



REPORT OF THE:

**EXTERNAL INDEPENDENT
MONITORING GROUP**

**TULLOW GHANA LTD
JUBILEE PROJECT**

GHANA

Site Visit: May 2014

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ABBREVIATIONS AND ACRONYMS

AAQM	Ambient Air Quality Monitoring
AMR	Annual Monitoring Report
ALARP	As Low As Reasonably Practicable
ATBA	Areas To Be Avoided
CAR	Corrective Actions Close Out Report
CIP	Community Investment Plan
CLO	Community Liaison Officer
CHPS	Community-based Health Planning and Services
COSHH	Control of Substances Hazardous to Health
CSR	Corporate Social Responsibility now changed to SI: Social Investment
ECR	Engineering Change Request
ED	Enterprise Development
EDC	Enterprise Development Centre
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
EHS	Environmental Health and Safety
EMS	Environmental Management System
EMP	Environmental Monitoring Plan
ESAP	Environmental Social Action Plan
FSA	Formal Safety Assessment
FPSO	Floating Production, Storage and Offloading
Gh EPA	Ghana Environmental Protection Agency
GHG	Greenhouse Gases
GTG	Gas Turbine Generator
IMO	International Maritime Organization
IMP	Incident Management Plan
IFC	International Finance Corporation
KPI	Key Performance Indicators
LEED	Livelihood Enhancement and Enterprise Development
MARPOL	Marine Pollution: International Convention for the Prevention of Pollution From Ships
M&E	Monitoring and Evaluation
MOC	Management Of Change
MSDS	Material Safety Data Sheet
MODU	Mobile Offshore Drilling Unit
NADF	Non Aqueous Drilling Fluids
OOC	Oil On Cuttings
OIW	Oil in Water
OSCP	Oil Spill Contingency Plan
OWS	Oil Water Separator

PCDP	Public Consultation and Disclosure Plan
PS	Performance Standard
PTW	Permit to Work
SCE	Safety Critical Elements
SI	Social Investment previously known as CSR :Corporate Social Responsibility
SME	Small and Medium Enterprises
SSEA	Safety, Sustainability and External Affairs
STOP	Safety Training Observation Program
TEN	Tweneboa, Enyenra and Ntomme
TGL	Tullow Ghana Limited
TVET	Technical, Vocational Education and Training
WMP	Waste Management Plan

INDEPENDENT EXTERNAL MONITORING TULLOW OIL JUBILEE PROJECT May 2014

1 EXECUTIVE SUMMARY

The Jubilee Phase 1 Oil and Gas Development Project is an oil and gas extraction and production project located offshore Ghana, lying in deep waters at approximately 60 km from the shoreline. It consists of drilling and development of 17 oil, gas and reinjection wells connected with a Floating Production, Storage and Offloading Vessel for commercialization of the produced oil.

The further Jubilee Phase 1A development was planned to exploit further reserves and extend oil production levels of the Jubilee field. The Jubilee Phase 1A development includes the drilling and completion of eight additional oil production and water injection wells, the tie-in to the existing Floating Production Storage and Offloading (FPSO) unit Kwame Nkrumah and the installation of additional subsea equipment for water injection.

Within the project disbursement agreement, Tullow Ghana Ltd (TGL), the designated Unit Operator, and the International Finance Corporation (IFC) have established a range of Environmental and Social management measures applicable for the Jubilee Phases 1 and 1A Project, which have been included in an Environmental and Social Action Plan (ESAP), developed in compliance with IFC's Performance Standards and Guidelines.

This report provides the findings and observations of the external independent monitoring group visit and review carried out in May 2014, relevant to the period between April 2013 and the time of the site visit.

The site visit conducted included the TGL headquarters in Accra, the FPSO, the on shore Project facilities in Takoradi, the Waste management contractor facilities, the Takoradi Polytechnic new Jubilee Technical Training Centre, the Enterprise development Centre and the fishing community of Nkotompo

At the time of the present independent external verification, all actions foreseen by the ESAP (dated December 2010) have been already implemented by TGL; nonetheless the external independent monitor has conducted a systematic review of all actions included in the ESAP in order to provide a follow up on the current status of their implementation.

Based on the conducted review, no non compliance situations with respect to the implementation of the ESAP requirements were identified for the period under review. Further observations collected, concerning the current implementation status of the ESAP actions and next planned milestones, have been reported in the ESAP updated table (see Section 5 of the current report).

In general, the monitoring team observed a strong Project health and safety culture during the site visit, which is reflected in the health and safety findings of this report, and a proactive approach is evident at Project facilities both onshore and offshore. Additional findings have been reported as follows and detailed in the respective sections of the report.

Major organizational restructuring is currently underway at TGL. The management of Health, Safety, Environment and External Affairs are being brought together into one group,

that being Safety, Sustainability and External Affairs (SSEA). At the time of the site visit the ESHS team structure was going through a transitional period. The monitoring team has seen significant progress by the ESHS team over the last few years and effective change management is needed for continuity of ESHS requirements in 2014 to ensure continued performance on ESAP items. This is particularly relevant for the Social aspects of the project regarding ongoing community engagement and Project representation.

The monitoring team note that extensive training has been carried out in 2013, covering a wide range of topics, including environmental monitoring, incident investigation, control of substances hazardous to health, dangerous goods transported by air and sea, applied environmental training, and national vocational qualification training. Specific International Maritime Organisation training also continued in 2013 and included IMO level II and level III oil spill response.

As part of the monitoring team's objectives, a review of ESAP related environmental management plans was carried out. The review found that half of the EMPs had not been reviewed within the review period. While significant changes may not be necessary for all procedures, they need to be reviewed within the agreed document review cycle with updates made as necessary.

Environmental monitoring actions, as foreseen by the Project ESAP related plans are consistently carried out by the Project, in compliance with the relevant time schedule and external reporting requirements.

Project reporting is ongoing on a monthly basis to the Ghana Environmental Protection Agency, and the Annual Monitoring Report (AMR) for 2013 has been recently released. Some suggestions for improvement have been made regarding Project reporting, in particular the AMR for 2013 relating to both social and environmental aspects. Suggestions relate to increasing the amount of information and data to support conclusions and graphs included in the report, and to ensure that consistency is maintained from previous year AMRs, in order to show Project results on a year to year basis.

The monitoring team has been provided with environmental monitoring records for the period under review and notes that emission monitoring and record keeping is up to date and records kept for waste disposal and transportation to the onshore waste management facility. Waste management was observed to be good across all sites visited and the management facility found to be proactive, well managed and a good example of an effective waste management approach with a close working relationship with the Project.

A marine mammal observations report for 2013 has been developed by an external consultant, outlining a positive Project approach towards monitoring within the Jubilee field.

TGL will conduct a follow up fishery study and it has agreed to support the EPA with the inclusion to investigate the phenomena of dead whales being washed ashore in the Gulf of Guinea

The H&S management system remains adequate and effectively implemented and maintained to control and manage any unexpected incident scenario that could lead to threats to people and asset, as well as major oil spills that could result in severe environmental damage.

In the perspective of the continuous improvement required by the safety management system, significant improvements have been introduced acting within the management of both occupational and process risks. Specifically, from the Occupational H&S point of view, the

updating of the “Permit to work procedure (PTW)” can be considered the main improvement, which has the scope to ensure that operations are carried out in a safe, controlled and coordinated manner.

Since the last Independent Monitoring visit, a few additional Social documents have been prepared: the Social Investment (SI) Strategy has been finalized, the 2010 PCDP has been updated and delivered as April 2014, and a Monitoring & Evaluation (M&E) Plan has been prepared. The M&E plan is a sound document which summaries key aspects of the SI strategy and provides a framework for M&E. The PCDP, which was revised to make it more straightforward and user-friendly for community members, was found to not always be the case and suggestions have been made to the Project and in the relevant section of this report.

The SI Strategy has not been subject to changes during the reporting period and reflects the philosophical approach of enhancing relevance for beneficiary communities while producing an augmented value for TGL core business and long-term objectives of TGL in Ghana.

Community engagement activities are ongoing in coastal communities and continue to be recorded. Engagement activity records for 2013 should be attached to the AMR for year on year recording.

“Community Focused Awareness Training” has been undertaken during 2013 with the objective to build on oil spill capacity and capability within targeted coastal communities of the Western Region. During 2013 over 30 communities were visited resulting in over 1500 attendees from local communities.

The Grievance mechanism remains in place, and has been strengthened over 2013 through learning from experience. Most of the complaints were found to have reached a positive resolution.

2 INTRODUCTION

The Jubilee Phases 1 and 1A Oil and Gas Development Project (the Project) concerns the extraction of hydrocarbons from the Jubilee field located offshore Ghana.

The Jubilee oil field lies in deep waters, with depth ranging between 1,100 and 1,700 meters; it is located at approximately 60 km from the shoreline at the western edge of Ghana and covers an area of approximately 110 Km².

Tullow Ghana Limited (TGL) has been designated as the Unit Operator under the Unitization and Unit Operator Agreement signed with the Ghanaian Ministry of Energy.



Figure 2.1: Jubilee Oil Field Location Map

The Jubilee Phase 1 Project included the development of the following activities:

- drilling and development of a total of 17 wells (among which 9 production wells, 5 water injection wells and 3 gas injection wells);
- construction and operation of the pipeline underwater network to collect the oil and gas to the Floating Production, Storage and Offloading (FPSO) Vessel;
- operation of the FPSO and related supporting vessels (for sea patrolling and FPSO supply); and
- operation of the onshore facilities, including the Tullow Logistic Shore Base, the adjacent pipe yard and chemicals storage area and the Takoradi port facilities (used for storage of chemicals and raw materials and for the loading and offloading of supporting vessels).

All the related drilling activities were concluded in 2011 with the completion of the last oil production well.

Tullow determined that the Jubilee field's reservoirs were somewhat different to the models initially envisaged in the Phase 1 Development Plan, and as such an addendum to the Jubilee Phase 1 Development Plan was developed. The further Jubilee Phase 1A development planned to exploit further reserves and extend oil production levels of the Jubilee field, including:

- the drilling and completion of 8 additional oil production and water injection wells;
- the tie-in to the existing FPSO unit; and
- the installation of additional subsea equipment for water injection.

The Jubilee Phase 1A development plan ("Phase 1A Addendum") was approved on January 9th 2012, subject to the condition that a Full Field Development Plan (FFDP) would be submitted to the Minister for Energy by 31 December 2012. The FFDP was submitted on 19th December 2012 but was rejected as it did not take into account resources outside of the Jubilee field (the West Cape Three Points area). Activities for Phase 1A have been completed, with the last gas injector well coming on line in September 2013.

TGL and the International Finance Corporation (IFC) have agreed a range of Environmental and Social management measures applicable for the Jubilee Phases 1 and 1A Project, which have been included in an Environmental and Social Action Plan (ESAP), developed in compliance with IFC's Performance Standards and Guidelines. Among the ESAP requirements, TGL environmental and social monitoring performances have to be verified on an annual basis by an external independent monitoring group. D'Appolonia S.p.A, Italy, has been appointed by TGL to carry out the annual external independent monitoring of the implementation of the ESAP and related management measures.

On 29 May 2013, the Government of Ghana formally approved the Tullow T.E.N. Project, which includes the development of the Tweneboa, Enyenra and Ntomme (TEN) fields, approximately 30km to the west of the Jubilee field. Development of the TEN Project requires the drilling and completion of up to 24 development wells which will be connected through subsea infrastructure to an FPSO. While not directly part of the Project, the TEN project is referred to in the current report with regards to potential cumulative impacts.

2.1 REPORT ORGANIZATION

This document is organized as follows:

- Section 2: provides a general introduction to the Project;
- Section 3: presents D'Appolonia scope of the work and adopted approach to conduct the independent external verification;
- Section 4: outlines the agenda of the site visit, along with the list of documents collected and reviewed;
- Section 5: provides the outcomes of the review of the ESAP commitments; and
- Section 6: presents the team findings and observations from the site visit, and the outcomes of the review of the monitoring data collected in agreement with monitoring plans in place for the Project.

3 INDEPENDENT VERIFICATION SCOPE OF THE WORK AND ADOPTED METHODOLOGY

Scope of the external independent verification, as defined by the relevant Terms of Reference issued by TGL on February 21st, 2014, is to:

1. identify instances where commitments or actions from ESAP have not been implemented (defined as “non compliances” for the Project) or provide evidence of the implementation of each ESAP related component;
1. review and verify the environmental and social monitoring data collected for the Jubilee Phase 1 Project and reported within: the Annual Monitoring Report (AMR) issued to IFC, the statutory reports to the Ghana Environmental Protection Agency (Gh EPA) and the TGL Corporate reports;
2. review and verify the effective implementation of H&S management system requirements for the safely management of all operations and potential occupational hazards, and the prevention and mitigation of loss of containment and, specifically, of any oil spill scenarios; and
3. conduct a visit of the Project facilities and interview TGL personnel in order to evaluate the implementation of ESAP related monitoring requirements.

In order to carry out the above scope of the work, D’Appolonia has involved a multidisciplinary team including one Environmental, one Health & Safety and one Social expert, with extensive experience in the Oil and Gas Sector.

The adopted methodology has included:

- the desk review of the ESAP and related implementation plans to understand Project commitments;
- the desk review of the latest issued 2013 AMR report (dated March 2014);
- the systematic spot check of the raw monitoring data, by collecting and reviewing, for each environmental and social component, the Project records and reports (including a sample of statutory reports to the GhEPA and GhEPA environmental audit undertaken in 2013);
- the evaluation of project performances through the visit of main operating facilities and the interview of TGL EHS personnel;
- the evaluation of project social related components by conducting joint meetings with local communities and TGL representatives;
- the identification of gaps with respect to the ESAP commitments (non compliances), or the verification of their implementation; and
- the identification of possible areas of improvement for the implementation of the ESAP commitments and related environmental and social monitoring requirements.

4 SITE VISIT DESCRIPTION

The site visit of the independent external monitoring group has been organized in order to reflect the different fields of expertise of the team member (biophysical environment, health & safety, social) and to cover all Project related facilities and stakeholders.

The following provides an outline of the site visit conducted along with the scope of each visit or activity carried out. Each visit or activity has been carried out jointly with the TGL EHS team:

- kickoff meeting in Accra at TGL Headquarter (held on 5th May) to discuss the site visit scope and agenda and to collect ESAP related documentation to be reviewed;
- visit to the FPSO (6th May) with the main purpose to verify TGL Environmental, Health and Safety Management System requirements and their implementation. The visit included a kick off meeting, followed by meetings with TGL personnel (FPSO manager, FPSO operation/environmental manager, FPSO Safety manager), and verification of correct implementation of procedures and monitoring, followed by a walk through key topside facilities of the FPSO;
- meetings in the TGL Takoradi Office with the Social Investment (SI) team (on May 6th and 7th) as well as with the SI Consultant for consultation activities to obtain an overview of the main progress and changes in implementing activities with local communities through social engagement and investment;
- visit to the Takoradi Polytechnic new Jubilee Technical Training Centre (on May 6th) to appreciate finalized works and discuss on-going training activities with management;
- visit to the fishing community of Nkotonpo, in the Sekondi Takoradi Metropolitan Area (STMA) (on May 6th) to meet fishmongers, beneficiaries of demonstrative improved ovens for smoking fish through the Livelihood Enhancement and Enterprise Development (LEED) Project;
- visit to the Enterprise Development Centre (EDC), financed by the Jubilee Partners to enhance opportunities of Ghanaian Small and Medium Enterprises (SMEs) in the oil and gas industry (on May 7th);
- visit of the TGL Shore Base and annexed pipe yard and chemical storage area (conducted on May 7th) to evaluate Project performances in terms of raw materials, chemicals and waste handling and storage;
- visit of Waste Management Contractor facilities (Zeal) (conducted on May 7th). Scope of the visit was to evaluate the Project and appointed contractor performance with respect to the Waste Management Plan (WMP) requirements;
- participation in the TGL Takoradi Office team meeting (on May 7th) to obtain an overview of the management approach and ongoing activities at the shorebase;
- initial close out meeting with the TGL EHS Manager and EHS Operations Team Lead in order to present initial monitoring team findings and discuss any remaining queries; and Close-out meeting (on May 9th) to review site visit findings and anticipate the content of the final report.

Data collected and reviewed, relevant to the period under review (January 2013-December 2013) included the following:

1. Phase 1A Development, Jubilee Unit Area, Ghana Environmental Impact Statement Addendum Report, dated October 2011;
2. Jubilee Phase 1A Environmental Permit, issued by Ghana EPA in January 2012;
3. EHS & Corporate affairs Organisational charts;
4. Jubilee Full Field Development Plan dated 12 November 2013;
5. Environmental Management Plan Rev.4 reviewed in October 2013;
6. Environmental Monitoring Plan issued in November 2012;
7. Waste production records and disposal tracking documents;
8. Waste Management Plan, reviewed in October 2013;
9. MODEC stack emissions report November 2013;
10. TGL Ambient Air Quality Survey, June 2013;
11. TGL EHS Risk Matrix Procedure dated March 2014;
12. FPSO Environmental Monitoring database 2013;
13. EPA Audit report on Jubilee Operations January 2014;
14. Incident reports 2013;
15. Chemical Management Guidelines;
16. Marine Mammal and Turtle Observations 2013 (produced by Gardline);
17. TGL incident and near miss recording, investigation and implementation of corrective actions;
18. TGL Integrated EHS audit plan 2014;
19. Tullow Oil Environmental Standards Audit - November 2013;
20. HSE Emergency Response drill plan 2014;
21. MODEC group HSEQ audit report of the FPSO 4 – 7 February 2014;
22. MODEC emergency muster drill records February 2014;
23. Public Consultation and Disclosure Plan (PCDP) for the Jubilee Field Phase 1 Development, September 2010 and final update of April 2014;
24. Social Investment Strategy, final document dated December 2012;
25. Community Engagement Pack 2013 (slides);
26. 2013 Stakeholder/Community Consultation Report;
27. Summary of 2013 Community Consultations;
28. Social Investment Update, April 2014 (slides);
29. Social Investment Project Summary Table;
30. SI Grievances Report (Jan-Dec., 2013), attached to the AMR 2013;
31. Social Investment Mandatory Criteria, May 2013;
32. SI Framework by value and non technical risk, May 2013;
33. Final M&E Plan for the Social Performance Programmes of Tullow Ghana Limited, November 2013.

5 REVIEW OF ENVIRONMENTAL AND SOCIAL ACTION PLAN COMMITTMENTS

The ESAP represents the key reference document established within the loan agreement between IFC and TGL and defines the environmental and social management measures in place for the Project.

The document, which last revision is dated 10th December 2010, is issued and updated by IFC and provides, for each Performance Standard applicable to the Project, the related actions to be implemented, the completion indicator and the timetable in a table format.

At the time of the present independent external verification, all actions foreseen by the ESAP have been implemented by TGL. However, as part of the scope of the work, D'Appolonia has conducted a systematic review of all actions included in the ESAP in order to provide a follow up on the current status of their implementation.

The relevant observations collected by the independent external monitoring team are reported, using the same table format in place for the ESAP, in the “**May 2014 Status**” column.

Some of the observations anticipated in the table and relevant to possible improvements for the implementation of the ESAP actions or related plans, along with the detailed description of the monitoring requirements in place, are presented in Section 5 of the present report.

Based on the observations reported in the table below, it is confirmed that **no non-compliance** situation, as defined in Section 4 of the present report, was observed with respect to ESAP commitments.

ENVIRONMENTAL AND SOCIAL ACTION PLAN
Tullow Oil (#27918) - December 10, 2010

Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
TULLOW PLC¹						
PS1: Social and Environmental Assessment and Management Systems						
1	Tullow Oil will revise the Risk Management Guidelines and EIA Recommended Practice to ensure that Applicable Projects are assessed and managed according to IFC's Performance Standards.	(a) The Company has submitted draft revised guidelines and practice acceptable to IFC. (b) The Company has provided evidences that any Applicable Project is in compliance with IFC Performance Standards, or has shown that the Applicable Project can come into compliance with the Performance Standards within a reasonable time period following the implementation of an action plan to be agreed upon between the Company and IFC.	(a) Completed. (b) Completed. Facility disbursed only for Jubilee project. (c) Completed	No update reported or further action needed. As stated in time table for completion indicator, this action is applicable to Jubilee ph 1 development only (see also Table footnote)	No update reported or further action required	No update reported or further action required
2	Tullow Oil will reconfigure the IMS to ensure that the Head of EHS reviews all Applicable Projects to ensure that they are evaluated and managed according to the IFC Performance Standards.	The Company has submitted a draft reconfigured IMS acceptable to IFC.	(a) Completed. (b) Completed.	No update reported or further action needed. As stated in time table for completion indicator, this action is applicable to Jubilee ph 1 development only (see also Table footnote)	No update reported or further action required	No update reported or further action required
3	Training in the IFC's Performance Standards and the applicable IFC EHS Guidelines will be provided to those involved with the risk	The Company has provided evidence of training and developed a specific training procedure to be included in the Corporate training plan.	(a) Completed. (b) Periodic training sessions discussed in the Annual	Records on TGL training session provided and adequate (further details are provided in Section 5 of the report)	Records on TGL training session provided and adequate PSs training provided by D'Appolonia in June and	The high turnover of staff and on-going organizational changes may justify additional training

¹ Items #1, 2 and 3 of the table are reported separately since they were supposed to cover the overall TGL activities. For the purpose of the present verification however they are considered applicable to Jubilee Phase 1 development project only.

**ENVIRONMENTAL AND SOCIAL ACTION PLAN
Tullow Oil (#27918) - December 10, 2010**

Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
	management of Applicable Projects.		Monitoring Reports (AMR)	Performance Standards (PSs) training within scope of the work of D'Appolonia engineering services to be provided to TGL. The training is currently planned for beginning of June 2012.	November 2012 for about 60 TGL staff with EH&S and social background. This information is not reported in the AMR. The PSs training is considered complete unless a high turnover of key staff justifies additional sessions.	sessions in IFC PSs.

**ENVIRONMENTAL AND SOCIAL ACTION PLAN
Tullow Oil (#27918) - December 10, 2010**

Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
PS1: Social and Environmental Assessment and Management Systems						
Jubilee Field Development Project – Phase 1						
4	The Project will prepare the ESIA for Ghana EPA, incorporating the results of the Environmental Baseline Survey (EBS).	(a) A draft ESIA has been submitted to IFC for review and comments. (b) The final ESIA has been disclosed in Tullow Oil website.	(a) Completed (b) Completed	No update reported or further action required under the period under review. ESIA published through Gh EPA web site in 2010. Updates will be possibly required by Gh EPA at the time of the renewal of the operation permit (forecasted for May 26, 2012) in order to reflect recent findings of the monitoring activities	No update reported or further action required under the period under review. ESIA for the Jubilee Phase 1 Project published through Ghana EPA web site in 2010. Phase 1A Development, Environmental Impact Statement Addendum Report issued in October 2011	No update reported or further action required

ENVIRONMENTAL AND SOCIAL ACTION PLAN
Tullow Oil (#27918) - December 10, 2010

Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
				conducted. Further details on key expected elements of review for the ESIA and related EMP are presented in Section 6 for each component.		
5	The Project will develop and implement a management of change procedure and Tullow Oil will use reasonable endeavors, by exercising its contractual rights pursuant to any relevant Project Agreements, to ensure that the procedure is part of the Project environmental and social management system (ESMS).	(a) Tullow Oil has submitted the procedure acceptable to IFC. (b) The procedure is integrated in the Project environmental and social management system (ESMS).	(a) Completed. (b) Completed. Integrated into the Project EMP.	No update reported or further action required. MOC procedure consistently implemented by the Project. Samples of MOC implementation provided by TGL to check for consistency between documentation produced and related procedure.	No update reported or further action required. No MOC implemented in the period under review	No update reported or further action required. No environmental MOCs implemented for the period under review. Engineering MOCs implemented as per MOC procedure.
6	The Project will have an ESMS that periodically reviews the environmental and social aspects of the Project to determine whether the Environmental Management Plan (EMP) needs to be revised.	(a) The Project has developed an ESMS development schedule and submitted it to IFC. (b) The Project has developed the ESMS for the drilling and installation phase, acceptable to IFC. (c) The Project has developed the ESMS for production operations, acceptable to IFC.	(a) Completed. (b) Completed (c) Ongoing, as per agreed timeline.	Periodical review of ESMS conducted within the ISO 14001 certification process (ISO 14001 certification successfully obtained on the 20 th of December, 2011 and to be renewed in May 2012). No action required. EMP revision pending and planned for 3Q 2012 in order to duly take into account possible changes as derived from the renewal of the operational permit scheduled for May 2012.	Periodical review of ESMS conducted within the ISO 14001 certification process (ISO 14001 certification successfully renewed in June 2012). No further action required. New EMP revision dated May 2012. Time schedule for update (already achieved or in progress) of all EMP related documents provided by TGL and presented in Section 5	ISO 14001 successfully renewed in October 2013. Not all EMPs have been reviewed by TGL within the Project determined timeframe. Reviews were ongoing at the time of the site visit.

ENVIRONMENTAL AND SOCIAL ACTION PLAN
Tullow Oil (#27918) - December 10, 2010

Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
				Time schedule for update (already achieved or in progress) of all EMP related documents provided by TGL and presented in Section 6.		
7	The Project will disclose the EMP, including this Action Plan, to local communities as it evolves and report on completion of its action items.	(a) Inclusion of a draft EMP disclosure and reporting procedure in the Project's Public Consultation and Disclosure Plan. (b) Disclosure of EMP updates, including this Action Plan, and public disclosure of EMP completion reporting.	(a) Completed. (b) Ongoing. Reporting at least twice per year or per PCDP once it is disclosed.	No further update or action required. Disclosure mechanism was implemented satisfactorily to IFC. External reporting available and provided. Some further details along with suggestions for improvement of the currently adopted external reporting (AMR) and disclosure mechanism are reported in Section 6.	No further update or action required. Disclosure activities are however envisaged once the PCDP is revised.	PCDP has been revised by TGL. Disclosure activities on-going at communities level. Other disclosure tools (such as education printed material, strips, documentary/docudramas, radio talks, information boards, posters could be considered when document improved.
8	The Project will develop a staffing and training plan to ensure the ongoing management of the project according to the commitments in the ESIA and EMP.	The Project has developed and submitted a draft plan acceptable to IFC.	Completed.	Updated records on training sessions and EHS organization chart provided by the project and adequate for ESAP requirements. Both topics are further analyzed within Section 6. No action required	Updated records on training sessions and EHS organization chart provided by the project and adequate for ESAP requirements. Both topics are further analyzed within Section 5. No action required	Training records provided for 2013 and plan for 2014 received. Training is detailed further in section 6.
9	The Project will retain a qualified, independent external expert to verify its environmental and social monitoring information.	The Project has hired a qualified, independent external expert, acceptable to IFC, based on a term of reference agreed by IFC. The Project has publicly disclosed the report of the external	(a) Independent expert appointed. (b) First visit January 2010. (c) Subsequent	External monitoring in place as per scope of the work of the present mission and report.	External monitoring in place as per scope of the work of the present mission and report	External monitoring in place as per scope of work and ongoing on a yearly basis.

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		expert annually.	annual independent verification visits.			
PS2: Labor and Working Conditions						
10	The Company will have a Human Resources Policy that communicates to workers their rights under Ghanaian law and spells out terms of employment, including equal opportunity principles, benefits, and leave policies.	(a) The Company has developed and submitted the policy with reference to its own employees, acceptable to IFC. (b) The Company has developed and submitted the policy with reference to non-employee workers, acceptable to IFC.	(a) Completed. (b) Completed.	No update reported or further action required. Human resource policies included in TGL Human Resource handbook.	TGL Employee Handbook is being reviewed to address some implementation challenges	TGL Employee Handbook constantly undergoing revisions to address eventual implementation challenges
PS3: Pollution Prevention and Abatement						
11	The Project will define routine inspection and maintenance of engines, generators, and other equipment, noise, and air emissions monitoring and use of low-sulfur diesel fuel, as part of the Project's environmental monitoring program.	(a) Availability of the Project's environmental monitoring program for the drilling and installation phase, acceptable to IFC. (b) Revised environmental monitoring program for the production operations phase, acceptable to IFC.	(a) Completed. (b) Completed.	Environmental Monitoring Program consistently implemented by the Project. Most of the monitoring actions relevant to the period under review were completed at the time of the visit. For all the remaining pending activities, a timeline for their finalization was provided by TGL. In Section 6 further details along with suggested improvements of current monitoring practice are provided.	Environmental Monitoring Plan updated in November 2012. Environmental Monitoring Program consistently implemented by the Project. Most of the monitoring actions relevant to the period under review were completed at the time of the visit. For all the remaining pending activities, a timeline for their finalization was provided by TGL. In Section 5 further details along with suggested improvements of current monitoring	Environmental monitoring ongoing in line with the Environmental Monitoring Plan. Environmental monitoring results for 2013 provided to the monitoring team. Discussed further in section 6.2.

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Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
					practice are provided.	
12	The Project will maintain a monitoring program for greenhouse gases (GHG).	Periodic public reporting of GHG emissions for the Jubilee Field production operations.	At least yearly reporting.	In place. Data provided through AMR report to IFC and statutory reports to Gh EPA commented in Section 6.	In place. Data provided through AMR report to IFC and statutory reports to Gh EPA commented in Section 5.	GHG monitoring ongoing. AMR details the GHG emissions for 2013, with reports provided to the Gh EPA.
13	The Project will include drilled cuttings and fluid disposal methods and procedures in the Project's Waste Management Plan. A cuttings deposition model will be developed and included in the Jubilee Field ESIA.	Availability of the cuttings deposition model and the drilled cuttings and fluid disposal methods and procedures, acceptable to IFC.	Completed.	Drilling activities pertaining to the period under review were limited to the completion of J06 well. Log of all drilling waste produced and disposed of has been provided within the relevant Well Terminal Report. Waste Management Plan consistently implemented. Further action consisted in the development, upon request of Gh EPA, of a the Jubilee Field Drill Cuttings Study, issued in December 2011 and delivered to IFC and Gh EPA. Detailed description of drilling cuttings and fluids disposal methods, implemented monitoring actions, results and outcomes of study carried out are reported in Section 6.	Drilling activities pertaining to the period under review were limited to the drilling of 5 wells and completion of four wells. Log of all drilling waste produced and disposed of has been provided within the relevant Well Terminal Reports. Waste Management Plan consistently implemented. No further update was reported after issuing the Drill Cuttings Study in December 2011. Detailed description of drilling cuttings and fluids disposal methods, implemented monitoring actions, results and outcomes of study carried out are reported in Section 5.	Log of all drilling waste produced and disposed of has been provided by TGL, and detailed in the AMR. Waste management plan has been reviewed in 2013.

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Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
14	The Project will ensure that a Hydrotest Water Disposal Plan will be prepared.	Availability of the plan, acceptable to IFC.	Completed.	No update reported or further action needed.	No update reported or further action needed.	No update reported or further action needed.
15	The Project will install a produced water discharge sampling point in the FPSO and relevant procedures developed.	Availability of the sampling point and procedures, acceptable to IFC.	Completed	Prior to being sent overboard, after being cooled to 40°C in the Produced Water Coolers, water quality is continuously monitored through an analyzer and off-spec water is automatically diverted to the Off-spec Water Tank for further treatment and/or additional retention time. No further action required.	Same practice observed during 2012 visit in place. No further action required.	Monitoring team observed that water quality is continuously monitored through an analyzer and off-spec water is automatically diverted to the Off-spec Water Tank for further treatment. No further action required.
16	The Project will develop tanker vetting procedures to ensure compliant management of ballast water. Ballast water management measures will be detailed and included in the environmental management system for operations.	Availability of tanker vetting and ballast water management procedures, acceptable to IFC.	Completed.	Both components are embedded within the Environmental Monitoring Plan which is consistently implemented by the Project, as detailed in Section 6 of the report. Ballast water is reported as no longer an issue for the FPSO (since no ballast water is used). Within the planned update of monitoring plans (see ESAP item #6) the relevant monitoring procedure will be revised to reflect	Both components are embedded within the Environmental Monitoring Plan updated in November 2012 which is consistently implemented by the Project, as detailed in Section 5 of the report. Although it was further confirmed during 2013 visit that the ballast water management is no longer an issue for the FPSO (since no ballast water is used), the relevant monitoring procedure was kept in place in case of future possible reuse of	Environmental Monitoring Plan outlines approach to ballast water management. Monitoring results show no ballast water used by FPSO during 2013.

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				actual project operational features.	ballast water	
17	The Company will update the Drilling Waste Management Plan (WMP) to include methods and procedures, adopted by the Project for the management of drilled cuttings and fluid disposal, and all planned activities during facility installation, as needed. An Operations Phase WMP will then be developed. Audits of the waste management facilities regularly conducted. The Chemical Handling (COSHH) Procedure will be implemented to handle all hazardous chemicals and the Company will ensure that it is adopted by its contractors.	(a) Availability of a draft Project's WMP (b) Availability of a draft Project's management plan for drilled cuttings (c) Chemical Handling (COSHH) Procedure for the drilling and installation phase, acceptable to IFC. (d) Waste Management Plan and Chemical Handling (COSHH) Procedure for the production operations phase, acceptable to IFC.	(a) Completed. (b) Completed. (c) Completed. (d) Received Revision 0 for Ghana EPA submission, June 2010. Ongoing review of Revision 1.	WMP in place and consistently implemented by the Project. Chemical Handling procedures embedded within Operation Guidelines Marine Ops Hazardous Substances - Transport by Sea, Operation Guidelines Storage of Hazardous Materials, and Operation Guidelines for Road Transportation of Hazardous Substances - Transport by Road are consistently implemented. Copy of latest Environmental Management System audit to Zeal (waste management contractor) provided. Update of WMP carried out in October 2011 but not yet published (last version amended dated October 2010). Updates of chemical handling procedures on going as	WMP update in January 2013 and consistently implemented by the Project. Chemical Handling procedures embedded within Operation Guidelines Marine Ops Hazardous Substances - Transport by Sea, Operation Guidelines Storage of Hazardous Materials, and Operation Guidelines for Road Transportation of Hazardous Substances - Transport by Road are consistently implemented together with updates of chemical handling procedures (ref. "Hazardous Chemical Management Procedure", doc. TGL-EHS-PRC-04-0060, rev. 30.08.2012) Copy of latest Environmental Management System audit to Zeal (waste management contractor) provided dated April 2012	WMP in place and consistently implemented by the Project. Monitoring results provided to the monitoring team for 2013. Waste management reporting ongoing. Waste Facilities visited (Zeal) meet project requirements, have a good management process implemented and are audited by the Company. Chemical handling procedures are being merged into a single chemical management guideline (see section 6 for additional details)

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Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
				detailed in Section 6.		
18	The Project will update the existing Emergency Response Plan (ERP), to include response procedures to emergencies potentially associated to all construction and production operations activities planned, including fire prevention and protection, environmental emergencies, and other incident responses.	(a) Availability of a draft Project's ERP for the drilling and installation phase, acceptable to IFC. (b) ERP for the production operations phase, acceptable to IFC.	(a) Completed (b) Ghana Incident Management Plan (IMP) Revision 2 received, acceptable to IFC.	IMP made available and implemented. No further update	IMP made available and implemented. No further update	IMP remains in place and made available. No further update
19	Quantitative modeling of defined potential surface and subsurface oil spill release scenarios will be conducted and an assessment of potential for oil spill related impacts to offshore and coastal environmental resources, including turtle nesting beaches, will be conducted for both the drilling/installation phase and the production operations phase, and incorporated in the Oil Spill Contingency Plan (OSCP). The OSCP will define specific measures for protecting turtle habitat and other protected and sensitive coastal habitats. The Project will develop spill scenarios for the operations phase Oil Spill Contingency Plan (OSCP).	(a) Availability of the Project's OSCP for the drilling and installation phase, including the spill trajectory model, acceptable to IFC. (b) OSCP for the production operations phase, acceptable to IFC.	(a) Completed. (b) OSCP Revision 1 received, acceptable to IFC.	Current revision of OSCP in place and implemented. Oil Spill Response Plan is based on a spill risk assessment, defining expected frequency of occurrence and size of spills from different release sources and oil spill trajectory modeling with oil fate and environmental prediction for a number of spill simulations, using a computer model with ability to input local current and wind data. Different procedures are provided based on spill severity, according to the size of spill, using a defined Tier 1, Tier 2 and Tier 3 approach.	Current revision of OSCP in place and implemented. Oil Spill Response Plan is based on a spill risk assessment, defining expected frequency of occurrence and size of spills from different release sources and oil spill trajectory modeling with oil fate and environmental prediction for a number of spill simulations, using a computer model with ability to input local current and wind data. Different procedures are provided based on spill severity, according to the size of spill, using a defined Tier 1, Tier 2 and Tier 3 approach. Records on OSR drills	OSCP for the production and operations phase remains in place. In accordance with OSCP, MODEC has implemented its own procedure "Field Response Plan", dated 19th of April, 2011, which identifies and details the actions that have to be carried out in case of any potential spill scenarios that could occur at the FPSO. Oil spill response and management training drill has been carried out in November 2013. No further update required.

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				Records on OSR drills conducted provided and consistent with ESAP requirements, as detailed under Section 6. New OSCP review under finalization (planned due date April 2012 but not yet disclosed).	conducted provided and consistent with ESAP requirements, as detailed under Section 6. No further update required.	
20	The Project will develop and adopt a H2S Program and ensure that it is also adopted by its contractors, as needed.	Availability of the Project's H2S Program, acceptable to IFC	N/A	No further update reported or action needed.	No further update reported or action needed.	No further update reported or action needed.
PS4: Community Health, Safety and Security						
21	(a) The Project will develop a program to avoid intrusion into the safety zones around the drilling rigs and FPSO to include: Education program for the nearby villages and other fishers known to use the project area. (b) Procedure for boat traffic management and for warning boats away from the safety zone, including rules of engagement for use of physical intervention. (c) The Project will develop a security plan, based on a security risk assessment, which may include, among other things, the adaptation of the	(a) Education program information and schedule for meeting with villages. (b) Procedures for offshore facilities provided to and accepted by IFC. (c) Procedures for managing traffic into and out of Takoradi Harbour (d) Security Plan provided to and accepted by IFC.	(a) Program ongoing. (b) Completed. (c) Tullow follows Africa Pilot for Takoradi Harbour, acceptable to IFC. (d) Completed.	Education program in place. Warning posters in place at villages visited. Copy of the material used for education provided. Procedures for offshore facilities and managing traffic along with the Security Plan consistently implemented. Training to coastal guards on respectful human rights ways to manage intrusion also in place.	Education program still on-going. Warning posters still in place. The upcoming T.E.N. project and current seismic surveys provide additional occasions to train fishermen to respect the area to be avoided. Procedures for offshore facilities and managing traffic along with the Security Plan consistently implemented. Training to coastal guards on respectful human rights ways to manage intrusion still on-going to face staff turnover.	Warning posters in place. Awareness program with fishermen strengthened in view of additional activities related with the TEN project and seismic surveys. Procedures for offshore facilities and managing traffic along with the Security Plan consistently implemented. Training to coastal guards on respectful human rights ways to manage intrusion still on-going to face staff turnover.

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Item	Action	Completion Indicator	Timetable	April 2012 Status	April 2013 Status	May 2014 Status
	US-UK Voluntary Principles on Security.					
PS6: Biodiversity Conservation and Sustainable Natural Resource Management						
22	The Project will develop and implement a program for training vessel's and helicopter's operators in marine mammal observation and monitoring at and in the vicinity of the proposed Jubilee Field development. The program will be included in the final Jubilee ESIA and developed in consultation with the Ghana EPA.	(a) Availability of the program, acceptable to IFC. (b) Observations analyzed by an experienced marine mammal biologist and reported in the annual monitoring report to IFC.	(a) Completed. (b) At least yearly reporting.	Program in place and consistently implemented. Data on marine mammal observation collected and interpreted under the Marine Mammals and Turtle Observation Report, issued on March 2012. Report delivered to IFC and Gh EPA.	Program in place and consistently implemented. Data on marine mammal observation collected	Marine spotters collect data and report on a monthly basis. Data shows the identification of 2 previously unrecorded species in Ghanaian waters. Reports delivered to Gh EPA.
23	The Project will develop and enforce a specific policy and procedures to ensure that traffic and operations of drilling vessels, support vessels and helicopters will minimize disturbance to marine mammals.	Availability of the policy and procedures, acceptable to IFC	Completed.	Procedure in place. No further update reported or action needed.	Procedure in place. No further update reported or action needed.	Procedure in place. Increase in whale carcasses washed up in Ghana in 2013, but not expected to be a result of Project activities. Report being developed.
24	The Project will ensure that support helicopters will routinely avoid flying over the Amansuri wetland and that, if avoidance is not feasible due to weather conditions, a minimum altitude will be specified, according to international good practice, when flying over this area to minimize disturbance to wildlife.	Availability of the policy and procedures, acceptable to IFC	Completed.	Procedure in place. No further update reported or action needed.	Procedure in place. No further update reported or action needed.	Procedure in place. No further update reported or action needed.

6 REVIEW OF PROJECT MONITORING DATA AND SITE VISIT FINDINGS

Consistently with the scope of work, as defined in Section 2 of the present report, during the visit the external independent monitoring group has undertaken an extensive review of the project environmental, health & safety and social monitoring data as reported in the TGL corporate documents, statutory reports to Ghana EPA and AMR to IFC. This review has been supplemented with the visit to the Project facilities, as described in Section 3, in order to evaluate the TGL EHS team performances with respect to the ESAP and related plans requirements.

The relevant findings of the review of the Project Monitoring data and site visits conducted are presented in the following sections and structured in order to reflect the different monitoring components applicable to the Project.

Along with the check of consistency between required, collected and reported data, some observations relevant to possible improvements of current Project practice in implementing monitoring requirements are provided. It is anticipated that no significant discrepancy between monitoring requirements and implemented actions has been identified during the visit.

6.1 EMP ORGANIZATION AND REPORTING

A key factor for the successful implementation of a project Environmental and Social Management System (ESMS) is the availability of adequate staff resources, training programs and reporting standards, consistent with ESAP requirements. The following paragraphs report the relevant data and information collected during the interviews with the EHS team representatives in Takoradi and Accra.

6.1.1 Organization and Staffing

With the reorganization of the group EHS and CSR/corporate affairs functions they have now been amalgamated into a combined function under the title of SSEA, that being Safety, Sustainability and External Affairs (SSEA).

At the time of the site visit the TGL ESHS team structure was going through a transitional period, and while a future organizational structure has been developed, numerous positions are yet to be filled, and there appears to be a gap in the current ESHS reporting structure, as reflected by the overdue review of EMPs (see section 6.1.4.). A potential concern relates to succession planning for the ESHS team given the large restructure currently ongoing. The monitoring team has seen significant progress by the ESHS team over the last few years and effective change management is needed for continuity of ESHS requirements in 2014 to ensure continued performance on ESAP items.

.At the TGL Takoradi level, the Social Investment Team established in 2012 (CSR title changed to SI (Social Investment)), is operating without the SI Manager who resigned a few months ago. Under the future organizational structure, this position is to be filled by a Social Performance Manager. Overall the situation has resulted in a leadership void at the middle management level; considering significant on-going activities for the TEN Project and seismic surveys, the previous CSR Manager - who retired two years ago – has been retained as a consultant due to his extensive experience in dealing with community members and to

ensure the transition to the envisaged organizational change does not result in an overly difficult disruption.

It is commendable that no turnover has occurred among the six Community Liaison Officers (CLOs) appointed to work as the linking focal points between TGL and the communities. Each CLO covers one of the six district/municipalities with which the Project interfaces; as these are the same communities affected by the TEN Project, their work is increasing and their role becoming more significant. They have grown as a better equipped and empowered team, eventually posing a challenge on management for stabilizing their recruitment without affecting the necessary independence they need to have to operate as interface between TGL and the communities to which they belong.

6.1.2 Training

According to the records provided, an extensive training program was carried out in 2013. A wide range of topics have been covered, including environmental monitoring, incident investigation, control of substances hazardous to health, dangerous goods transported by air and sea, applied environmental training, and national vocational qualification training. Specific International Maritime Organisation training continued in 2013 and included IMO level II and level III oil spill response.

A major oil spill response exercise was undertaken over a 2 day period in November 2013, which incorporated testing of equipment, liaison with local communities and emergency services, and included the involvement of various onshore and offshore response teams. In addition to the annual oil spill training exercise, offshore training in boom development and dispersant spraying was carried out on a monthly basis.

The Safety Training Observation Program (STOP or contractors equivalent e.g. CARE) is provided to all offshore and onshore TGL personnel in order to prevent injuries by increasing safety awareness and helping people talk with each other about safety. During the May 2014 visit, the monitoring team observed the systems in place, and the recorded close out of identified issues.

The current EHS training matrix was provided to the monitoring team during the visit, providing an overview of the TGL mandatory training to be completed by staff. As outlined by the Project, a training matrix is held for each department of TGL, with monitoring of training requirements carried out on a monthly basis and employees informed on a six monthly basis on training courses to be completed. Specific individual training records are kept with the TGL HR department. Additional information on training can be found in section 6.3.

6.1.3 Certification

TGL obtained its first stand alone ISO 14001:2004 Certification for the Environmental Management System in 31st October 2012, applicable to the activities including and associated with exploration and production of oil and gas from their Jubilee Field and their management through partnership agreements and contract.

TGL underwent an external independent ISO 14001 annual surveillance audit from the 22 – 24 October 2013 by Lloyds Register Quality Assurance. Some observations and two minor non conformances were raised as a result of the audit, however, the conclusion drawn was that the TGL EMS still met the requirements of the ISO 14001 standard and the certification was maintained.

The FPSO is provided with all required marine certifications and holds MARPOL certification as follows:

- MARPOL CERTIFICATION COMPLIANCE WITH ANNEX 1 - relevant to “Crude Oil Washing Manual”, doc MODEC 0245-MI20-OPSM-0756, rev. D, issued 23.03.2010. The certification was issued by ABS (American Bureau of Shipping), ref 569049, 26 March 2010; and
- MARPOL CERTIFICATION COMPLIANCE WITH ANNEX VI - relevant to “Ship board oil pollution emergency plan (SOPEP)”, doc MODEC 0245-MI20-OPSM-1003, issued 01.04.2010. The certification was issued by ABS (American Bureau of Shipping), ref 572432, 1 April 2010.

6.1.4 Periodical Review of ESAP Related Plans

ESAP requirement #6 requires TGL to regularly review and amend EMPs. During the site visit, TGL provided the reviewed EMPs to the monitoring team. Half of the documents foreseen for review in 2013/2014 have not yet been reviewed. An updated table of the ESMS related plan status is included below.

Table 6.1: ESAP Related Plans and Guidance Reviewing Milestones

Doc.No	Description /Title	Rev.	Type	Issue Date	Doc.Live Cycle (Minimum) / status
TGL-EHS-PLN-04-0004	Jubilee Phase 1 Development - EMP	4	Plan	Oct-13	2 Years.
TGL-EHS-PLN-04-0006	Jubilee Phase 1 Development Env. Monitoring Plan	1	Plan	Nov-12	1 Year. This document is currently being redrafted. New version will cover all TGL operations.
TGL-EHS-PLN-04-0008	Waste Management Plan	3	Plan	Oct-13	1 Year
TGL-EHS-PLN-04-0011	Decommissioning and Abandonment Plan	0	Plan	Jun-11	3 years. Currently being updated.
TGL-EHS-PLN-04-0013	Integrated EHSS Audit Plan - 2013	4	Plan	Jan-14	1 Year
TGL-EHS-PRC-04-0040	EHSS Audit Process - SOP	1	Procedure	Oct-12	1 Year. Procedure update yet to be undertaken
TGL-EHS-PRC-04-0041	EPA Chemical Clearance Permit Procedure	0	Procedure	Jul-12	1 Year. Specific document to be removed and procedure integrated in the Chemical Management Guidelines.
TGL-EHS-PRC-04-0045	EHSS Legal Compliance & Evaluation	2	Procedure	Oct-13	1 Year
TGL-EHS-PRC-04-0047	EHS Communications Procedure	1	Procedure	Oct-12	1 Year. Procedure update yet to be undertaken
TGL-EHS-PRC-04-0049	Aspects O&T EMP Procedure	1	Procedure	Oct-12	1 Year. Procedure update yet to be undertaken
TGL-EHS-PRC-04-0052	EMS Management Framework Process	2	Procedure	Oct-13	2 Years
TGL-EHS-PRC-04-0053	EHS Management Review Process	1	Procedure	Oct-12	1 Year. Procedure update yet to be undertaken
TGL-EHS-PRC-04-0057	Handling of ionising radiation source by TGL contractors	0	Procedure	Jul-12	1 Year. Procedure update yet to be undertaken

Doc.No	Description /Title	Rev.	Type	Issue Date	Doc.Live Cycle (Minimum) / status
TGL-EHS-PRC-04-0058	Norm procedure	0	Procedure	-	1 Year. Procedure update yet to be undertaken
TGL-EHS-PRC-04-0059	Radiation Management System Procedure	1	Procedure	Jul-12	1 Year. Procedure update yet to be undertaken
TGL-EHS-PRC-04-0060	Hazardous Chemicals Management Procedure	0	Procedure	Aug-12	Replaced by Chemical Management Guidelines (TGL-EHS-GUD-EN-0001)
TGL-EHS-PRC-04-0061	MSDS Management and Chemical Selection Procedure	0	Procedure	Aug-12	Replaced by Chemical Management Guidelines (TGL-EHS-GUD-EN-0001)
TGL-EHS-PRC-04-0062	MSDS Database Management	0	Procedure	Jan-13	1 Year. Procedure update yet to be undertaken
TGL-EHS-PRC-04-0064	Ambient Air Quality Monitoring	0	Procedure	Oct-12	1 Year. Procedure update yet to be undertaken
TGL-EHS-REG-04-0001	Environmental Aspects Register	1	Procedure	Oct-13	1 Year
	Public Consultation Disclosure Plan	0	Plan	Sept-10	Draft plan prepared in 2013 still to be finalised

TGL confirmed that the majority of these procedures do not require amendments to be made, however the review period has been determined by TGL and has not been respected. While the monitoring team agrees that significant changes may not be necessary for the procedures, they need to be reviewed within the agreed document review cycle. This internal review failure may be a reflection of the current restructuring within TGL and should be addressed to ensure that procedures remain current and applicable to ongoing Project activities.

From the updated procedures received, no follow-up appears to have been implemented with respect to last year's suggestion of a systematic consistency check among the different documents to ensure their alignment with the actual requirements enforced.

6.1.5 Management Of Change

Consistently with ESAP requirement # 5, the Project has developed a Management of Change (MOC) procedure, issued in January 2011. The MOC procedure is required within the ESMS, in order to effectively manage changes that may be needed with respect to the recommended practice or standards and in order to meet and reflect the operational issues encountered by the Project.

The MOC procedure in place includes the procedural requirements along with person responsible for the implementation of the changes and, in the annex to the document, the MOC request, assessment & approval and close out forms. This procedure does not foresee for external approval from IFC, but it is instead entirely managed internally by line departments.

No environmental MOC was reportedly implemented by TGL in 2013.

Numerous Engineering MOCs were implemented by TGL in 2013 on the FPSO. The monitoring team observed the Technical MOC process during the visit to the FPSO, from the issuing of the Engineering Change Request (ECR) to the review and assessment of the ECR, approval and implementation of the change and the close out of the MOC. The system is well managed and the process documented and verified as necessary.

6.1.6 Reporting

The TGL EHS team provides updates on performed monitoring activities within a number of different reports, including statutory reports to Ghana EPA (provided monthly and annually) and the AMR to IFC.

In agreement with the scope of the work, a verification of consistency of the data reported with respect to the monitoring requirements has been carried out by the independent external monitoring group. In addition, a review of the report formatting and organization has been carried out in order to identify possible areas for improvement.

Some areas for improvement have been identified with respect to the 2013 AMR submitted to the IFC, relating to both social and environmental aspects. In order to improve the content, TGL should ensure that additional monitoring data is provided and data supported with information regarding the monitoring requirements in place (as outlined in the various EMPs). The monitoring team found some inconsistencies between the 2013 and 2012 AMR (as outlined in the biophysical and social sections of the report that follow), and would encourage TGL to provide a summary of environmental monitoring findings to support graphs in the AMR. IFC indicates that as part of the AMR the companies should supplement the findings with additional data when necessary to substantiate the report. A high level TGL review of the AMR would assist in ensuring that the document provides the necessary data and information. Specific amendments to the AMR have been included in the following ESHS sections.

6.2 BIOPHYSICAL COMPONENTS

The following paragraphs present the outcomes of the conducted review of the biophysical environmental monitoring data and Project practice with respect to the EMP and the Environmental Monitoring Program (E Mon P) requirements. For each component the data and information provided by TGL, along with the observations, recommendations and suggestions for improvement are reported.

6.2.1 Waste Management

Waste management produced at the Project facilities includes the following six main streams:

1. solid waste from FPSO;
2. drill cuttings and fluids;
3. barite waste;
4. produced sand;
5. natural occurring materials; and
6. other wastes as defined in the WMP.

All the above components are managed according to the provisions of the Waste Management Plan (WMP).

6.2.1.1 Disposal of Solid Waste from FPSO

A check of the records on garbage collected and sewage water discharged to sea was conducted on board during the FPSO visit. The main EMP requirements applicable to this component are defined by the MARPOL convention.

Based on the FPSO environmental monitoring records and information provided, only sewage and food waste is discharged to sea on line with MARPOL requirements. Quantities of waste disposal to sea and shipped to shore are included in monthly reports provided to the Gh EPA and tracked in a monthly waste tracking spreadsheet. Reporting of quantities discharged appear to be consistent with EMP requirements.

6.2.1.2 Drill Cuttings and Fluids

The relevant data concerning well features and the quantities of chemicals employed and lost/discharged to sea are provided in the Terminal Report. These data are consistently provided to Gh EPA through the monthly reporting.

The main requirement set for this waste category concerns the maximum allowable Oil on Cuttings (OOC) concentration for the Non Aqueous Drilling Fluids (NADF) discharged to sea. The OOC concentration is quantified through measurements on board collected every 150 feet of advancement.

According to both Ghana EPA and EMP requirements in place, low contaminated cuttings and fluids are discharged directly to the seabed (depth ranging between 1,100 and 1,700 meters), while high contaminated materials are collected and disposed of through the Waste Management Contractor Zeal in Takoradi (see following sections for details). In general, no discharge to sea is allowed except where:

- OOC concentration does not exceed 2% by weight on dry cuttings; and
- discharge is via a caisson at least 15m below surface level.

Also, according to Ghana EPA requirements, in case of failure to meet the above level of OOC, surcharges are imposed as reported in the following Table. In case of OOC>15%, discharge to sea is prohibited.

Table 6.2: Surcharges on OOC

Category	OOC (%)	Surcharge/Well (\$)
1	OOC<2	No surcharge
2	2<OOC<5	20,000
3	5<OOC<10	40,000
4	10<OOC<15	80,000
5	OOC>15	Prohibited

Cuttings are treated using a multi stage system managed by MI-Swaco and Brandt prior to discharge. As reported in the 2013 annual report, For the period under review, an average OOC concentration of 2.18% was achieved by the Project per well for 2013 drilling

operations. A total of 7440.5t of Jubilee cuttings were discharged via a caisson from the drillings rig after they had been treated to remove excess NADF.

6.2.1.3 Barite Waste

Barite is used as the weighting agent for drilling fluids by the Project. Barite quality testing is performed before its use, as per the Environmental Monitoring Plan, by checking the concentration levels for Mercury (maximum acceptable concentration 1 mg/kg) and Cadmium (max 3 mg/kg) for each stock delivered to the Takoradi port.

The Company Mi Swaco purchases barite with a test certificate on Mercury and Cadmium content already attached. The annual average of samples results for 2013 show that results are in compliance with the above applicable limits with a sample average of 0.43 mg/kg for Mercury and 0.47mg/kg for cadmium.

6.2.1.4 Produced Sand

Produced sand is derived from gravimetric separation of oil collected and treated at the FPSO. The EMP requires the control of oil concentration in sand before discharging: residual concentration must be less than 1% as per IFC and Gh EPA requirements.

For the period under review no sand was produced or discharged from the FPSO. Data are consistently reported in the Gh EPA statutory report (zero quantity of produced sand) and tracked on a monthly basis in the FPSO environmental monitoring spreadsheet.

6.2.1.5 Natural Occurring Radioactive Materials

The presence of natural occurring radioactive materials, possibly embedded in the drill cuttings recovered, must be monitored by the Project. Measurements are conducted on board using a Geiger meter. No sand was produced from the Jubilee Field, and so natural occurring radioactive materials did not represent an issue for the period under review.

6.2.1.6 Other Wastes

Beside the above listed and described waste categories, the Project generates a large number of wastes which are managed in agreement with the WMP provisions. Waste categories include paper and plastic, metal scraps, wood, food and hazardous wastes, including chemicals, tank slop, oily sediments, oils, fluorescent lights and batteries.

These wastes are collected and disposed on shore through the appointed Waste Management Contractor Zeal (see following section relevant to the visit conducted at the Zeal facilities).

Adequate waste segregation is performed at the Project facilities visited and the log of quantities produced and disposed of are promptly available at the Project premises. The waste manifest form which needs to be completed and accompany any transfer of any waste between TGL facilities and /or all waste handlers is now being used and was observed during the site visit.

6.2.1.7 Waste Management Contractor in Takoradi

Zeal is the project waste management contractor for TGL in Takoradi. A visit of all the Zeal facilities was conducted in order to evaluate the waste management performances, determine whether actions identified during the TGL audit in 2013 have been implemented, and identify possible critical areas or areas of improvement with respect to the EMP and WMP requirements.

The Zeal facilities were found to be well managed and the housekeeping was observed as adequate and in line with Project standards. The waste management facility in Takoradi continues to be used for:

- treatment of oily water;
- cleaning and compacting of used drums;
- recycling of plastic, metal and wood wastes;
- collection of hazardous waste (currently stored in drums in a covered and protected area below a newly constructed shelter);
- incineration of hazardous waste;
- recycling of drilling cuttings and ash through stabilization with cement and lime and production of construction bricks; and
- several other waste segregation and processing activities.

The facility is provided with a dedicated storm water runoff collection system (connected to an oily water treatment plant) and two groundwater monitoring wells, respectively installed upstream and downstream of the oily water treatment plant. The wells are periodically sampled for chemical analyses.

Zeal was recently audited by Tullow (2 weeks prior to the site visit) to determine the waste facilities level of compliance with Tullow procedures and to follow up on Audit recommendations from 2013. At the time of the site visit, the audit report had not yet been completed, however, based on Project feedback, the main findings were in relation to mitigating potential EHS risks associated with hazardous waste in transit from the port to the treatment site and site ongoing emission monitoring data. A request has been made by Tullow for Zeal to develop a comprehensive plan to mitigate potential risks with hazardous waste transport along the road from the Port to the facilities, especially as the road passes through many local communities. This was also an issue identified by the external monitoring team and during the Gh EPA audit undertaken last year at the waste facility. Tullow has also requested additional monitoring data regarding site emissions that did not look realistic (regarding O₂ levels in incinerator flue gas), and are awaiting Zeal feedback.

Regarding Tullow identified actions to be taken by Zeal from last year's audit, the recent audit confirmed that an environmental aspects register, emergency response plans and other related plans have now been developed and implemented at the Zeal waste facility.

TGL has been working closely with Zeal to develop methods for the treatment and disposal of all the waste streams generated by TGL's operations, compliant with the requirements of the WMP. Furthermore, Zeal Management has shown a commitment to invest in facility upgrades and growth, and now accept waste from neighbouring countries (mainly from the oil and gas sector) and have initiated discussions for potential future waste recycling opportunities for reuse of waste material in the agricultural sector. Zeal have also been involved with TGL in emergency response training exercises held in 2013, incorporating members of local communities in emergency oil response scenarios.

Regarding recommendations made by the monitoring team in April 2013, Zeal have initiated a tracking and verification system to ensure that bricks produced from the hazardous material incinerator ash are used in industrial facilities only. This includes a register detailing the client, the final destination of the bricks, quantity supplied and visual verification of the site.

The Gh EPA audit undertaken at Zeal facilities in February 2014 resulted in the renewal of the facility operational permit for the next 3 years, while port reception facility permits are valid until 2015.

6.2.2 Waste Water Management

Several waste water streams have to be monitored by the Project in accordance with the EMP requirements. These include:

- produced water (from crude oil treatment at FPSO);
- sewage water;
- deck drainage, bilge water and ballast water;
- FPSO ballast water;
- Desalination Plant Brine Discharge;
- Desulphation water (associated with the Desalination Plant);
- well completion and work over fluids;
- spills; and
- shore base liquid discharges.

6.2.2.1 Produced Water

Produced water is derived from gravity separation of crude oil collected and treated at the FPSO. It is discharged to sea prior to verification of oil in water content that has to meet the EMP reference limits (<42 mg/L daily maximum and <29 mg/L daily average over one month period). Prior to being sent overboard, after being cooled to 40°C in the Produced Water Coolers, water quality is continuously monitored through an analyzer and off-spec (oil concentration > 20 mg/L) water is automatically diverted to the Off-spec Water Tank for further treatment and/or additional retention time.

The data collected are consistently reported in the AMR and in monthly reports to the Gh EPA. Data are monitored directly on the FPSO throughout the day at the laboratory located onboard. Some exceedences of Tullow limits of oil in water (OIW) content from produced water were reported for 2013, however, the monthly average EPA discharge limit was met throughout the year.

One minor spill was reported for 2013, when a leak from an overboard discharge valve resulted in a minor leak (0.2 liters) of off-spec produced water leaked to sea. The monitoring team observed the incident report, incident response timing and close out of the incident which has followed TGL procedures.

6.2.2.2 Sewage Water

Sewage water on the FPSO is treated on board and checked for residual chlorine content before discharge ($Cl < 1$ mg/L). Chlorine content is analyzed on board, while presence of floating solids and discoloration is conducted visually by the on board personnel. A spot check of the collected records has been conducted during the visit at the FPSO.

6.2.2.3 Deck Drainage, Bilge Water and Ballast Water

All these three waste water streams are collected on board and conveyed to a retention tank, connected with an Oil Water Separator (OWS) unit. Monitoring of effluent wastewater quality is conducted through an automatic online analyzer to check for presence of oil in water (maximum allowable discharge limit set at 15 mg/L). Daily records on concentration measured and quantity discharged are present on board and transferred to EHS personnel on shore for reporting.

As reported in 6.2.2.1, some Tullow exceedences in OIW discharge limits were reported in the period under review. Regarding OIW content of deck drainage water at the FPSO, exceedences between the range of 20-35 ppm have been recorded and attributed to suspended solids in slop tanks and off-spec water tank and contaminants from slops water. The majority of the exceedences are below the EPA limit, however exceedences appear to have been consistently reported during 2013.

- the monitoring team suggests TGL provide additional information regarding exceedences and actions taken to ensure OIW ppm limits comply with TGL limits, with details to be reflected in the AMR.

6.2.2.4 Desalination Plant Brine Discharge

Brine from desalination unit is discharged to sea from both FPSO and the Mobile Offshore Drilling Unit (MODU). Volumes of desalination brine discharged, potable water produced and consumed are monitored through flow meters and reported daily and monthly.

The quality requirement for discharge of desalination brine is related to the quantification of the salinity which is carried out on board before discharge.

6.2.2.5 Desulphation water (associated with the Desalination Plant)

Desulphation water is a byproduct of the desalination plant. It is treated through a Sulphate Reduction Unit and then re-injected in the reservoir. No particular EMP requirement is set for this stream beside the log of quantities re-injected that is consistently collected by the Project.

6.2.2.6 Well completion and work over fluids

This waste water stream mainly consists of oily water with Calcium Chloride used for well testing and clean up. According to EMP requirements oil in water content has to be checked prior to discharge (same reference limits set for produced water, plus pH in the 6-9 range). This stream is analyzed on board through automatic online analyzer prior to discharge. In case of exceedance of reference limit it is collected and disposed of on shore at Zeal WMF, where it is treated through the oily water treatment unit. Logs of quantities and chemical tests are correctly collected by the Project and have been viewed by the monitoring team during the site visit.

6.2.2.7 Spills

Two minor spill events occurred in the period under review. On the 13/06/2013 the previously mentioned leak of 0.2 l of off-spec produced water leaked to sea, and on 08/10/2013 a small quantity of hydraulic oil was found to have leaked to the concrete in the pipe storage yard. Both spills are correctly reported by TGL, summarized in relevant reports and closed out.

The monitoring team notes that the 2013 AMR does not provide sufficient information to distinguish between environmental spills and environmental harm incidents. According to TGL, environmental harm refers to any leak or spill that has impacted on the environment, while spills/flares/leaks refers to environmental incidents that have not had an impact on the environment (near misses or confined leaks).

- the monitoring team suggests Tullow provides additional details on environmental incident reporting in the AMR, including outlining how statistics are determined, what constitutes an environmental harm incident, and recorded environmental spills/flares/leaks.

6.2.2.8 Shore Base Liquid Discharge

No discharge is currently produced at the shore base sewage and storm water runoff collection system with the exception of the storm water runoff collected at the Chemical Storage area at the Takoradi port.

The storm water drainage system at the pipe yard and chemical storage area is connected with a closed drain system provided with a security valve (kept closed) and a holding tank periodically purged. The TGL Shore Base has recently installed a new sewage treatment unit. EMP requirements for liquid discharge monitoring have commenced in the last month. According to Tullow personnel, initial data appears to be in line with limits, however, the sewage treatment unit has only recently been activated and ongoing monitoring will provide more consistent tracking data.

The chemical storage area at the Takoradi port is provided with a containment system and storm water runoff collection system. The downstream valve is kept closed and opened (to drain storm water to the sea) when rainwater accumulates.

6.2.3 Air quality

Two main components follow within the EMP Air Quality monitoring requirements:

- emission testing, including: point emission sources from combustion devices on board, point emission sources from onshore activities, fugitive emissions and flaring; and
- ambient air quality monitoring at FPSO and shore bases.

6.2.3.1 Emission Testing

The Project consistently reports the Green House Gases (GHG) emissions data within the AMR and Statutory reports. The GHG quantification is based on the use of empirical formulas starting from the fuel type and quantities used at each combustion source. The GHG emissions are quantified taking into consideration FPSO production operations (including fixed wing and helicopter aviation and marine supply vessels), flaring, rig operations and TGL totals. TGL activities resulted in a total of 640,777.04 tonnes of CO₂ equivalent in 2013. The following table shows the GHG emissions from various sources within TGL operations for 2013.

Table 6.3: Total GHG Emissions from TGL activities in 2013

GHG Emissions 2013	FPSO Production Operations (include aviation and marine) Total CO ₂ e	tonnes	580,340.53
	Rig Operations Total CO ₂ e	tonnes	60,436.51
	TGL Total CO ₂ e	tonnes	640,777.04

The Project carried out a stack and fugitive emission campaign at the FPSO on the 20-21 November 2013 to evaluate the emission levels from Gas Turbine Generator (GTG), Emergency Boilers and Port Side Crane. Sampling has included the measurement of O₂, CO, NO, NO₂, CO₂, SO₂, CH₄ and VOC and it has included fugitive sources, where visible emissions were noted.

Based on the results, exceedances have been reported at GTG A (71mg/Nm³) and at GTG C (89mg/Nm³) versus a reference limit of 51 mg/Nm³ (IFC applicable guidelines). This study (report issued by SGS on the 6th of January 2014) has been disclosed to Gh EPA, with a summary of results included in last AMR.

Exceedences of NO_x have now been detected during the 2012 and 2013 monitoring campaigns. Based on TGL feedback, the TGL is currently working to establish manufacturer design specifications to determine normal operating emission levels prior to developing actions to address these exceedences. TGL also undertake Ambient Air Quality monitoring onboard the FPSO, and according to measurements taken on-board the FPSO, results indicate that NO_x levels are not a problem although the stack emissions to air exceed IFC guideline values.

- the monitoring team suggest that TGL undertake additional emissions testing and initiate measures to address the exceedences if measured emissions are found to exceed manufacturer emissions data for the units.

6.2.3.2 Flaring

Based on Project EMPs and agreements defined by the Gh EPA, flare use is limited to discharges in case of process upsets and in case of maintenance of equipment/tanks. Although no specific limit is enforced by Gh EPA or IFC on maximum allowable flaring level, the Project has autonomously targeted a maximum flaring volume equal to 2.5% of the total gas produced. This target has been then reported in the operational permit by the Gh EPA. The environmental certificate issued to TGL allowed flaring until May 2013. As the onshore gas infrastructure project is delayed (with current completion status unknown), TGL were issued with an amendment to the environmental certificate that was issued on the 24th May 2013, outlining "No production flaring of associated gas when the gas infrastructure project in the western region is complete and operational". Therefore TGL will continue to flare, in line with the EPA certificate, until the gas infrastructure project is complete.

As outlined in the AMR, flaring levels increased during the second half of 2013, well over the 2.5% limit. During the site visit, the monitoring team discussed with TGL the excess in flaring figures as presented by the Project and were provided with additional clarification on the reported exceedences of the adopted EPA limit. According to TGL, the elevated levels were due to maintenance, shutdowns and plant upsets (for e.g. high levels in September were due to plant shutdown and October levels were due to flare rupture disc failure). This

breakdown has not been sufficiently reported in the AMR and while an additional graph is included in the AMR showing the year on year reporting of flaring, the AMR does not provide percentages of flaring due to these additional factors. The monitoring team suggested TGL to record flaring percentages for extraordinary high flaring activities to determine the actual exceedences of the 2.5% limit based on normal operations. During on site discussions, TGL explained that the EHS team has been recording these figures for 2014 and agreed to provide additional information in reports going forward.

After the site visit, TGL provided the monitoring team with additional information on the flaring process, and have amended the graph to allow TGL to track compliance with the 2.5% EPA limit for abnormal flaring (see Figure 6.1 below). TGL have agreed to provide additional information in reports going forward, and will provide additional graphs and flaring statistics in the monthly Gh EPA reports going forward.

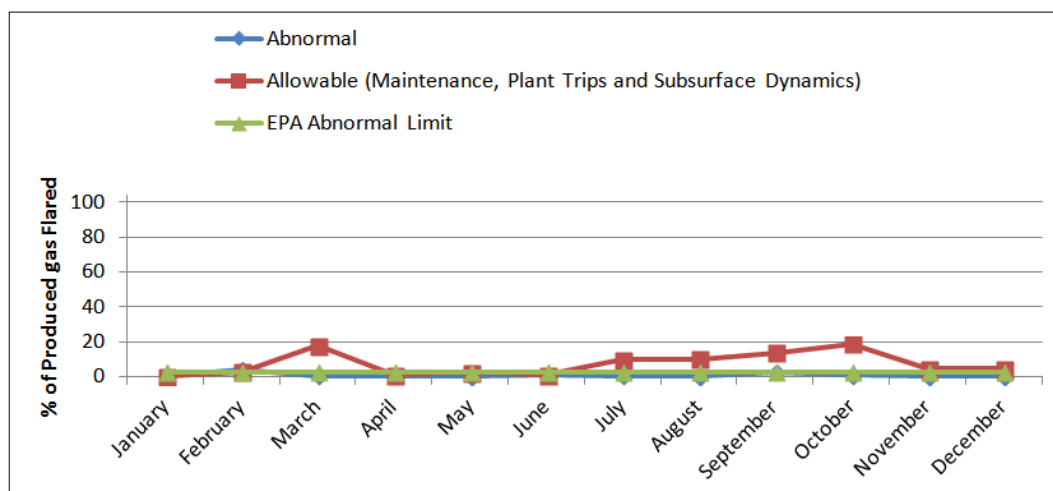


Figure 6.1: Production Operations Flaring Trends 2013

6.2.3.3 Ambient Air Quality Monitoring

Ambient Air Quality Monitoring (AAQM) is required by EMP for both FPSO and onshore facilities in order to evaluate the levels of NO_x, NO₂, SO₂ and VOCs at ends of FPSO, downwind and upwind of the vessel and at the Shore Base and Port Facilities. A comprehensive sampling campaign has been conducted at the FPSO indoor, FPSO outdoor, Accra office, Takoradi pipeline and the Takoradi staff house in June 2013 by the TGL Environmental team, FPSO EHS specialist and the Takoradi EHS advisor. The following conclusions were drawn:

- all locations onshore and offshore had acceptable ambient air quality levels in respect of the parameters tested,
- concentrations of NO_x at the Accra office, although under with EPA limits, were found to be higher than at other Project sampling locations. This could be attributed to the office being located in close proximity to the N1 six lane highway with regular heavy traffic and road work equipment.

As outlined in the last external monitoring report, it was found that upwind and downwind sampling was not undertaken at the FPSO and therefore in contradiction of the EMP

requirements. The TGL team outlined that during 2013, the AAQM was not undertaken at upwind and downwind sampling locations, and that sampling locations are now onboard the FPSO. The AAQM EMP has not yet been updated to reflect this change.

- TGL should ensure that environmental monitoring plans are updated within the minimum review period to reflect emission sampling locations for year on year comparison of ambient air quality results.

6.2.4 Chemical Management

Chemical Management EMP requirements are currently covered by several different Project plan and guidance documents, including the WMP, the Operation Guidelines for Marine Ops / Haz Substances - Transport by Sea, the Operation Guidelines for Storage of Hazardous Mats, and the Operation Guidelines for Road Transportation Haz Substances - Transport by Road. Currently, all these guidance documents are fully implemented by the Project. As outlined in section 6.1.4, the Chemical management EMPS are being integrated into a single overarching Chemical Management Guideline (TGL-EHS-GUD-EN-0001). At the time of the site visit this document was under preparation.

During the visits conducted at the FPSO, Shore Base pipe yard and chemical storage area, and the Takoradi port storage areas, housekeeping was observed to be of a high standard. Hazardous material labeling and Material Safety Data Sheets (MSDS) were observed by the monitoring team and all storage areas were found to be properly contained and covered to prevent exposure to rain.

6.2.5 Ecology

The components of ecology monitoring is embedded in the Ecology monitoring requirements. During the site visit, the monitoring team were provided with information regarding

- the monitoring of marine avifauna at the FPSO; and
- the marine mega fauna monitoring.

6.2.5.1 Marine Avifauna Monitoring

Logs of marine avifauna sightings relevant to 2013 were observed by the monitoring team during the visit. Observations collected show some significant observations were collected during the period under review, including observations of whale and dolphin species that are unrecorded in Ghana. Aggregation of data for 2013 has been carried out and a report produced by an external consultant for 2013 (Gardline report 10038 – Marine mammal and turtle observations in the Jubilee and TEN fields 2013). A total of 114 sightings of marine mammals and turtles are reported for 2013 (with roughly 80% dolphin sightings), with 28% of all sightings in the Jubilee field. The outcome of the Gardline report was the recommendation that a dedicated baseline survey is needed to obtain accurate representation of abundance and distribution of marine mammal and turtle species in the TGL project areas.

6.2.5.2 Marine Mega fauna Monitoring

Monitoring is ongoing with sighting reports for 2013 provided in the Gardline report. As outlined in the AMR, an unusually high number of whale carcasses have been washed up on beaches in Ghana. Local sentiment was originally focused on the oil and gas industry as being the culprit behind these deaths, and as such a task force has been established to

determine the causes of the high numbers reported in 2013. At the time of the site visit, a report was being developed based on the findings of the task force.

- TGL will conduct a follow up fishery study and it has agreed to support the EPA with the inclusion to investigate the phenomena of dead whales being washed ashore in the Gulf of Guinea.

6.2.6 Noise

Environmental Noise Monitoring is required by the environmental monitoring plan both at the FPSO (at increasing distances from the vessel till 5nm) and at the onshore Project facilities, to be carried out biannually at the FPSO and shore bases.

No ambient noise survey was carried out at the FPSO in 2013 as the most recent noise survey was undertaken in September 2012.

A noise survey was carried out at the TGL shore base in Takoradi during the period in review. High levels were recorded at the offices, potentially due to the proximity of the air base nearby. According to the Project, levels recorded were not damaging to hearing, however, some office glass windows were replaced/strengthened to further reduce noise levels within the office.

As with the AAQ requirements, the environmental noise monitoring plan requires monitoring to be undertaken at different distances from the FPSO (upwind and downwind). During the last FPSO noise monitoring survey, the monitoring team notes that these sampling locations were not used by TGL. The Project should ensure that sampling locations follow those stipulated in the EMPs in future monitoring activities.

6.3 HEALTH & SAFETY COMPONENTS

6.3.1 General

The main scope of this review was to verify if all TGL Safety Management System requirements have been fulfilled, or, even, improved during the period under review.

The conducted review has been carried out by checking each H&S requirement related records collected for the period under review (April 2013-April 2014) including amongst others:

- TGL Safety Management System procedures;
- Updating in Occupational Risk Management;
- Updating in Process Safety Management;
- TGL/MODEC incident and near miss recording, investigation and implementation of corrective actions;
- H&S Training activities;
- H&S internal and external auditing program implementation;
- KPI (Key performance indicators);
- Oil Spill Response Plan drills exercise requirements and related training provisions.

6.3.2 Interview with Tullow and MODEC Team Representatives in Takoradi and Accra - Updatings in Occupational H&S

The TGL and MODEC Safety Management system is still adequate and effectively maintained for the control of all H&S occupational risks.

In the perspective of the continuous improvement required by the safety management system, significant improvements have been introduced acting within the management of both occupational and process risks.

Specifically, from the Occupational H&S point of view, the updating of the “Permit to work procedure (PTW)” can be considered the main improvement (the relevant new Permit to Work procedure OPERATIONS: PTW1 MAIN PROCEDURE – DOC 0245-MI20-OPSM-0403, rev.3, issued on 22 March 2014, has been verified, together with the new forms).

The PTW procedure has the scope to ensure that operations are carried out in a safe, controlled and coordinated manner.

Some of the main improvements resulting from the implementation of the new PTW system are:

- updating of responsibilities, specifically including the HSEQ specialist amongst those responsible for issuing the PTW;
- requirements for a more detailed description of the work to be carried out;
- requirements for a more detailed identification of the hazards related to the operation and of safeguards to be implemented in order to achieve minimization of related risks;
- provisions for a procedure for times when work has to be suspended (i.e. stopped for a period before it is complete);
- provision of a formal hand-over procedure for use when a permit to work is issued for a period longer than one shift or when permit signature is changed;
- complete re-issue of Lock out/Tag out procedures, separating the “Process/Mechanical Isolation procedure” and the Electrical Isolation Procedures (The relevant “PTW Vol.4 – Electrical Isolation Procedure” has been verified during the visit on the FPSO);
- new PTW forms are issued with the introduction of the new procedure;
- provision of proper training, at all levels, regarding the implementation of the new PTW procedure;
- implementation of TRA (Task Risk Analysis) to all routine and non routine hazardous operations carried out in the FPSO

Moreover, the TGL management commitment towards safety has been clearly expressed during the interviews.

A “walkthrough” on the FPSO has been carried out during the visit, in order to examine the workplace and to verify standards of housekeeping, safe access and fire precautions.

From the site visit it was observed that appropriate PPE was correctly worn by all operators in the visited sites. Furthermore, the Site working areas and accommodation are correctly identified, clean, well lit and protected as far as possible from the elements (rains, wind, etc.).

All materials are stored and stacked safely with sound packing and pallets. Hazardous, toxic or dangerous substances are suitably contained and appropriate hazard warning signs are

clearly displayed where hazardous, harmful or toxic substances are present. MSDS are available for all chemicals currently stored or used. Specifically, MSDS are available at the place of storage such that immediate emergency advice is at hand and appropriate action can be taken.

Emergency escape routes and muster points are clearly marked and kept free of obstructions at all times.

6.3.3 Updates in Process Safety

Several actions have been implemented during the last year in order to ensure the most effective control of process safety related risks (specifically Major Accident Events).

Specifically:

- development of new HAZARD and OPERABILITY STUDIES (HAZOP) for all FPSO process units (Topside and Turret), to revalidate the previous HAZOP studies after more than 2 years of operations, chaired by a Third Party. The implementation of the resulting actions is on-going, based on the prioritization of the actions themselves, resulting from the HAZOP sessions;
- development of HAZOP and/or HAZID (Hazard Identification) studies for all process modifications falling under the requirements of the MOC procedure. The implementation of the actions resulting from HAZOP/HAZID studies is carried out in accordance with the MOC procedure;
- complete reissue of the Safety Case (on-going activity). Safety case being updated to reflect operating experience, changes, state of the art application of risk assessment methodologies etc. It is extended to address full field activities (including sub-sea). The safety case also applies ALARP (As Low As Reasonably Practicable) using a more quantitative approach, definition of performance standards and review against Tullow corporate guidance. In addition, a specialized company (Gexcon) was commissioned to conduct a study to address dispersion and explosion concerns by means of 3D modeling and using “state of the art” software model. For the time being, the following parts have been re-issued:
 - Part 1 – Introduction and management summary,
 - Part 2 – EHS management system description,
 - Part 4 – Formal safety assessment and hazard effect analysis,
 - Part 7 – Conclusions and approval.

In order to achieve a better differentiation among major hazard events with varying severities, a new 7 x 7 risk matrix has been introduced for risk assessment process purposes (in the current 5 x 5 risk matrix, limiting the highest severity class to “multiple fatalities” may not be sufficient for addressing major hazards).

In this case there would be no distinction between an event involving for e.g. two fatalities associated with a limited fire on an offshore module and an event leading to total loss of a facility involving the loss of maybe 20 to 100 lives.

The new 7x7 risk matrix will allow addressing the full range of risks which may be encountered, and to distinguish between risks that are materially different in terms of “tolerability” or impact on company reputation and its market value.

			Severity						
			1	2	3	4	5	6	7
People			Work related injury or illness which requires first aid, restricted duties etc. Does not require absence.	Work related injury or illness resulting in personal being absent from work (LTI). Any injury or illness to public.	Work related injury or illness resulting in permanent disability. Any injury or illness to public requiring hospitalization	1-2 worker fatalities or 1 public fatality	3-10 worker fatalities or 2 to 5 public fatalities	11-50 worker fatalities or 6-25 public fatalities	>50 worker fatalities or >25 public fatalities
Property/ Equipment Damage/Loss			>\$10,000 - \$100,000	>\$100,000 - 1MM	>\$1MM - 10MM	>\$10MM - 100MM	>\$100MM - 1B	>\$1B - 10B	>\$10B
Frequency	1	Similar event has not occurred within the oil industry (10-5 or less)	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM
	2	Similar event has occurred on any installation within the oil industry (10-4 to 10-3)	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH
	3	Similar event has occurred on a similar installation within the Oil Industry (>10-4 to 10-2)	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH
	4	Similar event has occurred or is likely to occur within Tullow Group (>10-3 to 10-2)	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	HIGH
	5	Has happened once at facility or facility has experienced near miss (>10-2 to 0.1)	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	HIGH	HIGH
	6	Likely to occur several times over lifetime of facility (>0.1 to 1)	MEDIUM	MEDIUM	HIGH	HIGH	HIGH	HIGH	HIGH
	7	Happens on average at least once per year at facility (>1)	MEDIUM	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH

Figure 6.2: 7x7 Risk Matrix

The complete review of the Formal Safety Assessment (FSA), carried out using state of the art methodologies and tools has led to the identification of some accident scenarios that still fall in the “unacceptable risk region” (red area) of the risk matrix.

Remedial actions have been, nevertheless, identified and introduced in Part 6 of the Safety Case (“Remedial Action Plan”).

- it is highly recommended to implement as soon as possible the identified actions in order to reduce such risks to the ALARP region of the Risk Matrix.

6.3.4 Safety Critical Elements

As part of the revision of the Safety Case (specifically of Part 5 – Safety Critical Elements Management), Safety Critical Elements (SCEs) and performance standards identification has been revised to reflect current Tullow corporate guidance and to take into account the latest

major hazard identification, as it comes from the review of the FSA (SCEs are considered the most important items of equipment, procedures or activities for managing risk related to FPSO operations and to reduce the risk to ALARP).

Performance Standards have been developed for all Safety Critical Elements and define key management information, such as:

- SCE goal (description of SCE role in the hazard management);
- Major Accident Hazard reference (Major Accident Hazard for which the SCE is barrier);
- SCE system description;
- SCE system design basis;
- SCE functionality; and
- Reliability/Availability of the SCE (assumptions used within the Formal Safety Assessments of Safety Integrity Level or other standards which provide the basis for how likely the SCE or its individual components will perform on demand and for what portion of time they will be capable to perform).

All SCE are managed through a centralized system (AMOS Maintenance and Integrity Management System) which generates a formal report, with the details of the status of SCE maintenance (compliance) and reports on SCE failing to meet their performance standards.

SCE maintenance routines that fail to meet their performance standards will be identified through the generation of a priority work order. Maintenance, inspection and testing requirements are identified for each SCE, ensuring that maintenance/inspection/testing are performed at appropriate times by competent personnel.

A record of such activities and resulting findings are maintained in the system, addressing any deficiencies and taking actions required to maintain risk ALARP.

Performance standards for each SCE are detailed within the specific AMOS maintenance routines. The system generates formal reports detailing the status of SCE maintenance (compliance) and reports on SCE failing to meet their performance standards. Sample records of tests carried out on SCEs have been verified during the visit on-board.

6.3.5 Auditing

H&S auditing program is implemented in accordance with the Company procedures:

- “EMS Management Framework” (doc TGL-E°HS-PRC-04-0052); and
- “EHSS audit process SOP” (doc TGL-EHS-PRC-04-0052), including the requirement of the annual audit plan, auditor approval process, monitoring of audit program, EHS audit performance measuring, planning and execution of the audit, preparation and issue of the audit report and verification of audit findings close out actions.

Specifically, in 2013-2014, audits were conducted onboard the FPSO which were categorized into the following:

- client (TGL) Audits: Audit by Tullow February 11-13th 2013 (FPSO MU21 EHS Compliance Audit): no non conformances identified (minor findings);
- corporate (MODEC) audit carried out in March 2014, report doc no.2507-M360-00A1-0214, rev. 0. Some actions for improvement have been identified, currently ongoing;

- daily investigations are performed on the FPSO, with the issue of a daily report, including indication of possible H&S areas of improvement;
- senior leadership walkthroughs are performed every 2 weeks, covering areas of the FPSO based on a predefined plan;
- internal weekly audits are carried out on the FPSO. Actions identified are introduced in the Corrective Actions Management System and correctly followed up. Actions requiring only maintenance activity are immediately converted into work orders;
- specific audits are conducted on the FPSO on the application of PTW Procedure, through a formal check list (177 PTW audited in 2014; 150 fully compliant);
- Health & Hygiene inspections performed weekly on FPSO.

During the visit, a random check was carried out in order to verify the correct implementation of auditing procedures and the implementation of identified corrective actions.

Specifically, the following were checked:

- report from Corporate (MODEC) audit: “2014 MODEC Group HSEQ “, FPSO Kwame Nkrumah (KNK) Audit Report” (doc 2507-M360-00A1-0214 rev .0), dated 12 March 2014. The audit included the review of documents and records, interviewing of FPSO staff with a high level operational responsibility and a tour of operational and non-operational areas of the vessel, making observations. The audit findings were collected into 6 categories: Document Verification, Field Verification, Employee Verification, Employee Interview Verification, Physical Conditions Tour Verification and Compliance Verification. The corrective actions were included in the Corrective Actions Close Out Report (CAR) management systems and the full implementation of all of them was verified;
- reports of audits carried out on PTW system, resulting in a general complete compliance with the requirements of PTW procedures; and
- records from some “Site Safety Inspections”.

It should be noted that all actions resulting from audits, incident/near miss investigations, site safety inspections, safety observations and drills carried out on the FPSO are managed through a unified electronic system, called the CAR MOC REGISTER.

For each identified action, a corrective action close out report is generated, as per HSEQ Corrective Actions Procedure (doc no. 0245-MI20-OPSM-1420 rev. 1), including the tracking number, priority ranking, due date, action type, non conformance description, recommended corrective action and close out, with verification of action and implementation, including references to supporting documentation and eventual attachments.

6.3.6 Training Activities

Extensive training activities have been carried out for all H&S issues in the period under review.

Specifically:

- Basic Incident Investigation training has been completed for all FPSO crew and an advanced Incident Investigation, Root cause analysis and reporting training provided for all supervisory level roles onboard;

- as already stated in the 2013 Annual Monitoring Report , project personnel have been trained in health and safety matters including accident prevention, safe lifting practices, the use of MSDS, safe chemical handling practices, proper control and maintenance of equipment and facilities, emergency response, PPE, emergency response, etc;
- all contractor and Tullow staff offshore underwent external and internal training to ensure they meet the competency level required for their various roles as per the training Matrix;
- conducted Confined space training and rescue from height for personnel onboard the FPSO;
- roll out of Safety Case to TGL and MODEC personnel is planned, with focus upon:
 - what is a Safety Case?
 - what is its purpose?

The safety case provides assurance to management that MAEs have been identified and that risks are managed to ALARP (Parts 1,2,4, 6&7) – “No Surprises”, and informs workers of the risks from MAEs and identifies their individual roles in maintaining risks ALARP (Parts 4&5).

6.3.7 Oil Spill Response Plan Specific Training

An onshore practical training exercise was held on the 25 May 2013. The purpose of the training was to refresh the IMO1 Site Supervisor qualification for five delegates who currently hold the qualification. In order to ensure the Tullow Site Supervisors are ready to respond as effectively as possible to an incident, quarterly training is conducted.

On 16th July 2013, a number of staff from Takoradi have undergone IMO1 Site Supervisor training. The three day training package leads to an internationally recognised qualification, which in order to be kept current, needs to be re-assessed on a regular basis through the medium of practical exercises and presentations.

In the following table, the summary of formal Oil Spill Response Training organized by TGL in 2013 is presented.

Table 6.4: Oil Spill Response Training Undertaken in 2013

Course	Date	Participants	Description
IMO 1 Beach master / Site Supervisor	24 th May	Logistic Support Team members (5 personnel)	Refresher training
	16 th July	Quayside Coordinators (3 personnel)	Refresher training
	9 to 11 th Sept	Marine Department in Takoradi (5 personnel)	IMO 1 delivered by OSRL secondee in Country at Casablanca Beach
	12 th to 14 th Sept	Marine Department and the four Offshore Environment Health Safety and Security Coordinators (OEHSSC) (9 personnel)	IMO 1 delivered by OSRL secondee in Country at Casablanca Beach
	16 th to 18 th October	Community Liaison Officers (CLO's) (6 personnel)	IMO 1 delivered by OSRL secondee in Country at Casablanca Beach
	4 th to 6 th Oct	Social Investment Team and Trainee well engineering EHS advisor(9 personnel)	IMO 1 delivered by OSRL secondee in Country at Casablanca Beach
IMO 2 Offshore training	16 th April and September	Offshore crew of the EHS vessel Seacor Master (7 Personnel)	Delivered offshore onboard the vessel
IMO2 Offshore training	16 th April and September	Offshore crew of the EHS vessel Seacor Master (7 Personnel)	Delivered offshore onboard the vessel
IMO 3 Oil Spill Management Workshop	Jan through to Dec 13	Production team members, Base manager and EHS advisers and two EPA Representatives (9 Personnel)	Delivered in Southampton throughout 2013

6.3.8 Incident Investigation

Safety Events (incidents, near misses) are properly recorded and analyzed, on the basis of the TGL “Reference Incident Management & EHS Statistics Reporting Procedure”.

The TGL procedure also includes specific training on incident investigation.

MODEC has in force its own procedure “Incident reporting and investigation”, dated 30th of May 2011, applicable to the recording and investigation of incidents and near misses that occur on the FPSO. The approach is fully in accordance with the TGL procedure and includes:

1. incident/ near miss notice:
 - incident classification (near miss, injury, environmental, fatality, security, vehicle incident, first aid, LTI, asset damage or loss);
 - severity of the incident, set in accordance with Company Risk Matrix, and
 - brief Incident description.
2. incident/ near miss investigation report:
 - definition of investigation team;
 - detailed description of the incident;
 - spill details;
 - medical information detail;

- asset damage information;
- type of event;
- identification of immediate causes and of basic underlying causes, and
- identification of corrective actions and follow up.

In addition to the above described “high level report”, a detailed technical investigation report, including an overview of system processes and procedures, the sequence of events, the observations of the investigation team and the root causes analysis, is developed when required.

Accident and Incident Statistics are properly collected and maintained.

All corrective actions identified during the investigation are managed through the unified electronic system (the CAR MOC REGISTER).

Incident and near miss recording is correctly developed in accordance with Company procedures. Actions identified after investigation activities are included in the Corrective Actions Management System and fully implemented, and the number of actions closed is a KPI.

In order to verify full compliance with the accident and near miss procedure during the period under examination, some incident records have been checked during the site visit on the FPSO. Specifically:

- investigation report relevant to an accidental contact with the live section from Bus Bar section “A” resulting in an Electrical Shock, burns and minor laceration on the lower jaw (record n° NOI-KNK-13-028);
- investigation report relevant to an oil spill on deck (record n° NOI-KNK-14-026). During purging operation of export header with nitrogen, the gasket on the removable spool failed causing oil spill on deck. The oil was contained on deck, no spill to sea.
- investigation report relevant to another potential spill, n° NOI-KNK-14-029. The spill followed a leak observed on the main discharge line of Seawater Injection Pump A (between the main SDV and the manual block valve). No injuries and no equipment damage. Investigation still ongoing.
- investigation report relevant to a near miss, n° NOI-KNK-14-034 . Starboard crane was isolated by Electrical Technicians while the crane was in service without communicating with the Crane Operator. There was no load on the hook at the time.

6.3.9 Oil Spill Response

The Oil Spill Contingency Plan (OSCP) is based on a spill risk assessment, defining expected frequency of occurrence and size of spills from different release sources and oil spill trajectory modeling with oil fate and environmental prediction for a number of spill simulations, using a computer model with ability to input local current and wind data. Different procedures are provided based on spill severity, according to the size of spill, using a defined Tier 1, Tier 2 and Tier 3 approach.

Specifically, the main purposes of the OSCP are to:

- describe the expectations, scope and content of the oil spill response and Management System of TGL;
- provide guidance to the TGL Crisis/Incident;

- manage the response to, and control of, a hydrocarbon spill associated with TGL facilities;
- identify the way in which the overall TGL response in Ghana will be coordinated;
- set out roles and responsibilities of key personnel;
- identify internal and external sources of support, assistance and resources to aid response;
- describe local response strategies and organizations; and
- define internal and external notification procedures, response organizations, resources and personnel.

The structure of the OSCP is divided into sub-plans that should be used for specific scenarios (Offshore oil spills, Onshore oil spills, Harbour oil spills, Oil Spill Waste Management Plan).

In accordance with OSCP, MODEC has implemented its own procedure “Field Response Plan”, dated 19th of April, 2011, which identifies and details the actions that have to be carried out in case of any potential spill scenarios that could occur at the FPSO.

The procedure includes:

- roles and responsibilities;
- signals and alarms;
- management team organization;
- incident notifications;
- incident scenarios (specifically, Appendix J includes specific incident management plans referred to all potential scenarios that can occur on the FPSO, and that were already identified and assessed in the “Safety Case”); and
- maintenance and training plan, including drill exercise requirements and training program.

6.3.10 Oil Spill Response Plan Drills

Annual Major Exercise carried out on the 14th and 15th November 2013 - two day exercise with the offshore element being carried out on the afternoon of the 14th Nov and the onshore response being carried out on the 15th November. All the equipment was tested including the vehicles needed to tow the onshore equipment to the locations. Liaison with local communities, police and village elders / chiefs was carried out by the CSR team and the Community Liaison Officers. Stakeholders were also invited to attend the exercise, with Ghana National Petroleum, Kosmos, Anardarko and the Petroleum Commission attending the exercise as observers and role players, Anadarko also played a part in the exercise by responding to telephone calls made to the Tullow Crisis Management Team, who were also involved throughout the two days of the exercise.

6.3.11 Key Performance Indicators

Leading and lagging KPI's have been identified with reference to the following standards:

- Std 1: Leadership and commitment;
- Std 2: Policy and strategic objectives;
- Std 3: Organization, roles and responsibilities;

- Std 4: Hazards and effect management;
- Std 5: Subcontractor and Supplier Management;
- Std 6: Facilities, design and construction;
- Std 7: Operation and maintenance;
- Std 8: Change management;
- Std 9: Incident notification, investigation and reporting;
- Std 10: Crisis and emergency management;
- Std 11: Occupational Health and Safety;
- Std 12: Environmental Management Objectives;
- Std 13: Documentation and legal requirements; and
- Std 14: Performance monitoring, assessment, review and improvement.

Key performance criteria and KPI expected values are defined yearly for each KPI relevant to the defined standards.

From the examination of the results of monthly and yearly reports, it clearly appears that the target KPI's have been mostly fulfilled in 2013 and, also, a significant improvement compared with 2012 results has been achieved.

6.4 SOCIAL COMPONENTS

Since the last Independent Monitoring visit, a few additional documents have been prepared: i) the Social Investment Strategy has been finalized: no major change is observed from the draft version provided last year; ii) the 2010 PCDP has been updated and delivered as April 2014; iii) a Monitoring & Evaluation (M&E) Plan has been prepared: this is a sound document which well summaries key aspects of the SI strategy and provides a framework for M&E.

As mentioned in the previous Independent Monitoring Reports, no social action is contained in the EMP; the PCDP (2010 and updated as April 2014) constitutes the Project social management plan and has been prepared in accordance with Ghana EPA and IFC requirements and international best practice. It adequately illustrates its purposes and specific objectives, identifies stakeholders and their roles at different levels and highlights tools to be used for communication and interaction.

The PCDP is considered a “living” document requiring periodical updates to reflect changes in the industry and lessons learned. Updates are exclusively a Ghana EPA regulatory requirement; therefore, in terms of ESAP, no further plan/update is needed; in terms of Project requirements, documents are exhaustive; yet some confusion is observed with the dates of delivery (PCDP and SI Strategy) and additional editing and alignment within documents could improve the overall presentation.

The revision of the PCDP produced in April 2014: i) takes account of the situation on the ground and of developments in the industry, ii) reflects the new SI approach to social engagement and investments, iii) provides an updated and detailed list of stakeholders; iv) highlights elements stakeholders would like to see disclosed. According to information collected in the previous reporting period, the PCDP was supposed to be revised in a way to make it more straightforward and user-friendly for community members. The result does not completely go in that direction.

A number of suggestions to improve the document include considering: i) prepare a Non Technical Summary to be utilized at community level during disclosure activities; ii) include a Consultation and Disclosure Schedule, iii) further edit it and align the content within the three documents (PCDP, M&E Plan and SI Strategy), iv) in addition to disclosure at community level, the PCDP could be disclosed in EPA and eventually TGL websites.

6.4.1 TGL New Strategy for Social Investments

Oil and gas industry developments in Ghana require TGL to maintain and strengthen its position as a trusted operator and partner for the Government of Ghana. This is achieved by conducting operations to industry best practice, in a socially and environmentally responsible manner, according to applicable laws and within the cultural and religious diversities. Community engagement, social impact management and social investment are instrumental to TGL's social performance.

A macro socio-economic review of TGL social performance in Ghana has been conducted in 2012, sponsored by the Tullow Group. It produced a report for internal use which has informed the development of the SI Strategy. The planned dissemination of the report to external audiences has been postponed to allow an in-depth revision of data and information collected.

The intention to produce Tullow Group Social Performance Standards is not yet a fact; this reflects the need to better investigate and understand the implications for management and for the business of an eventual adoption of IFC PSs for all TGL activities.

The Social Investment Strategy has not been subject to changes during the reporting period and reflects the philosophical approach of enhancing relevance for beneficiary communities while producing an augmented value for TGL core business and long-term objectives of TGL in Ghana. Its purpose is to create clearer linkages between activities undertaken with communities (enhancing relationships), business objectives (enhancing business led impact on society and the economy – local content and localization) and risk management (identifying and managing socially based non-technical risks).

The SI Strategy focuses on three major areas: i) Technical, Vocational Education and Training (TVET): a pathway to developing human capacity and to building competency that will directly benefit Ghanaians and TGL operations in the country and ii) Enterprise Development (ED): the building of capacities of local businesses to take advantage of opportunities within the O&G value chain; iii) Environmental and Social Mitigation Measures. Investment opportunities are identified through the ESIA process and through on-going engagement with stakeholders. An evaluation of past performance has identified the need to prevent engaging in new investments until the legacy projects are completed and delivered, reinforce the M&E process to ensure cost-efficiency and keep malfunctions to the minimum.

6.4.2 Community Engagement/Consultation

Based on the Jubilee and SI Strategy and EH&S policies, community engagement is an on-going activity. The following steps were undertaken since the Project beginnings²:

- i. During the scoping stage and preparation of the EIA (end of 2008): initial consultations were conducted through the consulting firm ERM to find out the main concerns,

² For the sake of clarity, past engagements activities are reported in each year IMR.

understandings and expectations of national, regional and local stakeholders. Copies of the scoping report were made available together with a summary Background Information Document (BID), written in a non technical language and designed to inform stakeholders about the Project. Reports on consultations done are attached to the EIA. The EIS was publicly advertised and published on EPA Ghana website as well as ERM website;

- ii. During the preparation of the Community Investment Plan (2010-2011): the CIP was elaborated by the local firm STRATCOMM Africa but engagement activities were also supported by the TGL Takoradi Team managing community development projects; the CIP is the result of an extensive documentary activity on major development plans, among others the World Bank Strategy for Poverty Reduction, the National Development Plan, district assembly plans; although the areas selected for implementation were already identified during previous consultations, STRATCOMM tested and detailed them, identifying strategic objectives for the impact they might have at communities, TGL and national levels; alignment with the Millennium Development Goals has also been given consideration;
- iii. During the first phase of the PCDP implementation (2011): this task was awarded to STRATCOMM Africa which undertook a series of activities to prepare the detailed strategy for the implementation of the PCDP; the work has been conducted in strict collaboration with the TGL Local Team and the previously identified CLOs, presently appropriately chosen among members of the communities of the covered districts. CLOs have been trained in EH&S, Communication and Grievance Management; this type of training is expected to be upgraded on a regular basis. In addition to the more traditional town hall and face to face meetings, STRATCOMM developed a number of culturally appropriate tools for engaging communities such as education printed material, strips, documentary/docudramas, radio talks, information boards, posters, hand bill among others which were tested during this phase and will continue to be used in future engagement activities;
- iv. During the monitoring activities of the TGL Local Team: although not as much as community members would like to, the TGL Local Team undertakes periodic visits to the communities which offer the occasion to provide local people with updated information on Project activities;
- v. During the development of any new social investment: each new project/activity entails a good effort to engage with communities;
- vi. During 2012 and 2013 as Jubilee on-going as well as the T.E.N. project consultations: in both 2012 and 2013 in addition to the Jubilees consultations, the T.E.N. project provided the occasion to strengthen relations and engagements with the communities; a large number of consultations were undertaken in different communities of the coastal areas; public hearings were held for TEN;
- vii. During the 2013/2014 Jubilee 4D seismic surveys: a survey vessel has been surveying the area updating the oil and gas field; the vessel carries equipment which can endanger lives and/or damage fishermen' equipment (as it effectively occurred); therefore a round of intensive engagements and consultations with coastal communities have taken place including to discuss amicable solutions to the petition made by those fishermen whose fishing gears had been destroyed; and

- viii. During the Oil Spill Response Training activities: over 1,000 community volunteers have been selected from the six coastal districts to develop an oil spill response capacity at community level; training included the use of appropriate Personal Protection Equipment, equipment mobilization, shoreline containment, and segregation of waste as a means to diminish the eventual impact of an oil spill and facilitate remediation actions.

The 2013 community consultations have been recorded; contrary to past years, a summary table has not been attached to the 2013AMR, issued in March 2014. However, a copy of the summary of consultation table was made available to the IFC representative during the visit.

6.4.3 Disclosure

As underlined in past Independent Monitoring Reports, the EMP is a document required both under IFC rules and Gh EPA legislation. ESAP requirement #7 indicates that the EMP has to be disclosed to local communities. Although social management actions could have been built-in in the EMP, all social issues and activities have been included in the PCDP. Therefore, the PCDP revision has to consider the need for disclosure through culturally appropriate ways of documents updates or new documents produced as identified in the 2010 version (EMP for operations; updated PCDP for operations, Social Investment Plan, Grievance Statistics and Trends, Communication Strategy and similar).

In the past years, the PCDP and the grievance mechanism have been disclosed to local communities through different culturally appropriate activities in line with their needs, preferences for spoken communication and languages as well as their decision-making processes. TGL reports that formal ways of disclosure such as website publication of documents would not have reached the communities. A number of meetings were held with village's chiefs, chief fishermen and fishmongers as well as other members of the communities to provide them with information; different tools were utilized such as comic strips, the diffusion of videos and docudramas and other education printed material to ensure appropriate transfer of information. Copies of the documents have been provided to Gh EPA both at national and at its local offices levels. This process is considered appropriate.

The 2014 PCDP update highlights additional information that stakeholders would like to know, among others oil production and revenues details. Although disclosure activities at community level are reported to be on-going, there are no details about how this is happening nor is this distinguished from other consultation activities. As mentioned above, a Consultation and Disclosure Schedule is not included. Disclosure on concerned websites could be considered in order to reach other possibly interested stakeholders.

An updated and very detailed list of stakeholders is annexed to the 2014 PCDP.

6.4.4 Grievance Management

A Grievance mechanism is a requirement of PS1 and is appropriately included in the PCDP. This is a mechanism where stakeholders concerns and grievances are received, recorded, investigated and answered in a culturally appropriate way. Communities' grievance management mechanisms revolving around traditional leaders and family heads are given consideration.

There are no changes to the way the grievance process has been managed in 2013 except for the fact that it has been strengthened through learning from experience. As reported in past IMRs, grievances are received verbally and in writing through the compilation of a special

form (annexed to the PCDP). The role of the CLOs has gradually increased as they have been trained, equipped and empowered; they receive the grievance, undertake a preliminary investigation and then pass the information to the SI staff in Takoradi, together with recommendations for how to handle the issue. CLOs are embedded in the communities and are themselves community members; it is commendable that no turnover has been registered over the years, greatly helping the difficult process of managing community's expectations.

The PCDP detailed implementation plan identified three levels at which grievances may be resolved, according to its specificity and the possibility to resolve it through the simplest way of discussion or instead go to the second level where a special committee would take over; if this system is still not satisfactory for the complainer, the issue will be deferred to an independent arbitration and ultimately will go to court. The intention to create a Community based Grievance Redress Committee to deal with issues which cannot be solved at the first tier has been dropped, the reason being fears of possible political interferences.

Records of grievances are kept, analyzed and summarized in a document reporting the day the grievance was received, the name of the person/s claiming the issue, investigations done, answers provided and if the issue is still open or has been closed. This document is attached to each year AMR (see attachments for the years 2011, 2012 and 2013); the 2013 AMR makes no exception apart from the fact that the analysis of the occurrences and eventual re-occurrences of grievances has not been done in the text. The attachment indicates that one unresolved complaint has been carried forward from 2012, 3 complaints are recurrent and 8 new issues are emerging. Most complaints found a positive resolution with the exception of 3 of them which are still under investigation.

It is possible to observe that the single most recurrent complaint (the restriction from the Safety Zone and the gradual decrease of fish stocks)³ has been decreasing through sound management of the grievances and awareness programs enhanced as a result of the activities conducted for both the TEN project and on-going seismic surveys. There is an increased awareness about the importance of non-intruding into the Safety Zone for security reasons. The lack of employment opportunities continues to be a recurrent complaint but also progressively managed through the SI approach investing: i) at grass root level through enterprise development and training in business management in order to create more local business opportunities (i.e. the LEED Project where the construction of more efficient ovens for smoking fish is done by local artisans and the capacity is left in the community) and ii) in long-term vocational capacity to ensure there are specialized workers with practical skills to operate in the oil and gas industry.

A few emerging issues in 2013 included the presence of 12 whales which were found washed around the coast. EPA is not relating this issue with the oil and gas industry as the public instead perceives; in any case a national commission has been set up to investigate the problem. Other issues concern malfunctioning projects (water quality within the boreholes,

³ As indicated in the 2012 IMR, "the warmer temperature of water, the presence of equipment, the restriction of the Safety Zone result in the FPSO becoming a point of fish aggregation and thus a sort of protected area". Fishermen claim fish stock is decreasing in other areas and the restrictions of the Safety Zone result in a negative impact to their livelihood. If a decrease of the fish stock is effectively observed, it is however difficult to attribute the cause to the presence of the FPSO more than it could be done to industrial fishing (certainly the paramount cause) or to the presence of multiple operators from other extractive activities and even climate change effects. TGL new field TEN, which is about to be put under operations, is likely to worsen the situation. Fishermen also claim that currents and big waves caused by TGL vessels disturb fishing and eventually push them into the Safety Zone even when unwanted.

infrastructure deficiencies) and destruction of fishing gears which occurred during the seismic surveys; all these issues are being addressed to the satisfaction of the complainant.

6.4.4.1 Exclusion Zone Management

TGL constantly works with both the Ghanaian Navy and the maritime authorities to ensure fishermen and boats refrain from entering the Security Zone and eventually keep away from the Area to be Avoided (ATBA). Enforcement is the responsibility of the Ghanaian authorities but the general lack of capacities/resources led TGL to provide supports and frequently coastal guards operate from TGL vessels. Since 2012 when intrusion in the Safety Zone has been considered a criminal offence by law, no incident has been registered.

Stronger collaboration is being sought between the security department and SI Team to ensure consistency of the messages going out to fishermen and their families. In addition, in collaboration with the Fisheries Commission and as a consequence of lessons learnt during the past year when intense seismic surveys increased the area to be avoided, a number of activities are being proposed to identify and register fishing boats and better manage relations by hiring a few fishermen liaison officers on the control vessels to help authorities to communicate with fishermen in their own languages.

6.4.4.2 Training

Training for the management of the Safety Zone and of the ATBA continues to be twofold: i) with maritime authorities and ii) with fishermen and other members of the communities; turnover of staff on one side and incursions of fishermen from regions other than the Western Region justify training to be a continuous activity.

TGL spent a considerable budget in training the maritime authorities to ensure respect of human rights during the management of intrusions and for warning boats away from the Safety Zone. Regular information activities and engagement sessions are done with the fishing communities; posters, bans and other education material are used, as appreciated during past site visits. A new program dubbed school engagement undergoing in schools so that even children are aware of the issues and can stimulate their fathers to refrain from the areas to be avoided. As mentioned, people's awareness and understanding has increased: the level of complains has reduced as well as the level of incursion in the Safety Zone. On the other hand, the number of incursions in the ATBA has increased, especially in certain months of the year (i.e. Christmas, a special fishing period). It is reported that knowing they will be registered, fishermen intrude also as a way to attract the attention of the authorities on aspects on which they claim (eventually not related with TGL operations). Complete control remains difficult to be achieved as fishermen and operators from other regions and from other countries are not reached by the training.

A "Community Focused Oil Spill Awareness Training" has been conducted in 2013 with the objective to build on oil spill capacity and capability within targeted coastal communities of the Western Region. This has included waste management related issues as the incidence of an eventual oil spill could be greatly aggravated in the presence of debris as well as lengthen cleaning and remedial operations. Communities can play a vital role in pre and post cleaning operations. In 2013 over 1500 people from 30 communities were visited and identified as people potentially impacted by an oil spill incident.

6.4.5 Community Development projects

Community development projects are not a requirement of the ESAP nor of the IFC PS1. Nevertheless, as part of its previous CSR strategy and new SI, TGL and the Jubilee Partners have implemented and implement a number of activities in favor of the communities of the six districts of the Western Region. These are a sound way of gaining the communities support for TGL operations and mitigate possible discomfort they may receive as a result of the Project.

In 2013, TGL rolled-out new mandatory criteria to ensure that all SI projects support the delivery of TGL's overall business strategy. All SI projects must now adhere to four key mandatory criteria: they must be i) focused on business objectives, ii) efficient, iii) compliant and iv) sustainable. The four areas identified for social mitigation projects under the previous strategies (Health; Education; Business development and Environment) are maintained; yet, all SI projects must respond to the three focus area of the new approach, that is: i) Education and specifically TVET (i.e. the Jubilee Technical Training Centre) and ii) Capacity building of local businesses to support localization and local content (i.e. Tullow Group Scholarship Scheme; Enterprise Development) and iii) immediate impact projects at community level (i.e. access to water). All investments are to be identified through the ESIA and aligned to local development priorities.

Project atomization has been reduced (as suggested by the 2011 IMR); there is a focus on projects on which an impact can immediately be reached at local level but refraining from addressing requests that are instead government obligations; investments are tailored to maximize the type of support the private sector can offer and increase the opportunities for local businesses to access the oil and gas industry through enhancing capacities.

The 2013 annual budget allocated to Jubilee and Tullow discretionary SI initiatives was US\$ 8.5M allocated to about 22 projects (out of which US\$ 2.37M for TGL standing-alone). The budget is partially frozen to ensure that legacy projects are led to a successful conclusion (including addressing some malfunctioning elements, mainly in the infrastructure investments) before investing in new projects under the new SI approach.

Table 6.5: SI Area of Intervention

Area of intervention	Type of Project	2011 TGL standalone projects	2011 Jubilee Partners funded projects	2012 projects	2013 TGL standalone projects	2013 Jubilee Partners projects
Health	Health screening, Upgrade of CHPS, Hospital rehabilitation	4	5	About 22 projects in the different areas, out of which 6 completed	2	3
Education	Scholarships for postgraduate education, Support to secondary/technical education, Support to kindergarten education, Construction, ICT support	7	7		5	5
Business Development	Training in accounting and enterprise development	-	2		-	2
Environment	Beach cleaning/costal protection, Provision of water, Capacity building for national fire service	-	3		-	5
Approved budget		US\$ 2,180,000	US\$ 7,000,000	UUS\$ 10,300,000 Jubilee and US\$ 260,000 TGL standalone	US\$ 2,370,000	US\$ 6,130,000

6.4.5.1 Projects Description According to Site Visit

The site visit included the Jubilee Technical Training Centre at the Takoradi Polytechnic. Construction works are finalized and the Centre is well equipped with material to support the vocational training of workers in four areas: Process, Mechanical, Electrical, Instrument & Control. Equipment includes computers for the management of data and a prototype oil and gas separation plant, very similar to those utilized on the FPSO; it provides a unique training opportunity not only for the people of the area but also nationally and possibly from other countries. The objective is to avoid providing paper degree but ensure technical skills are built for the needs of the oil and gas industry increasing job opportunities. The first batch of students recently graduated at the presence of authorities and another group will soon start their training. The Centre is embedded in the Takoradi Polytechnic and sustainable through the fees paid by trainees.

The Enterprise Development Centre (EDC) financed by the Jubilee partners was visited. This Centre has been established to provide support to Ghanaian Small and Medium Enterprises (SMEs) so that they can position themselves to take advantage of business opportunities in the oil and gas industry. This involves providing a range of services such as business training, capacity building programs, advisory services, access to market and information. So far they have registered 250 SMEs from 5 regions of the country, they trained the first batch of students and prepared a consultants database for the advisory service. The sustainability of the Centre is still being evaluated as the Centre is handed over to the Government.

Fishmongers - beneficiaries of the LEED project through the installation of a demonstrative improved oven for smoking fish - were visited in the community of Nkotompo, in the Sekondy Takorady Metropolitan Area. Four demonstrative ovens per district have been provided. A discussion is on-going on the possibility to change the oven design to make it more affordable for people on a family basis instead than for group use.

6.4.5.2 Monitoring

Monitoring is provided through project officers and CLOs. A M&E Plan has been recently finalized; the document is outstanding and hopefully the recently nominated M&E officer will take the lead for its implementation.