

9.1 OVERVIEW AND SCOPE

9.1.1 Introduction

This chapter is the provisional Environmental Management Plan (EMP) for the Jubilee Phase 1 Development project. The elements of this provisional plan will be taken forward and incorporated into a comprehensive Jubilee Field EMP that will be used to deliver the project's health, safety and environmental (EHS) regulatory compliance objectives, lenders requirements (ie IFC Performance Standards) and other related commitments. The Jubilee Field EMP is a component of the Jubilee Joint Venture's overall Environment Health and Safety Management System (EHSMS) which is the system the project will use to ensure environmental and social performance. The twelve key elements of the EHSMS outlined in *Chapter 2: Section 2.7.1* will be adopted by the Jubilee Joint Venture throughout the various stages including but not limited to installation, commissioning and operation. It will ensure consistency in the standards applied across various project components. All contracting parties to the JV partnership will be monitored to ensure they instil these key elements in their activities.

This EMP provides the procedures and processes that will be applied to activities to check and monitor compliance and effectiveness of the mitigation measures to which the Jubilee JV has committed. In addition, this EMP is used to ensure compliance with statutory requirements and corporate safety and environmental policies.

Tullow will manage its key contractor parties to ensure that the EMP is implemented and monitored. Tullow will conduct this process through contractual mechanisms and day-to-day management. For example, the subsea installation will be undertaken by Technip and the FPSO will be operated by MODEC but both sub-contractors will report to Tullow. Tullow will have its own supervisory personnel on-board and the Ghanaian Government will have an oversight of the project through its various agencies.

With respect to the significant impacts identified by the EIA, the EMP provides the linkage between each significant impact, the relevant mitigation measures and the monitoring approach. Further, through this EMP, significant impacts are referenced to:

- applicable regulatory requirements, lenders requirements and other commitments; and
- relevant operational controls (eg management best practices, construction and operation specifications, procedures, and work instructions).

9.1.2 *Objectives*

The objectives of the EMP are to:

- develop a commitments register to address legal and other requirements;
- promote environmental management and communicate the aims and goals of the EMP amongst the Jubilee JV;
- ensure that all workers, subcontractors and others involved in the project meet legal and other requirements with regard to environmental management;
- incorporate environmental management into project design and operating procedures;
- address concerns and issues raised in the EIA's stakeholder consultation process and those that will likely continue to arise during the project's lifetime;
- serve as an action plan for environmental management;
- provide a framework for implementing project environmental commitments (ie mitigation measures identified in the EIA); and
- prepare and maintain records of project environmental performance (ie monitoring, audits and non compliance tracking).

9.1.3 *Scope*

The EMP is intended to cover those activities described in this EIS as well as linking with the activities covered by the previous drilling EISs. It covers onshore and offshore project activities during drilling, completions, installation, commissioning, operations and decommissioning, and will be subject to thorough reviews prior to the commencement of activities to ensure completeness. The EMP does not cover activities related to equipment and facility fabrication being done outside of Ghana.

9.2 *GENERAL REQUIREMENTS*

9.2.1 *Introduction*

Requirements for an EMP and guidance on scope and application are given in Ghana environmental regulations and in lender performance standards. These are summarised as follows.

9.2.2 *Ghanaian Regulatory Requirements*

Requirements for an EMP are contained in the *Environmental Assessment Regulations of 1999*. Under Part II, Section 9, a 'provisional environmental management plan' is a required element of an EIS.

In Section 24, the Regulations further require:

(1) The person responsible for an undertaking in respect of which a preliminary environmental report or an environmental impact statement has been approved shall submit to the Agency an environmental management plan in respect of his operations within 18 months of commencement of operations and thereafter every 3 years.

Further:

(3) The environmental management plan shall be a document in such form as shall be determined by the Agency.

(4) The environmental management plan shall set out steps that are intended to be taken to manage any significant environmental impact that may result from the operation of the undertaking.

This document serves to satisfy the requirement for a provisional EMP. The need for further documentation on the project's overall EMP (as per Section 24, Item 1) will be agreed with EPA during EIS review.

9.2.3 Jubilee JV Requirements

The Jubilee JV has committed to governing the execution of the project following the expectations and operating philosophy of the EHSMS (see *Chapter 2: Section 2.7.1* for the 12 key elements of the project EHSMS). The EHSMS has been built from Tullow's EMS and applies equally to project development and operational phases to ensure a seamless transition.

This EMP is intended to be consistent with the elements and expectations of the project EHSMS. This includes addressing key elements of the EHSMS including the application of risk management techniques throughout the project to protect the environment and employees, subcontractors and communities, and the establishment of environmental baselines and mitigation/ action plans.

Appropriate procedures, plans and programs will be implemented during the course of the project to ensure that these management expectations are met. These will be based on industry best practice and the Jubilee JV partners' own company EHS policies and standards.

The EHSMS will include the organisational structure, responsibilities, policies, procedures and practices, and resources. In the context of accepted international frameworks for quality and environmental management systems the EHSMS process can be summarised as follows (see *Figure 9.1*).

Plan

- define policies and objectives for environmental and social performance;
- identify environmental and social impacts and risks of the operations;
- develop mitigations and operational controls to address impacts and risks; and
- develop a management plan to achieve these objectives.

Do

- implement management plan; and
- implement mitigations and operational controls.

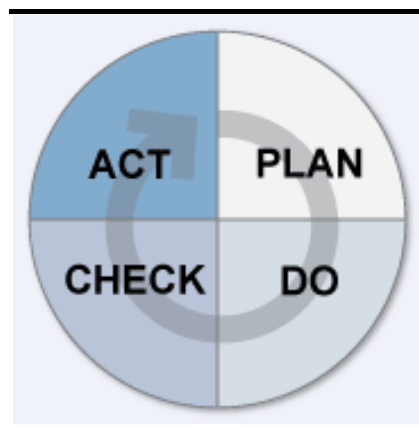
Check

- monitor performance against policies and objectives; and
- check that mitigations and operational controls are effective.

Act

- make corrections to plans, mitigations, or controls in response to performance monitoring or out of control events.

Figure 9.1 *Environmental Management Process*



Performance Standard 1 requires that the environmental management system be part of the client's overall management system for the project. It should include the organisational structure, responsibilities, policies, procedures and practices, and resources. Performance Standard 1 underscores the importance of on-going management of social and environmental performance to achieve continuous improvement.

The IFC requires that a management system be in place at the level where their investment is utilised. In this case, it is at the level of the project. It requires a plan for implementing the project-specific management programme developed through the social and environmental assessment.

9.3 *PLANNING*

9.3.1 *Impact Assessment*

As part of the EHSMS, the project utilises impact assessment as a tool in the planning process. Impact assessment has been conducted for early drilling activities as well as for the development.

The project will continue to use impact assessment as a planning tool for any future development activities including significant changes, additional development phases, expansions, or ancillary projects.

9.3.2 *Project Commitments*

Through the project development and the EIA process, the project has made commitments to actions to ensure or improve environmental and social performance. These commitments are not recommendations; they are binding commitments on the part of the project.

The commitments take a number of forms as summarised in Box 9.1 with the specific actions intended to address a particular environmental or social issue. The commitments are detailed in tabular form in *Chapter 6*. The commitments are organised by development stage and reference to the EIA, as applicable.

Box 9.1 Types of Commitments

Avoidance

During the planning phases, potential impacts to sensitive resources are identified. Where feasible, locations or processes can be changed during the planning or design phases to avoid impact to these areas.

Minimisation

Minimisation involves measures to reduce proposed impacts to a resource. Minimisation can include for example, vessels slowing down in the vicinity of marine mammals.

Management

Management commitments include development of plans and procedures for ensuring that measures to protect the environment actually take place and are of the desired standard of practice. Training is another commitment in this category.

Monitoring

Commitments to monitoring are primarily to ensure the above measures are working properly and delivering the desired (and anticipated) results.

Additionality

Additionality involves actions and contributions which are designed to provide a positive benefit. Examples include maximising Ghanaian content in employment, procurement of local goods and services, and dissemination of scientific data.

9.3.3 *Management Plans*

Provisional Environmental Management Plan

The goal of this EMP is to ensure full compliance with the project's policies and with mitigation, monitoring and other commitments made in the EIS. It outlines the actions necessary to attain this goal, and describes the means, and designation of responsibility required for compliance and conformance. The provisional EMP provides the link for implementation of mitigation and monitoring actions described in *Chapters 6 and 7*.

Project Environmental Management Plan

The Jubilee JV will develop a project-wide EMP combining the elements of this provisional EMP with other environmental and social performance requirements currently being implemented for the development.

9.3.4 *Related Management Plans*

The EHSMS also comprises a number of related detailed management plans and procedures that lay out the specifications for compliance with specific environmental and social elements and describes the plans and processes required for carrying out the necessary activities. The key management plans are outlined in *Table 9.1* with information on how these relate to the activities and impacts being discussed in the EIS, including reference to who has lead responsibility. The EMP implementation organisation is illustrated in *Figure 9.2*.

9.3.5 *Subcontractor Environmental Management Plan(s)*

The project will engage subcontractors to carry out project activities. The contractors are responsible for performing all work:

- in compliance with relevant national and international EHS legislation and regulations, and with other requirements to which the project subscribes;
- in conformance with the project's EHSMS; and
- in accordance with contractual technical and quality specifications.

The project will also provide specifications for environmental compliance and performance (through this EIS and EMP and the associated plans) and, as a contractual requirement, the subcontractor will develop and provide to the project its own specific management plans demonstrating how they intend to comply with the stipulated requirements.

The subcontractors must also provide documentation detailing their plans for:

- implementing the measures required in the EIA and this EMP;
- local content;
- logistics; and
- community relations.

Table 9.1 Jubilee EMP Hierarchy of Key Plans

Plan Name	Includes	Plan Owner
Jubilee Field EMP	Overarching plan linking all the other plans to the project EHSMS	Jubilee Development Manager
Jubilee Field Environmental Monitoring Plan	Seabed monitoring, routine effluent and discharge monitoring and Marine Mammal Observation Programme	EHS Manager
Waste Management Plan	Project-related waste handling procedures for hazardous and non hazardous solid wastes. Including chemical handling procedure.	EHS Manager
Emergency Response Plan	Accident and Incident Investigation and Reporting Procedure Investigation process to determine accident root cause and feedback for process improvement or prevention	EHS Manager
Oil Spill Contingency Plan	Spill preventative measures and spill response procedures	EHS Manager
Helicopter Operations Plan, Marine Logistics Plan and Transport Management Plan	Transport risk assessment, water transport routes, overland routes, air routes, transport rules	Supply Chain Manager / Base and Logistics Manager
Preventative Maintenance Plan	Maintenance procedures and description of the maintenance management system.	Production Operations Manager
Marine Operations Plan	Tanker Cargo Transfer Procedure & Fuel Oil Transfer Procedure	Asset Manager
Corporate Social Responsibility Management Framework and Plan	Public Consultation and Disclosure Plan addressing interactions with community and other stakeholders, and the grievance procedure. CSR and Community Investment Programme	Government Affairs and External Relations Manager
Human Resources Strategy and Plans	Local hiring, training and procurement programme and procedures.	Human Resources Manager

The subcontractor management plans must conform to the requirements of the project’s overarching plans. Subcontractor plans will be reviewed and approved by Tullow and incorporated into, and form part of, the project’s overall EMP.

Contractors will be required to self-monitor against their plan and the contractor’s compliance with the plan will be routinely monitored by Tullow

directly or by third-parties. Contractors will be required to submit regular reports of monitoring activities and the project will review these on a regular basis. An external assurance process will be conducted on an annual basis the results of which will be disclosed at completion of the process.

As a contractual requirement, the subcontractors are required to provide sufficient resources to manage EHS aspects of the work to be performed. This includes providing resources to ensure compliance of next tier subcontractors and a process for emergency stop-work orders in response to monitoring triggers.

9.4 IMPLEMENTATION

9.4.1 Environmental Management Organisation

Introduction

Tullow is committed to provide resources essential to the implementation and control of the EMP. Resources include the appropriate human resources and specialised skills. This section focuses on the overall approach for EHS management, on the structures of Jubilee JV and subcontractor EHS departments, and on the respective responsibilities of each department and their individual positions.

Jubilee Unit Organisation

The Jubilee Unit operated by Tullow is ultimately responsible for the management and supervision of all project activities.

Tullow has an EHS organisation with dedicated HSE staff, competent on the basis of appropriate education, training, and experience that will manage and oversee the EHS aspects of project construction. The structure for the organisation responsible for EHS management is depicted in *Table 9.2*.

Supervision of subcontractor activities will be conducted by the Tullow technical team. This will be accomplished through management controls over strategic project aspects and interaction with subcontractor staff where project activities take place. The Tullow organization will be staffed at a level to allow for continuous effective supervision of subcontractor activities and work products.

The Jubilee Unit Tullow EHS organisation will operate out of Accra, Ghana where staff overseeing commissioning and operations will be located. Some staff will also be placed locally in Takoradi to ensure direct interface and access for stakeholders in the Western Region. During commissioning and operations, supervisory staff will be located at the project site. The Tullow organisation includes community relations and governmental affairs departments. These functions are crucial to the successful

implementation of the EMP and the continuation of the stakeholder consultation process.

Table 9.2 *Environmental Management Organisation Roles and Responsibilities*

Position	Responsibility
<i>Jubilee JV Project Team</i> Jubilee Asset Manager	Oversee and coordinate all activities pertaining to the project; ultimately responsible for EHS. Ensure delivery by the asset of its EHS and operational targets. Ensure effective communication with all stakeholders.
Technical Managers including Production Operations Manager Project & Facilities Manager Well Engineering Manager	Technical aspects of the project including subcontractor supervision.
EHS Manager	Ensuring that the project and subcontractors operate in accordance with applicable regulatory environment, health and safety requirements and plans. Responsible for the execution of Emergency Response Plan execution including Oil Spill Contingency Plan.
EHS / Environmental Advisor	Monitor implementation of environmental and social protection measures, and assist with technical input into oil spill response requirements.
External Affairs/Community Relations Manager	Liaise with government regulators and other stakeholders including the public on the project's behalf. Employ Fisheries Liaison Officer.
<i>Subcontractor</i> Project Manager	Responsible for subcontractor technical performance and compliance.
EHS Manager	Ensure that environment, health and safety regulatory requirements are met and that EMP requirements are properly implemented.

9.4.2 *Training and Awareness*

Tullow will identify, plan, monitor, and record training needs for personnel whose work may have a significant adverse impact upon the environment or social conditions. The project recognises that it is important that employees at each relevant function and level are aware of the project's environmental and

social policy; potential impacts of their activities; and roles and responsibilities in achieving conformance with the policy and procedures.

This will be achieved through a formal training process. Employee training will include awareness and competency with respect to:

- environmental and social impacts that could potentially arise from their activities;
- necessity of conforming to the requirements of the EIA and EMP, in order to avoid or reduce those impacts; and
- roles and responsibilities to achieve that conformity, including with regard to change management and emergency response.

The EHS Manager is responsible for coordinating training, maintaining employee-training records, and ensuring that these are monitored and reviewed on a regular basis. The EHS Manager will also periodically verify that staff are performing competently through discussion and observation.

Employees responsible for performing site inspections will receive training by drawing on external resources as necessary. Training will be coordinated by the EHS Manager prior to the beginning of field activities. Upon completion of training and once deemed competent by management, staff will be ready to train other people.

Similarly the project will require that each of the subcontractors institute training programmes for its personnel. Each subcontractor is responsible for site EHS awareness training for personnel working on the job sites. The subcontractors are also responsible for identification of any additional training requirements to maintain required competency levels.

The subcontractor training program will be subject to approval by the project and it will be audited to ensure that:

- training programs are adequate;
- all personnel requiring training have been trained; and
- competency is being verified.

9.4.3

Communication

Tullow will maintain a formal procedure for communications with the regulatory authorities through its project Public Consultation and Disclosure Plan (PCDP). The EHS Manager is responsible for communication of EHS issues to and from regulatory authorities. This is coordinated with the project's Government Affairs Manager. The Project Director is kept informed of such communications. Pertinent information arising from such interactions will be communicated to subcontractors through the EHS Manager.

Whereas it is anticipated that the subcontractor EHS staff may interact with representatives from regulatory authorities on an informal, day-to-day basis

regarding routine matters, the EHS Manager shall be the point of contact for formal communications. The EHS Manager will be responsible for communicating any pertinent information arising from such discussions to appropriate subcontractor through the technical department.

Meetings will be held, as required, between the Tullow EHS Department and the appropriate regulatory agency and community representatives to review EHS performance, areas of concern and emerging issues. Dealings will be transparent and stakeholders will have access to personnel and information to address concerns raised. The entire project organisation will be open to Ghana Government review and audit.

The External Affairs/Community Relations Manager is responsible for communications with the public and with public stakeholder organisations. Communications and community relations will follow formal written procedures to document these communications.

With regard to EHS issues, the External affairs/Community Relations Manager is responsible for facilitating dissemination of information necessary to mitigate impacts through coordinating public notifications (eg meetings, media announcements, written postings) and through stakeholder interaction.

The project will maintain a written register of stakeholder interactions in line with the PCDP to effectively track communications so that commitments made to follow up actions can be tracked and implemented. This includes grievances that are tracked through the formal grievance procedure which will be administered by the CSR Manager. Grievances may be verbal or written and are usually either specific claims for damages/injury or complaints or suggestions about the way that the project is being implemented. When a grievance has been brought to the attention of the project team it will be logged and evaluated. The person or group with the grievance is required to present grounds for making a complaint or claiming loss so that a proper and informed evaluation can be made. Where a complaint or claim is considered to be valid then steps are required to be undertaken to rectify the issue or agree compensation for the loss. In all cases the decision made and the reason for the decision will be communicated to the relevant stakeholders and recorded. Where there remains disagreement on the outcome then an arbitration procedure may be required to be overseen by a third party (eg government official). Local community stakeholders will be informed on how to implement the grievance procedures.

9.4.4

Documentation

Tullow will control EHS documentation, including management plans; associated procedures; and checklists, forms and reports, through a formal procedure. The document control procedure will describe the processes that the project will employ for official communication of both hardcopy and electronic (through the internet) document deliverables. In addition, it will

describe the requirement for electronic filing and posting and for assignment of a document tracking and control numbers (including revision codes).

The EHS Manager is responsible for maintaining a master listing of applicable EHS documents and making sure that this list is communicated to the appropriate parties. The EHS Manager is responsible for providing notice to the affected parties of changes or revisions to documents, for issuing revised copies and for checking that the information is communicated within that party's organisation appropriately.

The subcontractors will be required to develop a system for maintaining and controlling its own EHS documentation and describe these systems in their respective EHS plans.

9.4.5 *Operational Control Procedures*

Each potentially significant impact identified in the EIA will have an operational control associated with it that specifies appropriate procedures, work instructions, best management practices, roles, responsibilities, authorities, monitoring, measurement and record keeping for avoiding or reducing impacts. Operational controls are monitored for compliance and effectiveness on a regular basis through a monitoring and auditing procedure described in the EMP.

Operational control procedures will be reviewed and, where appropriate, amended to include instructions for planning and minimising impacts, or to at least reference relevant documents that address impact avoidance and mitigation. To be comprehensive, suitable, adequate, and effective, the EHSMS will ensure that operational controls for avoiding and minimising impacts are properly maintained for the project's life-cycle.

9.4.6 *Emergency Preparedness and Response*

Tullow has developed plans and procedures to identify the potential for and response to environmental accidents and health and safety emergency situations and for preventing and mitigating potentially adverse environmental and social impacts that may be associated with them.

Emergency preparedness and response will be reviewed by Tullow on at least an annual basis and after the occurrence of any accidents or emergency situations to ensure that lessons learnt inform continuous improvement. Emergency exercises will be undertaken on a regular basis to confirm adequacy of response strategies. Investigations of accidents or incidents will follow formal documented procedures.

9.4.7 *Management of Change*

Changes in the project may occur due to unanticipated situations. Adaptive changes may also occur during the course of final design, commissioning or

even operations. The project will implement a formal procedure to manage changes in the project that will apply to all project activities.

The objective of the procedure is to ensure that the impact of changes on the health and safety of personnel, the environment, plant and equipment are identified and assessed prior to changes being implemented.

The management of change procedure will ensure that:

- proposed changes have a sound technical, safety, environmental, and commercial justification;
- changes are reviewed by competent personnel and the impact of changes is reflected in documentation, including operating procedures and drawings;
- hazards resulting from changes that alter the conditions assessed in the EIA have been identified and assessed and the impact(s) of changes do not adversely affect the management of health, safety or the environment;
- changes are communicated to personnel who are provided with the necessary skills, via training, to effectively implement changes; and
- the appropriate Jubilee person accepts the responsibility for the change.

As information regarding the uncertainties becomes available, the project EMP will be updated to include that information in subsequent revisions. Environmental and social, as well as engineering feasibility and cost, considerations have been and will continue to be taken into account when choosing between possible alternatives.

9.5 **CHECKING AND CORRECTIVE ACTION**

9.5.1 **Introduction**

Checking includes inspections and monitoring as well as audit activities to confirm proper implementation of checking systems as well as effectiveness of mitigations. Corrective actions include response to out-of-control situations, non-compliances, and non-conformances. Actions also include those intended to improve performance.

9.5.2 **Inspection**

EHS inspections will be conducted by subcontractors on a daily basis. The results of the inspection and monitoring activities will be reported to Tullow on a weekly basis or more frequently if requested by the EHS Manager or the technical Managers responsible for operational activity. Examples include daily operations and drilling reports which will feedback on any incidents and the status of pro-active EHS work and activities.

9.5.3

Monitoring

Monitoring will be conducted to ensure compliance with regulatory requirements as well as to evaluate the effectiveness of operational controls and other measures intended to mitigate potential impacts.

With respect to the impacts identified in the EIA, Tullow has developed a program to monitor the effectiveness of the mitigation measures (*Chapter 7*). The program describes what effect is to be measured and the frequency. In conjunction with monitoring of the effectiveness of specific mitigation measures, Tullow has developed a program to monitor for compliance with relevant regulatory standards. This program also ensures that subcontractors are meeting contractual obligations with respect to work practices and design specifications. Monitoring is carried out by the Tullow EHS department and/or by subcontractors under contractual obligations. The parameters to be measured during the early access infrastructure works along with the frequency of monitoring are provided in *Chapter 7*. Monitoring is conducted against the project emission standards that are also described in *Chapter 7*.

9.5.4

Auditing

Beyond the routine inspection and monitoring activities conducted, audits will be carried out internally by both Tullow and its partners in the Jubilee JV (including the Government of Ghana) to ensure compliance with regulatory requirements as well as their own EHS standards and policies. Audits to be conducted will also cover the subcontractor self-reported monitoring and inspection activities. The audit shall be performed by qualified staff and the results shall be communicated to the Jubilee JV Asset managers and related executive management.

The audit will include a review of compliance with the requirements of the EIA and of this EMP and include, at minimum, the following:

- completeness of EHS documentation, including planning documents and inspection records;
- conformance with monitoring requirements;
- efficacy of activities to address any non-conformance with monitoring requirements; and
- training activities and record keeping.

There will be a cycle of audits into specific areas of the project such as waste management, and effectiveness of local content plans and discharge controls. The frequency of audits will be risk based and will vary with the stage of the project (more frequent in the early stages of the project) and will depend on the results of previous audits.

9.5.5

Corrective Action

Identifying impacts and addressing associated risks before an incident occurs is an important part of the EHSMS approach. Investigating a 'near miss' or actual incident after it occurs can be used to obtain valuable lessons and information that can be used to prevent similar or more serious occurrences in the future.

Tullow will implement a formal non compliance and corrective action tracking procedure for investigating cause and identifying corrective actions in response to accidents or environmental or social non-compliances. This will ensure coordinated action between Tullow and its partners in the Jubilee JV, and also all subcontractors. The Tullow EHS Manager will be responsible for keeping records of corrective actions and for overseeing the modification of environmental or social protection procedures and/or training programs to avoid repetition of non-conformances and non-compliances.

9.5.6

Reporting

Throughout the project, Tullow will keep regulatory authorities informed of the project performance with respect to EHS matters by way of written status reports and face-to-face meetings. Tullow will prepare a monthly report on environmental and social performance and submit it to Ghana EPA. Copies may be made available to other interested authorities upon agreement with Ghana EPA.

Tullow shall release corporate annual reports on environmental and social performance which will be available to the public via Tullow's website. The content will be determined with consideration of national requirements and lender requirements.

In addition to regular reporting, official notification shall be made to the government for any of the following:

- significant modifications to this EMP or the EIA;
- significant design, routing or implementation changes;
- results of environmental monitoring;
- community incidents; and
- safety incidents or accidents.

Tullow will make accessible to government authorities, or provide upon request appropriate documentation of EHS related activities, including internal inspection records, training records, and reports.

Subcontractors are also required to provide EHS performance reporting to Tullow on a regular basis through weekly and monthly reports. This will be used as input to the above.

Figure 9.2 EMP Implementation Organisation

