision, the design is also to take into account the maximum allowable equivalent continuous day/night rating level of the potentially impacted sites outside the new installation's property. Where the LReq, d for the external site is presently lower than the maximum allowed, the maximum shall not be exceeded. Where the LReq,d for the external site is presently at or exceeds the maximum, the existing LReq,d shall not be increased.<br>2. The latest technology incorporating maximum noise mitigating measures for the coal power plant components should be designed into the system.<br>3. The design process is to consider, inter alia, the following aspects: | O&M Company | Annually |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | a) The position and orientation of buildings on the site.<br>b) The enclosure of noisy plant in buildings where possible and practical.<br>c) The design of the buildings to minimise the transmission of noise from the inside to the outdoors.<br>d) The insulation of particularly noisy plant and equipment.<br>4. All plant and equipment, including vehicles, must be properly maintained in order to minimise noise generation.<br>5. Observation of on-site noise levels by Safety, Health and Environment Officer<br>6. A complaints register must be held, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.<br>7. Corrective action is required to be undertaken immediately after a complaint is made or non-conformance is identified.<br>8. Any complaints regarding noise must be investigated, sources identified and mitigation measures implemented. Feedback on resolution of the issue must be provided to the complainant.<br>9. The Safety, Health and Environment Officer will maintain an incident reporting system to record non-conformances. | | |
| **Impacts on biodiversity (flora and fauna)** | 1. Indigenous vegetation must be maintained.<br>2. The active control of all alien invasive species by means of manual removal, ring-barking, chemical control or a combination of these methods.<br>3. The use of herbicides will be in compliance with the Kenyan regulations.<br>4. The Operator will:<br>• Ensure that a registered pest control operator applies or supervises the application of all herbicides. | O&M Company | Quarterly |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | • Ensure that all herbicides are stored in a well-ventilated demarcated storage area.<br>• Ensure that a register of all contents of the storage area is kept and updated on a regular basis.<br>• Ensure that a daily register of all relevant details of herbicide usage is kept, and that such a register is maintained by the O&M Company.<br>• All emergent seedlings must be removed by hand and re-sprouting from existing rootstock must be chemically treated in a continual monitoring and follow-up programme.<br>• Implementation of a site rehabilitation and landscaping program.<br>• Where possible re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction.<br>• Vegetative re-establishment shall, as far as possible, make use of indigenous or locally occurring plant varieties within a 20m radius of the site<br>5. No faunal species must be harmed by maintenance staff during any routine maintenance at the site.<br>6. Appropriate mitigation of bird collisions with trough mirrors need to be confirmed on an ad hoc basis through regular monitoring once the plant is operational.<br>7. The development and implementation of an avifauna impact monitoring programme.<br>8. Follow-up aquatic surveys are recommended to potentially identify emerging impacts following post-construction within both the aquatic and riparian areas. This is important so as to implement any further migratory measures required for emerging problems (e.g. soil erosion forming through poor stormwater management feature design, recruitment of exotic vegetation, etc.). | | |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| **Impacts of waste management** | **Waste management**<br>1. The ash yard must be designed and implemented ensuring that the coal yard is bunded and has an impermeable layer at the bottom to prevent sub-surface soil and groundwater contamination;<br>2. The design of the ash yard should include installation of 5 – 7 groundwater monitoring wells (3 upstream and 4 downstream) of the inferred groundwater flow regime over the project site;<br>3. Solid waste separation and recycling should take place for the duration of the operational phase for the project in accordance with the Waste Management Regulations 2006 in Kenya.<br>4. All structures and/or components replaced during maintenance activities are appropriately disposed of at an appropriate licensed waste disposal site or sold to a recycling merchant for recycling.<br>5. Ensure that care is taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Should any accidental spillage take place, it must be cleaned up according to specified standards regarding bioremediation.<br>6. Waste handling, collection and disposal operations are managed and controlled by a waste management contractor<br>7. Wastewater:<br>• Water from bunds and oily water from oil/water separator must be removed by a licensed contractor.<br>8. Waste – Leaked oil and chemicals:<br>• Appropriate disposal must be arranged with a licensed facility.<br>• Waste must be stored and handled according to the relevant legislation and regulations. | O&M Company | Monthly |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 9. General Waste:<br>• Recycled where possible or disposed of in and environmentally safe manner.<br>10. Hazardous Waste:<br>• Separate hazardous and general waste and dispose hazardous waste to an appropriate hazardous waste disposal site in accordance with the Waste Management Regulations in Kenya.<br>11. Uncontaminated waste must be removed at least monthly for disposal.<br>12. Contaminated or regular wastes must be disposed of as necessary and in accordance with Kenyan waste legislation.<br>13. An incident/complaint register must be established and maintained.<br>14. Visual inspection of the site must be carried out daily for evidence of litter or waste material that has been inappropriately disposed of by site personnel.<br>15. Waste collection must be monitored on a regular basis.<br>16. Waste documentation must be completed and available for inspection on request.<br>17. A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, resolved.<br>18. Weekly and monthly reports on exact quantities of all waste streams exiting the site must be compiled by the waste management contractor and monitored by the Safety, Health and Environment Officer. All appropriate waste disposal certificates accompany the monthly reports. | | |
| **Impacts on health and safety** | **Emergency evacuation plan**<br>1. Upon completion of the construction phase, an emergency evacuation plan must be drawn up to ensure the safety of the staff and surrounding land users in the case of an emergency. | O&M Company | Daily |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 2. All permanent staff must undergo safety training.<br>**Fire safety**<br>3. Firefighting equipment in the form of a fire protection system comprising fire hydrants, fire pumps, fire extinguishers, etc. must be available on-site. These must be regularly maintained by an appropriate company.<br>**Storage and handling and management of hazardous materials**<br>4. Management strategies/operational procedures for the routine monitoring and inspection of fuel tanks, and other fuel related equipment will be compiled and implemented.<br>5. The storage of flammable and combustible liquids such as oils will comply with the requirements of Kenya's L.N. 59 titled Fire Risk Reduction Rules, 2007 and the Occupational Safety and Health Act, 2007 (OSHA).<br>6. The storage and handling of corrosive substances must be in accordance with L.N. 60 titled Hazardous Substances Regulations 2007<br>7. The minimum amount of fuel required for efficient operation of the facility must be stored on site.<br>8. Any spills will be rendered harmless and arrangements made for appropriate collection and disposal, including cleaning materials, absorbents and contaminated solid<br>9. Ensure that spill kits are available on site to clean up spills and leaks.<br>10. Obtain any permits and approvals necessary and comply with the conditions attached to such permits and approvals<br>11. Transport of all hazardous substances must be in accordance with the relevant Kenyan legislation.<br>12. Identify and maintain a register of all activities that involve the handling of potentially hazardous substances, as well as devise and supervise the implementation of protocols for the handling of these substances. This will include all fuels, oils, lubricants and grease. | | |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 13. Ensure that all hazardous substances are handled in accordance with the manufacturer's specifications and relevant legal requirements.<br>14. Arrange and supervise the implementation of clean-up operations and proper disposal of contaminated materials at a licensed hazardous waste disposal site.<br>15. Keep written records detailing the type of spill, the corrective and remedial measures implemented in the stopping or reduction of the spill, and the clean-up of the spill. Such progress reporting is important for monitoring and auditing purposes and the written reports may afterwards be used for training purposes in an effort to prevent similar future occurrences.<br>16. All such tanks to be designed and constructed in accordance with a recognized code (international standard).<br>17. The rated capacity of tanks must provide sufficient capacity to permit expansion of the product contained therein by the rise in temperature during storage.<br>18. Tanks must be situated in a bunded area the volume of which must be at least 110% of the largest volume of the tank.<br>19. The floor of the bunded area must be smooth and impermeable constructed of concrete or plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The floor of the bunded area will be sloped towards an oil trap or sump to enable any spilled fuel and/or fuel–soaked water to be removed.<br>20. The fuel delivery area must be bunded and an interceptor system or similar structure must be installed, with all drainage directed to an oil water separator. This approach will allow for the removal of free product from any surface run-off or spillages. The interceptor system must contain a holding tank that is used to contain any free product recovered. Free product must be removed from this separator, stored in a holding tank, and recycled or disposed of in an appropriate manner.<br>21. Internationally approved non-corrosive pipework systems must be installed (approved codes). | | |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 22. Anti flash nozzles must be installed at the end of the vent pipes and provisions must be made for overfill protection devices in the tank filling pipes to prevent tank overfills during filling operations.<br>23. Fuel must be dispensed via a system that has suitable leak detectors linked to the fuel lines if and where required. These leak detectors must form an integral part of the pumping system and allow for automatic cut-off of the fuel supply must a leak be detected.<br>24. Any water that collects in the bund must not be allowed to stand and must be removed and the hydrocarbon digestion agent within must be replenished.<br>25. Spill and emergency response equipment must be accessible at chemical transfer/unloading points and refuelling locations.<br>26. Bunds and storage facilities must be maintained to ensure design capacity is available.<br>27. Water ponds within the bunded areas must be pumped to the oil/water separator as soon as possible after rain events cease.<br>28. Observation and supervision of chemical storage and handling practices and vehicle maintenance by the Safety, Health and Environment Officer throughout the coal power plant's operational phase.<br>**Hazard and Risk**<br>29. All monitoring will occur according to the risk management and emergency response plan, guidelines and license conditions.<br>30. A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon. | | |
| **Impacts on visual impact** | 1. The exterior design in terms of buildings, fences and landscaping is planned in such a way to reduce the visual impact.<br>2. All lighting where practical, must be "down" to minimise the visual impact of the facility at night. Lighting must be directed towards the areas they are supposed to illuminate. | O&M Company | Annually |

| Impact | Environmental and Social Management Plan – operational phase | Responsibility | Frequency/ Monitoring requirement |
|---|---|---|---|
| | 3. Use of light fixtures and the fitment of covers and shields designed to contain rather than spread light where practical. The minimum amount of lighting must be used.<br>4. If a visually intrusive component of the site is identified, the procedures must be altered or updated to ensure effective management.<br>5. An incident reporting system will record and manage follow up of resolution of on conformances. | | |

**Table 11-4: Social management plan for economic opportunities**

| Social Management Plan (I) - Economic Opportunities | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| **Opportunities and benefits associated with creation of employment for the local community** | ▪ Employment of contactors sourced from outside the local community instead of employing from the local community for both the construction and operational phases | ▪ Recommended priority direction for allocating employment opportunities:<br>1. Communities proximate to project site<br>↓<br>2. Lamu County<br>↓<br>3. Within Kenya<br>↓<br>4. Internationally outsourced | APCL and service contractors | Employment and local sourcing policy documents that set out local employment targets to be in place before construction phase commences |
| | | ▪ Develop a Workforce Recruitment and Training Strategy that will focus on assisting unemployed, underemployed and vulnerable persons access training and employment in the project | APCL | Before construction phase commences, and review it throughout the project lifecycle |
| | | ▪ Develop and institutionalize a company Gender Policy that will ensure equal allocation of employment and business opportunities to men and women, and where necessary, affirmative actions are applied to bridge gender gaps that may exist | APCL and service contractors | Before construction phase commences, and review it throughout the project lifecycle |
| | | ▪ Aim for at least 80% of low-skilled workers sourcing from the local area | APCL and service contractors | Throughout project lifecycle |

| Social Management Plan (I) - Economic Opportunities | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | ▪ Give priority to female and youth owned enterprises during allocation of procurement tenders | APCL and service contractors | Throughout project lifecycle |
| | | ▪ Provide timely and accessible information to the local community on the job opportunities that will be available, the skills and qualifications required to fill them, as well as when the opportunities will be available. | APCL and service contractors | Throughout project lifecycle |
| | | ▪ Where required, implement appropriate training and skills development programs prior to the initiation of the construction phase to ensure that the 80% target is met | APCL | Training and skills development programs to be initiated prior to the construction phase |
| | | ▪ Enhance opportunities for employment by developing and supporting training programs to up-skill local residents for the Projects construction and operation phases | APCL | Throughout project lifecycle |
| | | ▪ Institute an elaborate structure to promote and enhance knowledge transfer between international experts employed by the project and the local employees. This should be a set requirement for all international firms contracted by APCL | APCL | Throughout project lifecycle |
| | | ▪ Skills audit to be undertaken to determine training and skills development requirements | APCL | Before commencement of the construction phase |

| Social Management Plan (I) - Economic Opportunities | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| **Impacts related to loss of livelihoods** | ▪ Disruption and loss of livelihoods as a result of project activities | ▪ Ensure that job and business opportunities are available or are created within the project for the local community and that proper capacity building is afforded to the local communities to enable them to benefit from the available economic opportunities | APCL | Throughout project lifecycle |
| | | ▪ Support creation of employment opportunities by prioritizing local bossiness fill contract positions such as catering, cleaning, construction, material supply, light vehicle maintenance, security. Build the capacity of local businesses to ensure they are competitive and appropriately skilled to provide goods and services to APCL and its contractors' standards and specifications | APCL | Throughout project lifecycle |
| | | ▪ Power plant operations should avoid:<br>- disruption of activities at tourism and recreational areas / facilities<br>- destruction of existing aesthetic and visual quality | APCL and service contractors | Throughout the project cycle |
| | | ▪ APCL's CSR programme should include efforts to support improvement of the tourism industry such as conservation of the forests, creation of recreation parks, preservation of heritage sites, etc. | APCL | Throughout project lifecycle |

| Social Management Plan (I) - Economic Opportunities | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | ▪ Power plant operations should aim to avoid contamination of crops, livestock and fish resources by applying the necessary technologies | APCL and service contractors | Throughout the project cycle |
| | | ▪ Power plant operations should avoid interference with arable land utilized for crop production and livestock grazing | APCL and service contractors | Throughout the project cycle |
| **Benefits related to creation of business opportunities for the local community** | ▪ Importing construction materials from outside the project area which are available locally<br>▪ Importing perishable goods from outside Lamu County | ▪ Recommended priority direction for allocating business opportunities:<br>1. Communities proximate to project site<br>↓<br>2. Lamu County<br>↓<br>3. Within Kenya<br>↓<br>4. Internationally outsourced | APCL | Business / tendering policy documents that set out local business allocation targets to be in place before construction phase commences |
| | | ▪ Provide timely and accessible information to the local community on the tender opportunities that will be available, the requirements to fill them, as well as when the opportunities will be available. | APCL | Throughout project lifecycle |

| Social Management Plan (I) - Economic Opportunities | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | ▪ Develop a database of local service providers and ensure that they are informed of tenders and job opportunities | APCL | Before construction phase commences |
| | | ▪ Identify potential opportunities for local businesses | APCL | Throughout project lifecycle |

**Table 11-5: Social management plan for health and safety**

| Social Management Plan (II) for Health and Safety | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| **Impacts related to Community and workforce health** | ▪ Emergency Incidents resulting from project activities | ▪ APCL shall, throughout the project life, continue to seek opportunities (not limited to those identified in the environmental and social impact and risk assessment) to improve socio-environmental conditions which affect the health of the community and its workers | APCL | Throughout the project cycle |
| | | ▪ Undertake Emergency Response Planning for construction and operations in collaboration with emergency service providers and the community | APCL and service contractors | Before construction phase commences and regularly updated throughout the project cycle |
| | | ▪ Assess possible risks to the communities as it relates to emergency incidents (such as the uncontrolled release of pollutants and fire) | APCL and service contractors | Before construction phase commences and regularly updated throughout the project cycle |
| | | ▪ Communities and other stakeholders should have access to information necessary to understand the nature of the possible effect of an accident and an opportunity to contribute effectively to decisions concerning hazardous installations and the development of community emergency preparedness and response plans. | APCL and service contractors | Throughout the project cycle |

| Social Management Plan (II) for Health and Safety | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | ▪ Comply with aviation regulations, including lighting requirements, to avoid potential safety issues associated with proximity to airports, military bases or training areas, or landing strips | APCL | Before construction phase commences |
| | | ▪ Document any event of an accidental release of hazardous substances to the environment, including a root cause analysis, appropriate corrective actions taken, and the resulting health and safety impacts | APCL and service contractors | Throughout the project lifecycle |
| | ▪ High health and safety incident rates within the workforce | ▪ Conduct an occupational health safety risk assessment for both construction and operational phases describing potential safety issues (site access, construction, work practices, hazardous materials, security, transportation of heavy equipment, traffic management, emergency procedures, wildlife encounters, and fire control and management) and implement a health and safety program addressing all of the safety issues identified | APCL | Before construction phase commences and regularly updated throughout the project cycle |
| | | ▪ Reduce occupational EMF exposures, through practices such as backing electrical generators with iron, shutting down generators and transformers when work is being done near them, and limiting exposure time while generators are running | APCL and service contractors | Throughout the project lifecycle |
| | | ▪ Institute an elaborate Occupational Health and Safety Management System (that is in line with the occupational Health And Safety Act of 2007 and its subsidiary regulations) that will outline OHS procedures including:<br>- Provision of occupational health and safety orientation training to all employees<br>- Periodic safety inspections | APCL and service contractors | Throughout the project lifecycle |

| Social Management Plan (II) for Health and Safety | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | - Employment of health and safety personnel<br>- Development of a worker safety programme | | |
| | ▪ Upsurge in the spread/prevalence of diseases | ▪ Identify all health risks to affected communities (such as air and water quality impacts) and take the appropriate steps to avoid, minimize and mitigate such impacts via the provisions of the site-specific Environmental Management Plans which support this SMP | APCL and service contractors | Throughout the project cycle |
| | | ▪ Develop and institute a comprehensive company Sexual Harassment Policy and ensure all APCL and Contractor employees are adequately sensitized | APCL and service contractors | Throughout the project cycle |
| | | ▪ Implement health and safety monitoring for construction and operational phases and disseminate results through community engagement activities | APCL and service contractors | Throughout the project cycle |
| | | ▪ Establish adequate surveillance programs to screen the health of workers including documenting and reporting on existing diseases to avoid the introduction of new or highly resistant diseases into host communities. | APCL and service contractors | Throughout the project cycle |
| | | ▪ Specific education and training programs for contractors must be developed and implemented to prevent the transmission of communicable diseases. | APCL and service contractors | Throughout the project cycle |

| Social Management Plan (II) for Health and Safety | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | ▪ Surveillance, active screening and treatment must be provided to workers in order to prevent the spread of illness in local communities by:<br>- Undertaking health awareness and education initiatives;<br>- Training health workers in disease treatment;<br>- Conducting immunization programs for workers in local communities to improve health and guard against infection<br>- Providing health services (treatment through standard case management in on-site or community health clinic);<br>- Promoting collaboration with the County Government to enhance access of workers families and the community to public health services and promote immunization activities | APCL and service contractors | Throughout the project cycle |
| | ▪ Increase in traffic related incidences due to increased traffic associated with transport of workers and materials and equipment<br>▪ Movement of heavy vehicles can generate noise and dust impacts | ▪ Implement dust suppression measures for heavy vehicles such as wetting roads regularly | Contractors | Throughout the project cycle |
| | | ▪ Ensure that all vehicles are road-worthy, drivers are qualified and are made aware of the potential noise, dust and safety issues | APCL and service contractors | Throughout the project cycle |
| | | ▪ Ensure that drivers adhere to speed limits. Vehicles should be fitted with On-Board Computers (OBCs) to monitor their compliance with APCL standards | APCL and service contractors | Throughout the project cycle |
| | | ▪ Ensure that damage to roads is repaired and that maintenance is done on all public and private access roads used by the contractor in order to minimize erosion and surface damage. Potholes, rutting must be repaired and storm water management mechanisms must be maintained. | APCL and service contractors | Throughout the project cycle |

| Social Management Plan (II) for Health and Safety | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| **Impacts related to safety and security** | Increased insecurity due to large influx of migrant workers | ▪ Conduct a security risk assessment for the construction and operational phases. Based on the security risk assessment, develop and implement a comprehensive security plan The security action plan should include instructions for employees, contractors and site visitors to avoid harassment and disturbance of the local community | APCL | Before construction phase commences and regularly updated throughout the project cycle |
| | | ▪ APCL should provide a work environment that is safe and conducive to both women and men, considering gender-disaggregated differences and vulnerabilities for instance, providing adequate onsite worker's sanitation facilities, where women should have separate facilities from men and, avoiding where necessary, placing female workers on night shift | APCL | Throughout the project lifecycle |
| | | ▪ Collaborate with the local police administration to enhance security measures | APCL | Throughout the project lifecycle |
| | | ▪ Measures to reduce safety and security risk include:<br>- Access to construction sites must be restricted;<br>- Trespassing on neighboring properties (by workers) must be prohibited and the appropriate disciplinary action must be taken in the event of transgression;<br>- The appropriate signage must be placed on the boundary or at the entrance to all construction sites, warning against entering the site and highlighting the health and safety risks;<br>- Public awareness programmes must be developed to identify areas of particular risk and approaches to reduce risk. This may be expanded to include programmes at | APCL and service contractors | Throughout the project lifecycle |

| Social Management Plan (II) for Health and Safety | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | schools, along the road in order to advise children of the dangers of traffic. | | |

**Table 11-6: Social management plan for land use and land access**

| Social Management Plan (III) - Land use and land access | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| **Impacts related to involuntary resettlement and relocation** | ▪ Rise in poverty due to lost access to economic resources such as farmland, forests, grazing grounds etc.<br>▪ Social networks and community organization disrupted due to relocation<br>▪ Loss of cultural identity and ancestral heritage through disruption of traditional authority, culturally significant sites and rituals, and dispersion of kin groups | ▪ Ensure full disclosure, consultation and meaningful engagement of the affected communities throughout the resentment process (including the host communities) | APCL | Before construction phase commences |
| | | ▪ Jointly (with the affected community) develop a Resettlement Action Plan (RAP) that includes compensation plan for land owners and/or displaced persons. Compensation should be commensurate to the land value and lost socio-economic value | APCL | Before construction phase commences |
| | | ▪ Complete all necessary land acquisition in accordance with the RAP prior to the commencement of any construction works | APCL | Before construction phase commences |
| | | ▪ Ensure that new locations are culturally and commercially compatible | APCL | Before construction phase commences |
| | | ▪ Provide counseling to assist in adaptation to the new surroundings | APCL | Before construction phase commences and monitored throughout the construction phase |
| | | ▪ Provide financial literacy training for compensated individuals to ensure they are able to manage the funds sustainably | APCL | Before construction phase commences and monitored throughout the construction phase |
| | | ▪ Power plant operations should avoid disturbance of land resources utilized for crop production and livestock grazing. This includes siting developments such as roads, on non- | APCL and service contractors | Throughout the project lifecycle |

| Social Management Plan (III) - Land use and land access | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | arable or on previously disturbed or altered landscapes whenever possible | | |
| | | ▪ Consolidate all infrastructure requirements for efficient use of land. Consider the ultimate reclamation requirements for the site during initial development of facilities | APCL and service contractors | Before development commences |
| **Impacts related to decommissioning and site reclamation** | ▪ Land degradation and loss of value | ▪ Establish a reclamation plan that addresses both interim and final reclamation requirements. Ensure that interim reclamation of disturbed areas is conducted as soon as possible | APCL and service contractors | Before development commences, and reviewed throughout the project lifecycle |
| | | ▪ Implement the reclamation plan established and ensure:<br>- Removal of all above ground structures from the project area<br>- Reestablish the original grade and drainage pattern to the extent practicable<br>- Restore the vegetation cover, composition, and diversity commensurate with the ecological setting.<br>- Review reclamation efforts and weed control periodically until determining that the site has been reclaimed successfully | APCL | During decommissioning phase |

**Table 11-7: Social management plan for cultural heritage**

| Social Management Plan (IV) - Cultural heritage | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| **Impacts related to disruption of the social fabric and degradation of moral principles** | ▪ Rise in socially unacceptable behavior due to the increase in the migrant population and changed demographics<br><br>▪ Economic growth and increase in individual income may result in increased nightlife and entertainment activities along with the associated pre-disposing factors to the spread of HIV and other sexually transmitted diseases such as crime, drug abuse, infidelity and commercial sex activities | ▪ Fence off the Power plant colony to regulate interactions between the power plant activities and the local communities | APCL | Throughout the project lifecycle |
| | | ▪ Priority for employment and other economic opportunities should be given to the local community to minimize in-migration. At least 80% of the low-skilled workers sourced from the local area | APCL and service contractors | Throughout the project lifecycle |
| | | ▪ Identify local contractors who are qualified to undertaken the required work and afford them the opportunity to tender for opportunities | APCL | Before construction phase commences. |
| | | ▪ All construction workers should attend a brief session before they commence activities. The aim of the briefing session is to inform them of the rules and regulations governing activities on the site and address ad hoc concerns | APCL and service contractors | Briefing session for construction workers held before they commence work on site |
| | | ▪ Develop a Code of Conduct to cover the activities of the construction workers housed on the site | APCL | Before construction phase commences. |
| | | ▪ Construction workers that don't comply with the rules and regulations governing activities on the site should be progressively disciplined | APCL and service contractors | Progressive discipline policy to be developed and implemented prior to f construction |
| | | ▪ On completion of the construction phase all construction workers must leave the site. | APCL and service contractors | At the completion of the construction phase |

| Social Management Plan (IV) - Cultural heritage | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | ▪ Presence migrant workers can impact negatively on family structures and social networks, especially in small rural communities | ▪ Develop and implement an internal HIV/AIDs policy for prevention and protection from discrimination at the workplace | APCL and service contractors | Throughout the project lifecycle |
| | | ▪ Develop and implement a peer educator program for HIV/AIDS and other wellness programs such as stress and stress management. | APCL and service contractors | Throughout the project lifecycle |
| | | ▪ APCL's CSR programme should include initiatives for public education on life skills, promotion of positive family values and predisposing factors to the spread of HIV and other STD's | APCL | Throughout the project lifecycle |
| **Impacts related to destruction of cultural heritage resources** | ▪ Destruction of cultural, archeological, ceremonial or historic resources during construction activities such as excavation and land clearing may<br>▪ Degradation of cultural heritage sites due to neglect as other socio-economic | ▪ Location of power plant facilities should aim to avoid destruction of cultural, archeological, and historic resources. Construction activities should aim for minimal surface disturbance | APCL and service contractors | Before commencement of development and throughout the construction phase |
| | | ▪ All features and sites of social/or cultural historical significance must be identified, located and mapped to be protected during construction. | APCL | Before commencement of construction |
| | | ▪ Collaborate with National Museum of Kenya to conduct cultural resource recovery and efficient 'chance-finds' management | APCL and service contractors | Throughout the project lifecycle |
| | | ▪ Consultation and engagement of local communities in identifying and managing sites of cultural, archeological, ceremonial or historic significance | APCL and service contractors | Throughout the project lifecycle |

| Social Management Plan (IV) - Cultural heritage | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | aspects take priority within the community<br>▪ Modification and/or destruction of buildings with cultural, archeological, ceremonial or historic significance due to growing demands on housing and other infrastructure | ▪ Develop and implement a cultural resource management plan which will include:<br>- APCL procedures, policies and responsibilities in managing cultural heritage matters<br>- Employee and contractor education on significance of cultural heritage, identification of cultural, archaeological and historical resource, and procedures for chance finds<br>- Employee, contractor and general public sensitization of legal provisions on cultural heritage and collection of artifacts<br>- Collaborate with the authorities to conserve and monitor cultural, archeological, ceremonial and historic within and proximate to the Power Plant to prevent degradation | APCL | Before commencement of development and regularly reviewed though out the project lifecycle |
| | | ▪ Cessation of construction activities on sites of discovered resources of cultural, archeological, paleontological, ceremonial or historic significance and the subsequent management of such resources by authorized professionals and in line with legal provisions under the National Museums Heritage Act, Chapter 216, 2009 | APCL and service contractors | Construction activities |

**Table 11-8: Social management plan for infrastructure development**

| Social Management Plan (V) - Infrastructural development | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| **Impacts associated with quality and access to infrastructure and social amenities** | ▪ Strain on the existing infrastructure and social amenities due to population upsurge<br>▪ Compromised quality and access to the existing infrastructure and social amenities by the local communities<br>Reduced ability to access affordable housing resulting in the emergence of informal settlements | ▪ Consult with all the relevant agencies (local and national Government and other non-Governmental agencies) on the current use and future infrastructural development plans for the County | APCL | Before commencement of development and throughout the construction phase |
| | | ▪ Ensure alignment of Project related social infrastructure mitigation projects with the Lamu County Integrated Development Plan (CIDP) and community needs through stakeholder engagement in decision making | APCL | Before commencement of development and throughout the construction phase |
| | | ▪ Provide housing facilities for construction workers and subsequently, for the Power plant employees (within the power plant colony) | APCL | Before commencement of development and throughout the construction phase |
| | | ▪ Ensure internal management and provision of such infrastructure that may experience immediate and adverse strain directly from project activities, and of which existing provisions are inadequate to handle project-related strain without compromising access by the local communities. These include waste | APCL | Before commencement of development and throughout the construction phase |

| **Social Management Plan (V) - Infrastructural development** | | | | |
|---|---|---|---|---|
| **Potential impacts** | **Activity/risk source** | **Mitigation: Action/Control** | **Responsibility** | **Timeframe** |
| | | management, health facilities, portable water supplies, roads, jetties etc. | | |
| | | ▪ The company's social investment plan should include strategies to:<br>- Support the continued development of safer and healthier communities (including efforts by ambulance, healthcare, police and emergency services and public welfare activities)<br>- Support and deliver programs that assist to manage population influx in a responsible and sustainable manner<br>- Support the capacity development of key social infrastructure services and facilities, in accordance with priorities identified by relevant stakeholders | APCL | Before commencement of development and throughout the construction phase |