

Taweelah 200 MIGD IWP Seawater  
Reverse Osmosis Plant  
Abu Dhabi, UAE



ESIA: Volume 3 –  
Environmental & Social  
Management and Monitoring  
Framework

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## LIST OF ABBREVIATIONS

Abbreviation	Meaning
CESMP	Construction Environmental Management Plan
EAD	Environment Agency Abu Dhabi
EPC	Engineering Procurement and Construction
ESIA	Environmental & Social Impact Assessment
ESMS	Environmental and Social Management Systems
H&S	Health & Safety
IFC	International Finance Corporation
MIGD	Million Imperial Gallons per Day
MSDS	Material Safety Data Sheet
O&M	Operation & Maintenance
OESMP	Operational Environmental & Social Management Plan
SEP	Stakeholder Engagement Plan
SWRO	Sea Water Reverse Osmosis
UAE	United Arab Emirates
5 Capitals	5 Capitals Environmental and Management Consulting

# 1 INTRODUCTION

This document is Volume 3 of the ESIA and provides a Framework for the development of the Environmental and Social Management System (ESMS) for the construction and operational phases of the Taweelah 200 MIGD Sea Water Reverse Osmosis (SWRO) desalination plant. The framework has been developed to ensure that all associated Environmental and Social Impacts associated with both the construction and operational phases of the project are appropriately identified and controlled through the development of a robust construction and operational phase ESMS.

Both the construction and operational phase ESMS will need to incorporate requirements established within Volume 2 of the ESIA as well as any and all future requirements defined by Environment Agency Abu Dhabi (EAD), project financiers, relevant stakeholders and client conditions.

## 1.1 Development of a CESMP

The Construction Environmental Management Plan (CESMP) is the overarching, principal document that identifies scope, objectives, risks, responsibilities, desired outcomes and associated monitoring requirements of the ESMS associated with the construction phase of the project.

The construction phase ESMS is likely to have plans, documents, data, forms, records etc. affiliated with the construction phase of the project that are supplementary to, and will be defined by the CESMP.

The CESMP will be developed and implemented by the Engineering, Procurement and Construction (EPC) Contractor and will cover all potential environmental and social impacts associated with the project's construction phase (including potential impacts from subcontractors and the supply chain that can be influenced by the EPC Contractor).

The CESMP will be prepared, reviewed and submitted to EAD and Project Lenders in advance of the commencement of construction.

## 1.2 Development of an OESMP

The Operational Environmental and Social Management Plan (OESMP) is the overarching, principal document that identifies scope, objectives, risks, responsibilities, desired outcomes and associated monitoring requirements of the Environmental and Social Management System (ESMS) associated with the operational phase of the project.

The operation phase ESMS is likely to have plans, documents, data, forms, records etc. affiliated with the operational phase of the project that are supplementary to, and should be defined by, the OESMP.

The OESMP will be developed and implemented by the Operations and Maintenance Company and should cover all potential environmental and social impacts associated with the projects operational phase (including potential impacts from subcontractors and the supply chain that can be influenced by the Operations and Maintenance Company).

The OESMP should be prepared, reviewed and submitted to EAD and Project Lenders in advance of the commencement of operation.

### 1.3 Identification of EMS Scope

Both the CESMP and OESMP will outline scope of the associated ESMS including:

- Applicable activities and timescales for construction/operation;
- Organisational units and functions;
- Boundaries of the ESMS (e.g. this will include the project site and may include associated facilities, or other storage areas, warehouses etc.)
- Authority and ability to exercise control and influence.

### 1.4 General Approach to the Development of ESMS

The aim of the ESMS is to provide a framework management system to be developed and implemented to effectively manage environmental and social issues throughout the lifecycle of the project.

Effective management of environmental & social issues should include the following fundamental components as part of a robust ESMS:

- Identifying environmental aspects/risks and potential impacts as early as possible for construction and operation phase planning, including the incorporation of environmental and social considerations into staffing requirements, process plans, programming, work orders, required authorisations, and site layout.
- Involving environmental professionals, who have the experience, competence, and training necessary to assess and manage environmental impacts and risks, and carry out specialised environmental management functions including the preparation of project or activity specific plans and procedures that incorporate the technical requirements presented in this document.
- Prioritising management strategies with the objective of achieving an overall reduction of risk to human wellbeing and the environment, focusing on the prevention of irreversible and / or significant impacts.

- Favouring strategies that eliminate the cause of the impact at its source, for example, by selecting less hazardous materials or processes that avoid the need for environmental controls.
- When impact avoidance is not feasible, incorporating controls to reduce or minimise the possibility and magnitude of undesired consequences, for example, with the application of pollution controls to reduce the levels of emitted contaminants.
- Preparing workers, nearby communities and relevant stakeholders to respond to emergencies, accidents, including providing technical and financial resources to effectively and safely control such events, and restoring workplace and community environments.
- Improving Environmental performance through a combination of ongoing monitoring of facility performance and effective accountability.

The ESMS will evolve and adapt over time to meet the needs of the project and ensure material issues for the site are appropriately reflected and targeted.

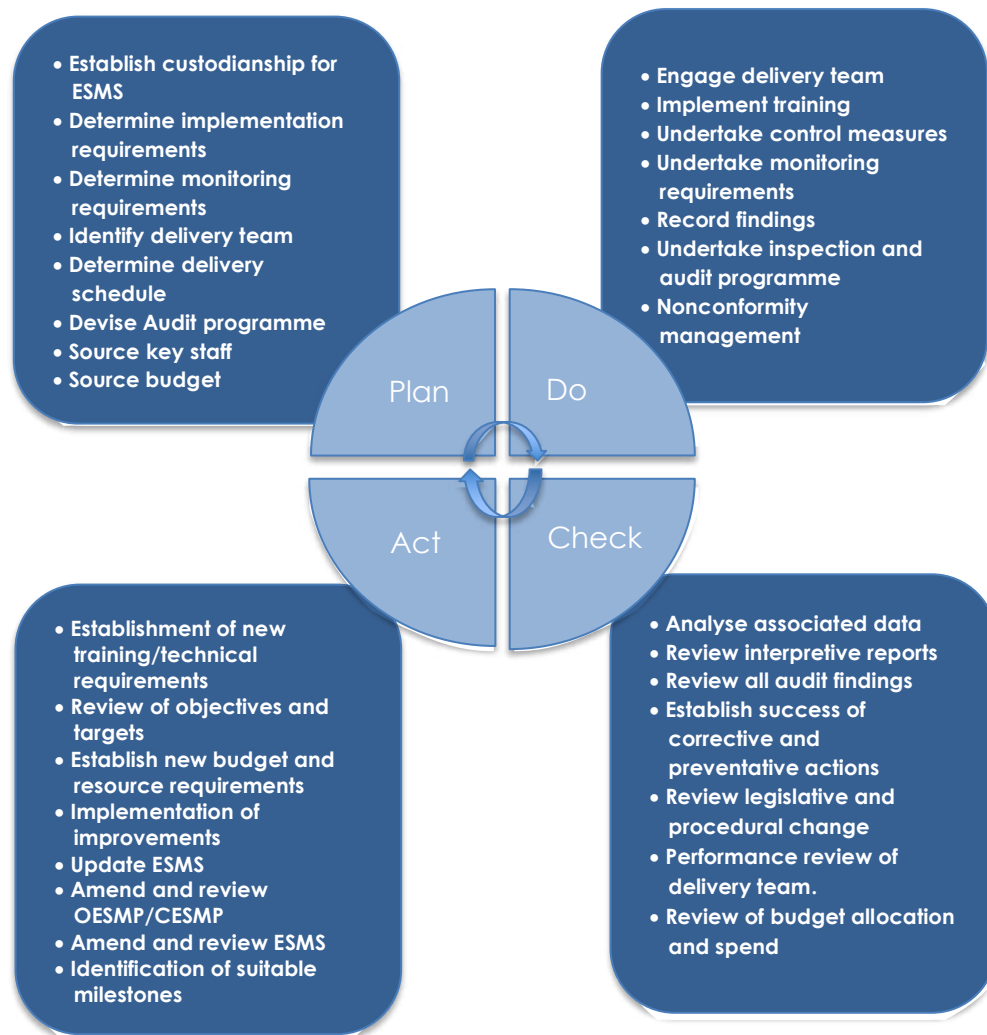
Initial implementation will focus on setting and reviewing requirements of the ESMS, determining custodianship within the project team, identifying budget source, establishing target ranges for performance and establishing appropriate data gathering techniques and controls.

Performance ranges will be refined on a regular basis as more data becomes available, in turn enabling more accurate strategy development and benchmarking.

It is important that the CESMP, OESMP and associated plans and procedures are treated as live documents, to be updated and refined within a continuous process of improvement.

A proposed implementation process for ESMS is illustrated in the figure below.

Figure 1-1 Implementation Process



## 2 ENVIRONMENTAL AND SOCIAL POLICY

The construction phase and operational phases of the project will each have a clear statement that defines what is the policy with regards to Environmental and Social issues. This policy document will:

- Be appropriate to the context of the project, including the nature, scale and impacts as defined from the ESIA.
- Provide a suitable framework for establishing appropriate environmental and social objectives.
- Include a commitment to the protection of the environment, including prevention of pollution and requirements established by the ESIA process.
- Include a commitment to the fair and just treatment of all staff including a commitment to:
  - The provision of a safe and healthy workplace environment;
  - Fair and just remuneration in accordance with employment law and agreed contracts; and
  - Vehemently condemn and ensure against forced or compulsory labour, child labour or discrimination.
- Be in all appropriate languages to be able to be understood by all personnel and visitors.
- Include a commitment to fulfil all Environmental and Social compliance obligations.
- Include a commitment to continual improvement of the Environment and Social Management System.

During the construction and operation phase, the policy will be established and signed by top management and will be made available to all staff, contractors and sub-contractors.

## 3 IDENTIFICATION OF REQUIREMENTS FROM ESIA

Volume 2 of this ESIA has identified numerous project's and/or site-specific mitigation measures that must be incorporated into the construction and operational phase of the project.

During the development of the CESMP all mitigation (and any enhancement measures) relevant to the construction phase of the project will be identified from Volume 2 and the method of compliance with these mitigation measures detailed within the CESMP.

During the development of the OESMP all mitigation (and any enhancement measures) relevant to the operational phase of the project will be identified from Volume 2 and the method of compliance with these mitigation measures detailed within the OESMP.

## 4 IDENTIFICATION OF REQUIREMENTS FROM THE STATUTORY AUTHORITY

In response to this ESIA, EAD will grant a clearance/permit for the project commensurate with national legislation in UAE. This clearance/permit is likely to incorporate conditions which must be met by the project to maintain validity of the clearance/permit (please note that non-adherence to clearance/permit conditions is likely to result in breach of legislation).

During the development of the CESMP, the environmental clearance/permit for the project must be reviewed to ensure that all construction related conditions established by EAD are met during the construction phase of the project.

The environmental clearance/permit for the project will be included as an appendix to the CESMP and/or maintained onsite during construction.

During the development of the OESMP, the environmental clearance/permit for the project must be reviewed to ensure that all operational related conditions established by EAD are met during the construction phase of the project.

The environmental clearance/permit for the project will be included as an appendix to the OESMP and/or maintained onsite during operation.

## 5 IDENTIFICATION OF REQUIREMENTS FROM THE PROJECT LENDERS

In response to this ESIA, international financial institutions lending finance to the project will establish an Action Plan that identifies Environmental and Social requirements for the project commensurate with or supplementary to the ESIA. Requirements of the action plan will have been established as a condition to the project loan. Failure to comply with the Action Plan can result in financial disbursements being delayed or even withheld.

During the development of the CESMP and wider construction phase ESMS, the lenders action plan for the project must be reviewed to ensure that all construction related conditions established by the project lenders are met during the construction phase of the project.

During the development of the OESMP and wider operational phase ESMS, the lenders action plan for the project must be reviewed to ensure that all construction related conditions established by the project lenders are met during the operational phase of the project.

## 6 IDENTIFICATION OF LEGAL AND OTHER REQUIREMENTS

During the development of the CESMP and OESMP, the requirements associated with the following will be identified and documented:

- Local legislation.
- National legislation.
- International Treaties and Conventions.
- International Financial Institutions (including Equator Principle Financial Institutions).
- Client/Contractual requirements.
- Stakeholder requirements.

## 7 IDENTIFICATION OF PERMIT REQUIREMENTS

EAD and/or applicable legislation is likely to warrant the requirement for task/activity related permits or no objection certificates (NOC). During the development of the CESMP and OESMP, the requirements for permit/NOC applications will be identified according to the associated required activity, for example:

- Establishment of a temporary batching plant.
- Generation, storage and disposal of controlled or hazardous wastes.
- Procurement, storage or use of a controlled or hazardous material.
- Dredging activities.
- Establishment of a site worker compound.

## 8 IDENTIFICATION OF RISKS AND IMPACTS

One of the principal stages in the development of the project's CESMP and OESMP will be the development of project aspects/risks and associated environmental or social impacts associated with the relevant phase of the project.

Once aspects and associated risks have been identified and documented (i.e. specifically in accordance with the required construction methods statements or operational activities), associated controls will be developed that are commensurate to the level of anticipated severity, likelihood and any statutory or lender requirements.

When identifying the aspects/risks and associated environmental or social impacts the following will be considered:

- Change, including planned or new development and or new/modified activities.
- Abnormal conditions and reasonably foreseeable emergency situations.
- Project timescales and potential impacts associated with seasonality.
- Stakeholder perception.
- Compliance obligations.
- Risks inherent in the supply chain in addition to those on-site.
- Consider linkages with the projects Health and Safety Management System.

The identification of aspects/risks and impacts will be documented, linked to associated proposed controls and updated as and when project or environmental & social circumstances change.

## 9 COMPLIMENTARY PLANS & PROCEDURES

The CESMP and OESMP will clearly define all associated plans and procedures that are used to define and control potential adverse environmental and social risks. The requirement for such plans will be dependent on the potential for environmental and social impacts for the project as identified during the preparation of the CESMP and OESMP.

The following table provides a list of examples plans and procedures that may be considered/required.

**Figure 9-1 Example Complimentary Plans and Procedures**

Plan / Procedure	Project Phase	Purpose
<b>Waste &amp; Wastewater Management Plan</b>	Construction & Operation	Identify site specific requirements for waste and wastewater treatment, containment (segregation, storage area specifications and locations), collection methodologies & transport (identification of licensed contractors and the process of engaging them), and treatment/disposal (identification of licensed treatment and disposal sites), record keeping and reporting requirements related to waste and wastewater. To include measures to limit instances of contamination to soils and groundwater.
<b>Pollution Prevention and Response Plan</b>	Construction & Operation	Identify site specific requirements for the prevention of pollution and how to manage pollution incidents. Should include the identification of high-risk areas on a plan and the location of spill kits. Identify required contact details in the event of an incident and contractors that are available on a quick response contract to assist with clean up. Where necessary this should link up with the SEP for any external communication. Should also identify staff that require training in regard to the plan. The plan should include provisions for recording of any incidents in separate register, to

Plan / Procedure	Project Phase	Purpose
		ensure close out and implementation of corrective and preventative actions.
<b>Environmental &amp; Social Training Plan</b>	Construction & Operation	To identify specific staff members for training and the type (e.g. practical, toolbox talks), how/when this is to be delivered, the frequency of the training and whether follow up training provisions are required. The training should be linked to the specific content of the listed plans and procedures, or key risk activities that may be identified from on-site method statements.
<b>Stakeholder Engagement Plan</b>	Construction & Operation	To identify project stakeholders, identify communication protocols for engagement with stakeholders. To identify frequency or event-based communication with stakeholders (e.g. for emergencies and specific grievances). To detail the grievance mechanism, or provide a reference to a separate grievance mechanism.
<b>Grievance Procedure</b>	Construction & Operation	To be included or linked to the SEP. To identify the procedure for all site staff to be able to raise issues, concerns and opportunities for improvement for any aspect of their employment on the project. To develop and identify the process for external parties to raise grievances in regard to the project. The mechanism, shall be easily accessible (including for any vulnerable groups), non-discriminatory and provide a transparent process to raise concerns or complaints, which may be issued in an anonymous nature. The mechanism shall specify the roles and responsibilities of internal staff with regard to the grievance mechanism and the procedure for the timeline for response, engagement mechanisms and recording of records.
<b>Traffic Management Plan</b>	Construction	The plan shall identify any specific requirements for heavy, or oversize loads, including timings of deliveries, specific routes (to minimise disruption), engagement mechanisms with external transport authorities (as per the SEP, e.g. local government). To include measures to minimise congestion, fuel use and risks to the public and site staff. Deliveries and diversions near the project site (if applicable) will be guided by a Traffic Management Plan
<b>Hazardous Material Storage Plan</b>	Construction & Operation	Should identify locations for hazardous material storage, storage requirements (specifications of bunds and buildings/warehouses to ensure environmental and H&S protection, segregation requirements etc.) and handling procedures to minimise environmental and social risk. The plan shall outline record keeping as per chain of custodies, requirements for MSDS and roles and responsibilities.

Plan / Procedure	Project Phase	Purpose
		Staff involved in chemical management, procurement or overseeing on-site deliveries shall be specified in the plan and provided with training for the provisions of this plan (all training to be linked to the training plan).
<b>Material handling and storage procedure</b>	Construction & Operation	Should identify locations for material storage, storage requirements and handling procedures to minimise environmental and H&S risks. As appropriate this plan should be linked to or inclusive of the Hazardous Materials Storage Plan and H&S Plan. Specific statements in regard to the handling of materials shall be detailed, as well as training requirements for staff involved in such activities.
<b>Site Inspection &amp; Audit Plan &amp; Procedure</b>	Construction & Operation	To specify the timing and frequency of inspections and audits (including external independent audits for the lenders). To detail the methodology of such inspections and audits to ensure Environmental and Social Issues are adequately covered.  For internal audits, the procedure should identify the audit scope (site, laydown areas, accommodation areas, sub-contractor areas etc.), audit criteria (e.g. CESMP, OESMP, ESMS), selection process for audit evidence, reporting format and auditor competence requirements. The Procedure should specify definitions of non-conformance, observations and best practices, as well as detailing the mechanisms for issuance and follow up of Non-conformance reports, including time periods for action and the implementation of corrective and/or preventative measures.
<b>Occupational Health &amp; Safety Plan</b>	Construction & Operation	Identify the required controls for worker health and safety during the construction and operational phases. As a minimum, this plan shall include: <ul style="list-style-type: none"> <li>Means of identifying and minimising, so far as reasonably practicable, the causes of potential hazards to workers.</li> <li>Provisions of preventative and protective measures, including modification, substitution, or elimination of hazardous conditions or substances.</li> <li>Provision of appropriate equipment to minimise risks, and requiring and enforcing its use.</li> <li>Training of workers, and provision of appropriate incentives for them to use and comply with health and safety procedures and protective equipment.</li> <li>Documentation and reporting of occupational accidents, diseases and incidents.</li> <li>Emergency prevention, preparedness and response arrangements.</li> </ul>
<b>Emergency Preparedness and Response Plan</b>	Construction & Operation	To identify the contingencies put in place for a variety of potential emergency situations relevant to the construction or operational phases. The plans should outline the response mechanisms, roles and responsibilities, training requirements, internal communication, equipment and relevant engagement with stakeholders.  Requirements for on-site equipment shall be established based upon the potential emergency risks,

Plan / Procedure	Project Phase	Purpose
		including training provisions for site personnel in regard to such equipment.
<b>Chance Finds Procedure</b>	Construction	To identify the process for identifying and responding to a potential find of archaeology in the construction working area. It shall include the process of halting works in that area, sectioning off potential artefact and external communication with Abu Dhabi Municipality as consistent with SEP.
<b>Environmental &amp; Social Monitoring Plan</b>	Construction & Operation	Monitoring is required to demonstrate compliance to Federal environmental standards and lender requirements. The monitoring plan is to specify monitoring requirements for all ESIA parameters (as specified in ESIA Volume 2- as a minimum). The plan will therefore need to include: <ul style="list-style-type: none"> <li>• What parameters need to be monitored and measured and at what locations.</li> <li>• The methods for monitoring measurement, analysis and evaluation to ensure valid results.</li> <li>• The criteria against which compliance and performance should be measured.</li> <li>• When and at what frequency monitoring needs to be performed.</li> <li>• How the results from monitoring and measurements should be analysed and evaluated (independent or internal).</li> </ul>
<b>Biodiversity Action Plan</b>	Construction & Operation	A Biodiversity Action Plan will be required under IFC PS 6 to ensure that the construction and operation of the IWP will minimise the loss of beach habitat and provide mitigation and monitoring measures. During turtle nesting season (March to June) there will be restricted access to the beach and measures will be taken to ensure that turtles are not endangered by the IWP intake system.
<b>Working Conditions and Terms of Employment Procedure</b>	Construction & Operation	The EPC Contractor and O&M Company will provide a plan detailing how working conditions and terms of employment are compliant with national labour, social security and occupational health and safety.
<b>Retrenchment Plan</b>	Construction & Operation	The EPC Contractor and the O&M Company will develop a plan to mitigate the adverse impacts of retrenchment, in line with national law, lender requirements and good industry practice and based on the principles of non-discrimination and consultation. Without prejudice to more stringent provision in national law, such as consultation will involve reasonable notice of employment changes to the workers.
<b>Human Resources and Policies Procedures</b>	Construction & Operation	Human resource policies and procedures will be adapted appropriate to the size of the workforce required for operation and maintenance requirements. Policies and procedures must be prepared demonstrate consistency with national and lenders' requirements.

# 10 ORGANISATIONAL CAPACITY AND COMPETENCY

## 10.1 Roles and Responsibilities

In order to ensure application of the ESMS and to achieve the required outcomes of the CESMP/OESMP, senior management for the project will need to:

- Ensure that resources needed for the implementation of the ESMS are available (human and financial resources).
- Communicate the importance of effective environmental & social management for all those involved in the day to day management of the Project.
- Direct and support employees to contribute towards the effectiveness of the plan.
- Ensure appropriate lines of communication on environmental and social issues, including providing of any required data to statutory bodies and lenders.
- Ensure regular updates to the ESMS are undertaken to ensure that it remains appropriate to the purpose and context of the project, and that any change of direct and indirect impacts are identified and managed accordingly.

Key roles and responsibilities of principal parties likely to be involved in the implementation of the ESMS during construction and/or Operation include (but are not restricted to) the following:

- EAD
- Corporate (Head Office) Management Representatives
- Regional or Department Heads for Environmental and Social Issues
- Project Director
- Environmental Manager
- Environmental Co-ordinators
- Community Liaison Officer
- Site Managers / Foremen / Supervisors
- Sub-Contractors
- Suppliers
- Site staff
- Stakeholders

The CESMP and OESMP will need to appropriately define the involvement of each of these key parties (and others) in the development and implementation of the ESMS.

### 10.1.1 Environmental Manager

The Environmental Manager will be the primary project personnel (during construction and operation) to implement the ESMS and will report to the Project Director. It is expected that such a role will be filled by a competent person with approximately 10 years of experience in the environmental field, including at least 3-years of site-based experience.

A guide for the responsibilities of the Environmental Manager are listed below:

- Execute the overall environmental programme and procedures demonstrating environmental ownership.
- Ensure requirements and mitigation measures of the CESMP/OESMP are appropriately and efficiently implemented.
- Monitor the workplace to ensure environmental compliance (including for sub-contractors).
- Liaise with Local Government Authorities on environmental and social issues.
- Investigate environmental and social issues, incidents and non-conformances, implement corrective actions and report those to the Project Director, and liaise with the management and relevant authorities.
- Maintain an environmental and social grievance and incident register.
- Ensure monitoring programmes in the CESMP/OESMP are implemented by qualified personnel and report results to the Project Director for review and as a basis for continuous improvement.
- Be responsible for communications regarding environmental reporting and third-party audits and periodic monitoring as required by project lenders.
- Maintain environmental records, as a minimum including monitoring records, alerts following incidents, statistical data and best practice bulletins.
- Monitor site bulletin boards to ensure they remain "live" and "up-to-date" with relevant environmental & social information.
- Coordinate, plan, formulate and/or deliver environmental and social induction training to all project personnel (including sub-contractors) as well as regular toolbox talk environmental and social training sessions.
- Organise programmes and activities to promote environmentally responsible conduct in the prevention of injury, ill health and environmental impact throughout the workforce.
- Manage the external grievance mechanism, and address inquiries, complaints and other communications received via this mechanism.
- Stop any unsafe activity which is not compliant with environmental and social legislation or lender requirements, and correct such work practice and/or conditions before allowing work to resume/commence.
- Act as a point of contact for any sub-contractor with regard to environmental issues.

- Ensure that each sub-contractor is aware, compliant and implementing the requirements of the CESMP/OESMP.
- Review sub-contractor's personnel, qualifications, competency and environmental performance.
- Undertake regular audits to assess compliance with the CESMP and implement corrective actions-audits are to include all sub-contractors at the project.

### 10.1.2 Environmental Co-ordinator (s)

The Environmental Co-ordinator(s) will be the second level project personnel (during construction and operation) to implement the ESMS and will report to the Environmental Manager. It is expected that such a role will be filled by a competent person with at least 5 years of experience in the environmental field, including at least 2-years of site-based experience.

A guide for the responsibilities of the Environmental Co-ordinator(s) are listed below:

- Ensure implementation of requirements and mitigation measures of the CESMP/OESMP at all times.
- Implement monitoring programmes as per the Environmental Management Framework and report the results to the Environmental Manager.
- Supervise and ensure personnel and sub-contractors comply and adhere to environmental and social regulations and lender requirements.
- Conduct weekly site inspections and report the outcomes to the Environmental Manager including information on: sub-contractors on site, observations, non-compliances, environmental incidents, spills and volumes, internal and external grievances, emergencies, training conducted and number of staffs trained and monitoring records.
- Accountable for the overall environmental and social incidents and communicate the investigation results and proposed corrective action to the Environmental Manager.
- Attend all HSE meetings to contribute to a safe and healthy working environment.
- Support the Environmental Manager in delivering environmental and social induction training, information and instruction to competently perform work in a safe and controlled manner-specifically in regard to method statement and the required plans and procedures.
- Stop any activity which is not compliant with the environmental and social legislations/requirements and rectify non-compliance environmental and social conditions promptly.

### 10.1.3 Community Liaison Officer

The Community Liaison Officer may be a role undertaken in tandem by the Environmental Manager or Environmental Co-ordinator(S). a guide of responsibilities of the Community Liaison Officer are listed below:

- Manage and maintain the Stakeholder Engagement Plan (SEP) and Grievance Mechanism; both for internal and external grievances.
- Respond to and co-ordinate the response to internal and external grievances, along with the Environmental Manager.
- Attend environmental and social meetings and engagements with external stakeholders, with the Environmental Manager.

## 10.2 Environmental and Social Awareness and Training

In order for environmental and social control measures to be effective, staff will need to be aware of specific responsibilities and required actions associated with their element of work.

Tailored training requirements relevant to elements of works will need to be developed and defined as part of the ESMS (i.e. site personnel associated with waste management will require training on relevant components of the waste management plan).

For a training programme to be successful, it is vital to:

- Select a trainer with appropriate knowledge, skills and experience (often peer-level training is effective);
- Make training specific to the audience;
- Ensure training is engaging and relevant; and
- Follow up and refresh training to keep abreast of changes in site conditions.

In order to record identified training needs, training type and frequency required for each staff role, commensurate with the requirements of the ESMS, will be identified. Records of associated training will be held to include the following.

- Description of training.
- Purpose of training.
- Date.
- Location.
- Attendee.
- Trainer.

### 10.3 Induction and Orientation

The CESMP and OESMP will identify the necessary Environmental and Social requirements to be covered by site induction. This is likely to include:

- Raising awareness for any significant potential impacts associated with the project.
- Any patricianly valuable resources or protection measures that need to considered by all staff.
- The proximity or sensitivity of nearby residents and communities to the project.
- Internal grievance procedures and allowances for worker welfare.

### 10.4 Toolbox Talks

Toolbox talks are a useful way of providing on-site training to disseminate good practice and provide regular reminders on induction and training content. It is recommended that toolbox talks are held regularly for site personnel and supervisory staff.

Required toolbox talks topics and frequencies will be identified within associated risk assessments, method statements plan or procedures.

## 11 MITIGATION AND MANAGEMENT MEASURES

Construction and Operation phase requirements from the ESIA and how they are to be implemented must be detailed within the CESMP and OESMP for the project and fed into the applicable plans and procedures. Upon approval of the project, all mitigation and management measures specified in the ESIA are required for implementation at the construction and operational phases respectively; as per the statutory requirements.

The environmental assessment sections within Volume 2 of the ESIA identify these associated mitigation and management requirements for the project.

## 12 MONITORING

The CESMP and OESMP will determine:

- What parameters needs to be monitored and measured and at what locations.
- The methods for monitoring measurement, analysis and evaluation to ensure valid results.
- The criteria against which compliance and performance should be measured.
- When and at what frequency monitoring needs to be performed.

- How the results from monitoring and measurement should be analysed and evaluated (independent or internal).

## 12.1 Monitoring Requirements from ESIA

Construction and Operation phase monitoring requirements from the ESIA and how they are to be implemented must be detailed within the Environmental and Social Monitoring Plan for the project. Volume 2 of the ESIA identifies the minimum monitoring requirements for the project and will be referred to when developing the projects CESMP & OESMP. These minimum monitoring requirements have been outlined in applicable sections of Volume 2.

# 13 MANAGEMENT OF DATA

Monitoring results will be compared against relevant standards, permit requirements, required thresholds, received complaints, audit findings, potential impacts, CESMP and OESMP requirements. The Environmental Manager will define appropriate action to follow in the instance that any exceedances in monitoring limits are confirmed or adverse impacts identified, including:

- Communication protocol in the event that an exceedance is identified.
- Internal review process of recently performed maintenance and inspection.
- Review of previous monitoring data to identify any potential associated variations or trends in results.
- Recommendations for quarantine of equipment or change in work practices.
- Review of monitoring frequency to ensure issue does not reoccur.

The Environmental Manager will also keep a record of any communications received regarding environmental condition and thoroughly investigate any grievances; as per the grievance procedure.

The repetition of measurements is an essential part of monitoring as it detects changes over time and will alert to potentially positive or negative effects of an activity. Adverse effects will trigger a review of mitigation measures and determination of the likely source of the impact. Should no effect be detected it may demonstrate a lack of effect, success of mitigation measures or the requirement to continue monitoring over a longer period of time.

The Environmental Manager will use the data from monitoring for comparison against baseline and all previous monitoring efforts to identify trends in condition and make inferences on the success of implemented mitigation measures.

Data and associated interpretation will be recorded in a report format suitable for submittal to the lenders and Statutory Authorities (should submittal of monitoring data be required)

making clear any adverse impacts identified and how mitigation measures have been adjusted to compensate.

## 14 RECORDS

The appropriate management of records is a requirement of any successful ESMS and can be used to track progress, review effectiveness and demonstrate compliance.

The ESMS relevant to both the construction and operation phases will include for the collation of the records including (but not limited to) the following:

- Environmental and Social induction and training records.
- Relevant records of competence/qualifications.
- Accident Investigation Reports.
- Grievance register.
- Internal Audits reports (including close-out).
- Non-Conformance Reports
- Environmental Inspections Reports (including close-out).
- Environmental Monitoring Results.
- Waste Manifest Forms.
- Environmental Risk Assessments and Method statements.
- Equipment Inspections/Certifications.
- Independent Audit Reports for Lenders (including close-out).

## 15 AUDIT PROGRAMME

Auditing is an integral requirement of any monitoring strategy and will be considered as a continual process to be undertaken by a range of site staff to ensure the successful implementation of mitigation/management measures.

### 15.1 Internal Audits

The ESMS will establish, implement and maintain an internal audit programme that identifies the frequency, methods, responsibilities, planning requirements and reporting of audits and inspections.

When establishing an audit and inspection programme, the organisation will consider the potential frequency and significance of environmental risks relative to the construction and operational phase and adjust the audit scope and frequency accordingly.

When developing and undertaking audits the following will be considered:

- Define audit criteria and scope for each audit.
- Select audit staff competent in the audit process and subject matter.
- Ensure that audit results are reported to relevant senior management.

As a minimum, audit of the internal ESMS, worker accommodation and Occupational H&S aspects will be undertaken monthly during construction but the frequency will be subject to review according to the identified level of compliance and anticipated risks attributable to specific construction stage/activities.

During operations, the frequency shall be bi-annual as a minimum (depending on risks attributable to specific operational activities), and the audit criteria may also vary depending on any external certification that may be linked to the ESMS.

## 15.2 Lenders Monitoring and Reporting

should the project seek Finance from one more International Financing Institutions (IFI's) that may be signatories to the Equator Principles, or have investment policies that are consistent with the IFC Performance Standards, the project will be required to comply with lenders requirements.

In accordance with Equator Principle 9, an Independent Environmental and Social Consultant will be required to undertake monitoring and reporting activities on behalf of the lenders for the period of the project loan. This will typically be undertaken on a quarterly basis during construction and annually during operation (to be confirmed by the Lenders Environmental & Social Action Plan).

# 16 EMERGENCY PREPAREDNESS AND RESPONSE

The likelihood of an incident can be minimised by effective planning and development of a site pollution incident response plan as part of an ESMS.

All risk assessments and method statements will include consideration of the potential for environmental incidents. Suitable incident response equipment, will be maintained at appropriate locations on site and project staff be suitably trained to use such equipment and respond to such emergencies.

The Environmental Manager will be responsible for preparing a bespoke Pollution Prevention and Response Plan for the Site to include requirements for co-ordination with the applicable external agencies (i.e. emergency services), impacted stakeholders and statutory authorities in the instance that a pollution incident occurs.

The plan will identify procedures for emergency situations associated with explosion, fire etc. and identify requirement for pollution response materials and where these are to be placed within the project area.

When establishing an emergency preparedness and response plan, the following will be considered:

- The most appropriate method for responding to an emergency situation
- Internal and external communication process.
- The action required to prevent or mitigate environmental impacts.
- Mitigation and response actions to be taken for different types of emergency situations.
- The need for post-emergency evaluation to determine and implement corrective and preventative actions.
- Periodic testing of planned emergency response actions.
- Training of emergency response.
- A list of key personnel and aid agencies, including contact details (such as fire department, spillage clean-up services).
- Evacuations routes and assembly points.
- The possibility of the need for mutual assistance from neighbouring organisations/projects.

The CESMP and OESMP will identify all reasonable steps to be taken to prevent land contamination or water pollution from spills of fuel or other hazardous liquid and a suitable method of communicated the spill response procedure to site personnel.

## 17 NONCONFORMITY, CORRECTIVE ACTION AND PREVENTATIVE ACTION

All non-conforming actions observed during audits, inspections and monitoring activities will be recorded as a nonconformity.

Examples of nonconformity include:

- Works commence without an approved risk assessment and method statement that covers environmental issues identified herein.
- Risk assessment and method statements are not reviewed following any significant changes in requirements that could adversely impact the environment.
- A waste transport/disposal service provider is appointed that is not appropriately licensed.
- Breach in any Environmental Standards.
- Failure to comply with waste storage/disposal requirements as identified by risk assessment and/or method statement.
- Failure to comply with chemical storage and/or handling requirements.
- Un-containable or uncontrollable spills of fuels or chemicals.
- Works undertaken outside the scope defined with in the risk assessment and method statement.
- Discharge of untreated, contaminated waste water to the Marine Environment.

Any situation or condition that poses an imminent risk to the environment will be immediately resolved. If the situation or condition cannot be corrected immediately, temporary measures as necessary for the protection of the environment will be implemented.

Each non-conformance will be recorded utilising a Non-conformance Report (NCR). All NCRs will include the following information:

- Location and description of the Non-conformance.
- The proposed corrective action including who holds responsibility for undertaking this action.
- A deadline for the corrective action.
- A proposed preventative action to ensure against reoccurrence of the non-compliance including who holds responsibility for undertaking this action.
- A deadline for the preventive action.

## 18 STAKEHOLDER ENGAGEMENT

Stakeholder engagement can be described as a systematic effort to understand and involve stakeholders and their concerns in the project activities and decision-making processes. Stakeholders are defined as any group or individual who can affect, or can be affected by, the project.

The main objectives for stakeholder engagement are:

- To inform the relevant stakeholders about the project;
- To capture views and concerns of the relevant stakeholders with regard to the project;
- To enhance ownership of the project within the host community;
- To provide a basis for stakeholder participation in impact identification and mitigation.

For projects that have environmental and social impacts, consultation is not a single conversation but a series of opportunities to create understanding about the project among those that are likely to be affected or might have an interest in it, and to learn how these stakeholders view the project and its related risks, impacts, opportunities, and mitigation measures. Listening to stakeholder concerns and feedback can be a valuable source of information to help identify environmental and social risks (real and perceived) and improve project management.

In order to ensure that stakeholders are identified and engaged in an effective manner, the project will develop and implement a Stakeholder Engagement Plan (SEP) for both the construction and operational phases. The SEP will detail the plan for engagement and will ensure that dialogue with communities is maintained, whilst outlining a suitable grievance mechanism to allow community complaints to be raised in a clear process.

This SEP will be based on international best practices, such as the IFC handbook on Stakeholder Engagement, which provides a typical benchmark for stakeholder engagement within the financial industry for project finance lenders.

## 19 COMMUNICATION

The ESMS will establish implanted and maintain processes needed for internal and external communication relevant to environmental and social performance of the project.

Lines of communication relevant to the construction phase will be clearly defined within the CESMP whilst lines of communication relevant to the operation phase will be clearly defined within the OESMP.

Associated processes will establish:

- What will be communicated
- When it will be communicated
- With whom to communicate
- How to communicate

When establishing communication processes relevant to the ESMS, particular note will be made to

- Compliance obligations, including any reporting requirements to the statutory environmental authority
- Reporting requirements required by the project lenders.

## 20 GRIEVANCE MECHANISM

### 20.1 Internal Grievances

The ESMS will identify a grievance procedure for workers to raise workplace concerns. The procedure will involve an appropriate level of management and address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned, without any retribution. The mechanism will also allow for anonymous complaints to be raised and addressed.

The grievance mechanism will not impede access to other judicial or administrative remedies that might be available under the law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.

All staff will be informed to the grievance procedure at the time of induction to the project and the procedure will be made readily available and easily accessible.

## 20.2 External Grievances

The ESMS will include a procedure for external communications that includes methods to receive and register external communications from the public, to include:

- A method to screen and assess the issues raised and determine how to address them.
- A method to provide, track, and document responses, if any.
- A method to adjust the | ESMS management program, as appropriate, in response to external grievances.

The grievance procedure will be scaled to the risks and adverse impacts of the project and have include consideration of any affected communities. It will seek to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate and readily accessible, and at no cost and without retribution to the party that originated the issue or concern. The mechanism will not impede access to judicial or administrative remedies. The client will inform the Affected Communities about the mechanism in the course of the stakeholder engagement process.

## 21 ESMS REVIEW

The ESMS (including the CESMP and OESMP) will be regularly reviewed according to changes in construction or operational activities and in response to results from monitoring, audits and inspection.

Reviews will be undertaken at a frequency to ensure adequacy of the ESMS and to ensure that all potentially significant adverse impacts are identified and that associated control measures are appropriate to the project.