

REPORT OF THE:

**EXTERNAL INDEPENDENT
MONITORING GROUP**

**TULLOW GHANA LTD
JUBILEE PROJECT**



Site visit: April 2013

Ghana

FINAL REPORT

Prepared for

International Finance Corporation

REPORT EXTERNAL INDEPENDENT MONITORING GROUP TULLOW GHANA LTD JUBILEE PROJECT

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GHANA

Site Visit: APRIL 2013

Prepared for: International Finance Corporation

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FREQUENTLY USED ACRONYMS

AMR	Annual Monitoring Report
ATBA	Areas To Be Avoided
ALARP	As Low As Reasonably Practicable
BID	Background Information Document
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
CA	Corrective Action
CMT	Crisis Management Team
ED	Enterprise Development
ERP	Emergency Response Plan
ESD	Emergency Shut Down
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
FPSO	Floating Production, Storage and Offloading
Gh EPA	Ghana Environmental Protection Agency
GHG	Greenhouse Gases
IMO	International Maritime Organization
IMP	Incident Management Plan
IMT	Incident Management Team
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)
MOC	Management Of Change
MSDS	Material Safety Data Sheet
MODU	Mobile Offshore Drilling Unit
OOC	Oil On Cuttings
OSCP	Oil Spill Contingency Plan
OWS	Oil Water Separator
OSC	On Scene Commander
PAH	Polycyclic Aromatic Hydrocarbons
PCDP	Public Consultation and Disclosure Plan
PS	Performance Standard
PTW	Permit to Work
SCE	Safety Critical Elements
SI	Social Investment
STOP	Safety Training Observation Program

TPH	Total Petroleum Hydrocarbons
TGL	Tullow Ghana Limited
TVET	Technical, Vocational Education and Training
WMP	Waste Management Plan

**INDEPENDENT EXTERNAL MONITORING
TULLOW OIL JUBILEE PROJECT
APRIL 2013**

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

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.

Among the ESAP requirements, TGL environmental and social monitoring performances have to be verified on an annual basis by an external independent monitoring group.

Scope of the external independent verification is to:

- 1. identify instances where commitments or actions from ESAP have not been implemented (defined as "non compliances" for the Project);*
- 2. review and verify the environmental and social monitoring data collected for the Jubilee Phase 1 Project and reported within the Annual Monitoring Report issued to IFC, the statutory reports to the Ghana Environmental Protection Agency and the TGL Corporate reports;*
- 3. review and verify the effective implementation of the Health & Safety management system requirements for the safe 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*
- 4. conduct a annual visit the project facilities and interview TGL personnel to evaluate the implementation of the Environmental and Social Action Plan and related monitoring requirements.*

The present report provides the description and outcomes of the external independent monitoring group visit and review carried out in April 2013 and relevant to the period comprised between April 2012 and the time of the site visit.

The adopted methodology has included:

- a desk review of the Environmental and Social Action Plan and related implementation plans to understand Project commitments;*
- a check of the raw monitoring data, by collecting and reviewing, for each environmental and social component, the Project records and reports;*
- a desk review of H&S requirement related records collected for the period under review (April 2012-April 2013) including among the others Safety Management System procedures, incident and near miss recording, investigation and implementation of corrective actions, Oil*

Spill Response Plan drills exercise requirements, Training activities, internal and external auditing program implementation, Safety Critical Elements (SCE) identification and test program implementation;

- *an evaluation of project performances through the visit of main operating facilities and the interview of TGL personnel;*
- *the on-site verification of the correct implementation of H&S requirements and the adequacy of the relevant recordings, collating into proper key performance indicators;*
- *the evaluation of project social related components by conducting joint meetings with local communities, TGL and IFC 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.*

The site visit conducted has included the TGL headquarter in Accra, the FSPO, the on shore Project facilities in Takoradi, the Waste management contractor facilities in Takoradi, the Takoradi Polytechnic and the new Jubilee Technical Training Centre and the fisher community of Ahobre in the Jomoro District

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 4), in the “April 2013 Status” column.

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.

The report provides an overview of all environmental monitoring data collected and specific studies carried out by the Project between April 2012 and April 2013.

Some suggestions for improvement of the current Environmental monitoring practice have been identified, in particular with respect to the reviewing process of the ESAP related monitoring plans and the external reporting content.

The H&S management system is 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.

The social component emerging issues concern: i) a major managerial reorganization with the social team further empowered and totally seconded to Takoradi; ii) the elaboration of a new Social Investment Strategy which builds on previous approaches but tailoring to the challenges found in the field (i.e. managing people expectations) and to the long-term strategies of TGL in Ghana (focusing on education and especially on vocational training). The new Strategy is still to be finalized; on paper it represents the correct response to the challenges faced as well as responds to most of the suggestions made in the 2012 Independent Monitoring Report. Social investments continue and already showing impact; as soon as the Strategy is implemented, investments are to respond to new objectives and criteria; iii) Public Consultation and Disclosure Plan (PCDP) is being updated as a GH EPA requirement to respond to the developments of the situation on the ground and in the

industry; disclosure activities are envisaged. As confirmed from last year monitoring, social actions are not included in the EMP as the PCDP represents the social action plan of the project.

Grievance management has been strengthened and all complaints are being addressed. CLOs have been further empowered. Training activities are continuous both with fishermen and with maritime authorities

1 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 it 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 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.

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 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 Phase 1A project operational activities, conducted in the period under review, have comprised the drilling of 5 new wells, performed by 4 different mobile rigs, among which, 4 already completed (e.g. one under completion).

Current Project operational permit was renewed upon negotiation with Ghanaian Authorities on the 26th of May, 2012.

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.

1.1 REPORT ORGANIZATION

This document is organized as follows:

- Section 1: provides a general introduction to the Project;
- Section 2: presents D'Appolonia scope of the work and adopted approach to conduct the independent external verification;
- Section 3: outlines the agenda of the site visit, along with the list of records collected and reviewed;
- Section 4: provides the outcomes of the review of the ESAP commitments; and
- Section 5: presents the outcomes of the review of the monitoring data collected in agreement with monitoring plans in place for the Project.

2 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 March, 5th, 2012, 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;
2. 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 (GhEPA) and the TGL Corporate reports;
3. 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
4. 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 AMR (dated March 2013);
- 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 sample of statutory reports to GhEPA);
- 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, IFC 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.

3 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.

In the following a log of the site visit conducted along with the scope of each visit or activity carried out is reported. Each visit or activity has been carried out jointly with TGL Environmental, Health and Safety (EHS) team and IFC representatives:

- Kickoff meeting in Accra at TGL Headquarter (held on **April, 15**) to revise the site visit scope of the work and agenda and to collect ESAP related documentation to be reviewed;
- visit of Waste Management Contractor facilities (Zeal) (conducted on **April, 17**). Scope of the visit was to evaluate the Project and appointed contractor performance with respect to the Waste Management Plan (WMP) requirements;
- visit of the TGL Shore Base and annexed pipe yard and chemical storage area (conducted on **April, 17**) to evaluate Project performances in terms of raw materials, chemicals and waste handling and storage;
- visit of port facilities (on **April, 18**) including the chemical storage facility run by Baker Hughes and the batch to evaluate Project performances in terms of raw materials and chemicals handling and storage;
- meetings in the TGL Takoradi Office with the Social Investment (SI) Manager and her team (on **April, 17**) to get a first overview of the main progresses and changes in implementing activities with local communities through social engagement and investments;
- visit to the Takoradi Polytechnic and the new Jubilee Technical Training Centre (on **April, 17**) to appreciate progress related to the construction of the Centre and the future plans for training activities;
- visit to the fisher community of Ahobre in the Jomoro District (on **April, 18**) to meet and exchange overviews with the Community Liaison Officer (CLO) and community members, including chief fishermen and fishmongers. The community is a beneficiary of various projects among others the Livelihood Enhancement and Enterprise Development (LEED) Project, the science laboratory at Half Assini Senior High School, the potable water system;
- Visit on the FPSO (held on April, 18) with the main purpose to verify if all TGL Safety Management System requirements have been fulfilled, or, even, improved during the year 2012-2013. The visit included a “walk through” the whole topsides of the FPSO, followed by meetings held together with FPSO management personnel (FPSO manager, FPSO operation/environmental manager, FPSO Marine manager); and
- Close-out meeting (on **April, 19**) to review site visit findings and anticipate the content of the final report.

Institutional visits/interviews were not included in the agenda.

Data collected and reviewed, relevant to the period under review (April 2012-April 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. Environmental Management Plan issued in April 2012;
4. Environmental Monitoring Plan issued in November 2012;
5. Waste production records and disposal tracking documents;
6. Waste Management Plan, issued in January 2013;
7. Baseline Ambient Air Quality Survey Onshore & Offshore, issued in May 2012 by SGS;

8. Emission testing (Test Report: FPSO MV21 Onboard Ambient Air and Emission Monitoring Report, issued in January 2013 by SGS);
9. FPSO flaring data,;
10. Terminal reports for J-18 and J-22 wells;
11. Barite testing sample records;
12. Records on marine avifauna monitoring;
13. Noise Survey Report – FPSO issued in September 2012 by SGS;
14. Onshore Environmental Noise Monitoring, issued in July 2012;
15. 26/02/2012 Oil Spill Incident Report;
16. Hazardous Chemicals Management Procedure;
17. TGL incident and near miss recording, investigation and implementation of corrective actions;
18. Oil Spill Contingency Plan (OSCP) drills exercise requirements and related Records on TGL EHS staff training;
19. Currently planned milestones for ESAP related plans review;
20. Internal and external EHS auditing reports, including ISO140001 audit to Zeal EMS;
21. training provisions;
22. Safety Critical Elements (SCE) identification and test program implementation;
23. Key Performance Indicators (KPI), definition, recordings and trends.
24. Public Consultation and Disclosure Plan (PCDP) for the Jubilee Field Phase 1 Development, September 2010 and its draft update of February 2013;
25. Social Investment Strategy, draft document dated February 2013
26. Community Investment Plan, issued on October 2011 by STRATCOMM Africa;
27. Implementation of PCDP, issued on October 2011 by STRATCOMM Africa (Service Order N. TGHA-1571);
28. Educational material for fishermen and local communities;
29. CSR Communication Strategy PP;
30. Summary tables of consultations undertaken, attached to the AMR 2011 and AMR 2012
31. SI Grievances Report (Jan-Dec., 2012), attached to the AMR 2011 and AMR 2012; and
32. SI Projects Summary Table (internal document, prepared by TGL Takoradi Office);

4 REVIEW OF ENVIRONMENTAL AND SOCIAL ACTION PLAN COMMITMENTS

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 “**April 2012 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	Time table	April 2012 Status	April 2013 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
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

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	Time table	April 2012 Status	April 2013 Status
TULLOW PLC²					
PS1: Social and Environmental Assessment and Management Systems					
3	Training in the IFC's Performance Standards and the applicable IFC EHS Guidelines will be provided to those involved with the risk management of Applicable Projects.	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 Monitoring Reports (AMR)	Records on TGL training session provided and adequate (further details are provided in Section 5 of the report) 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.	Records on TGL training session provided and adequate PSs training provided by D'Appolonia in June and 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.
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	(a) Completed (b) Completed	No update reported or further action required under the period under review. ESIA published through Gh EPA web	No update reported or further action required under the period under review. ESIA for the Jubilee Phase 1 Project

² 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	Time table	April 2012 Status	April 2013 Status
		website.		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 conducted. Further details on key expected elements of review for the ESIA and related EMP are presented in Section 6 for each component.	published through Ghana EPA web site in 2010. Phase 1A Development, Environmental Impact Statement Addendum Report issued in October 2011
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

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
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.	<p>(a) The Project has developed an ESMS development schedule and submitted it to IFC.</p> <p>(b) The Project has developed the ESMS for the drilling and installation phase, acceptable to IFC.</p> <p>(c) The Project has developed the ESMS for production operations, acceptable to IFC.</p>	<p>a) Completed.</p> <p>(b) Completed</p> <p>(c) Ongoing, as per agreed timeline.</p>	<p>Periodical review of ESMS conducted within the ISO 14001 certification process (ISO 14001 certification successfully obtained on the 20th of December, 2011 and to be renewed in May 2012). No action required.</p> <p>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.</p> <p>Time schedule for update (already achieved or in progress) of all EMP related documents provided by TGL and presented in Section 6.</p>	<p>Periodical review of ESMS conducted within the ISO 14001 certification process (ISO 14001 certification successfully renewed in June 2012). No further action required.</p> <p>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</p>

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
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.
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

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
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 expert annually.	(a) Independent expert appointed. (b) First visit January 2010. (c) Subsequent annual independent verification visits.	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
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
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	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

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
				for their finalization was provided by TGL. In Section 6 further details along with suggested improvements of current monitoring practice are provided.	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 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.
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	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

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
				<p>implemented.</p> <p>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.</p> <p>Detailed description of drilling cuttings and fluids disposal methods, implemented monitoring actions, results and outcomes of study carried out are reported in Section 6.</p>	<p>implemented.</p> <p>No further update was reported after issuing the Drill Cuttings Study in December 2011.</p> <p>Detailed description of drilling cuttings and fluids disposal methods, implemented monitoring actions, results and outcomes of study carried out are reported in Section 5.</p>
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.
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	<p>Same practice observed during 2012 visit in place.</p> <p>No further action required.</p>

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
				further treatment and/or additional retention time. 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 actual project operational features.	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 ballast water

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
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.	<p>(a) Availability of a draft Project's WMP</p> <p>(b) Availability of a draft Project's management plan for drilled cuttings</p> <p>(c) Chemical Handling (COSHH) Procedure for the drilling and installation phase, acceptable to IFC.</p> <p>(d) Waste Management Plan and Chemical Handling (COSHH) Procedure for the production operations phase, acceptable to IFC.</p>	<p>(a) Completed.</p> <p>(b) Completed.</p> <p>(c) Completed.</p> <p>(d) Received Revision 0 for Ghana EPA submission, June 2010. Ongoing review of Revision 1.</p>	<p>WMP in place and consistently implemented by the Project.</p> <p>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.</p> <p>Copy of latest Environmental Management System audit to Zeal (waste management contractor) provided.</p> <p>Update of WMP carried out in October 2011 but not yet published (last version amended dated October 2010).</p>	<p>WMP update in January 2013 and consistently implemented by the Project.</p> <p>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)</p> <p>Copy of latest Environmental Management System audit to Zeal (waste</p>

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
				Updates of chemical handling procedures on going as detailed in Section 6.	management contractor) provided dated April 2012
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
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	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

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
				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 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).	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 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.
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.	(a) Education program information and schedule for meeting with villages. (b) Procedures for offshore facilities provided to and accepted by IFC. (c) Procedures for	(a) Program ongoing. (b) Completed. (c) Tullow follows Africa Pilot for Takoradi Harbour, acceptable to IFC.	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	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

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
	(c) The Project will develop a security plan, based on a security risk assessment, which may include, among other things, the adaptation of the US-UK Voluntary Principles on Security.	managing traffic into and out of Takoradi Harbour (d) Security Plan provided to and accepted by IFC.	(d) Completed.	traffic along with the Security Plan consistently implemented. Training to coastal guards on respectful human rights ways to manage intrusion also in place.	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.
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
23	The Project will develop and enforce a specific policy and procedures to ensure that traffic and operations of	Availability of the policy and procedures,	Completed.	Procedure in place. No further update reported	Procedure in place. No further update reported

ENVIRONMENTAL AND SOCIAL ACTION PLAN Tullow Oil (#27918) - December 10, 2010					
Item	Action	Completion Indicator	Time table	April 2012 Status	April 2013 Status
	drilling vessels, support vessels and helicopters will minimize disturbance to marine mammals.	acceptable to IFC		or action needed.	or action needed.
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.

5 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.

5.1 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.

5.1.1 Organization and Staffing

The current up-to-date EHS organization chart has been provided by the Project. The EHS team appears to be adequately structured to meet the ESAP and related plans commitments and duties through seven different units as follows:

- Environmental Team Lead;
- Drilling EHS Team Lead;
- EHS Coach Trainer;
- Health Team Lead;
- Security Team Lead;
- Ghana Project EHS Technical lead; and
- Security Team.

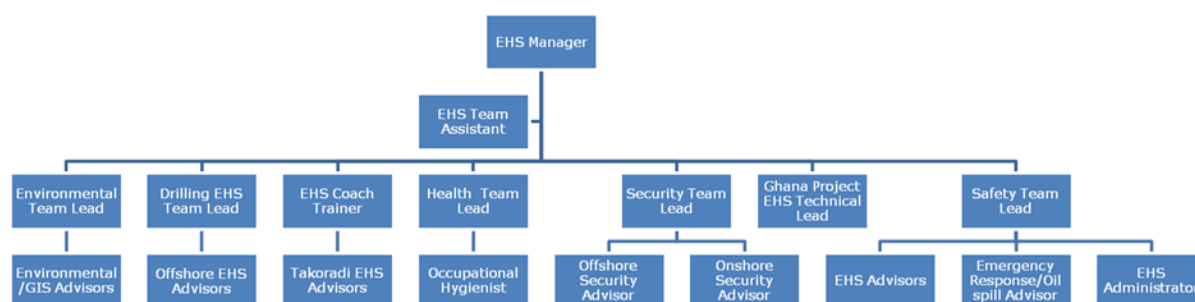


Figure 2: TGL EHS Team Organization Chart – April 2013

Depending on the different topics covered, the above units include personnel based in Accra HQ, Takoradi Shore base and FPSO, as well as advisers based in London and Singapore.

Community engagement has been managed under the Corporate Affairs Group and through the Corporate Social Responsibility (CSR). 2012 has been a year of important organizational changes as a shift in strategy and approach (discussed below) resulted in all staff dealing with social engagement being seconded to the Takoradi Office: a Social Investment Manager and a SI Team with a deputy manager, programme officers and Community Liaison Officers (CLOs); the Team responds to the Head of Corporate Affairs, in Accra and covers the previous CSR Manager's responsibilities as well as all responsibilities linked to the social investments. The previous CSR Manager retired; nevertheless, he has been temporarily retained as consultant due to his great experience in dealing with community members and to have a smooth transition with the newly appointed SI Team (November 2012).

The six CLOs appointed to work as the linking focal points between TGL and the communities are still in place and there has been no turnover. Each CLO covers one of the six district/municipality with which the Project interfaces; they all belong to the communities they support. CLOs are currently better equipped and empowered than last year; they have been provided with mobilization and communication facilities and further trained in handling grievances and interfacing with the communities; in addition they are required to undertake preliminary investigations on the grievances collected and transmit the information to the SI Team with recommendations for managing them.

5.1.2 Training

According to the record provided, an extensive program has been implemented in 2012 as summarized in the following Table. A wide range of topics have been covered, including environmental monitoring, health and safety procedures and plans, internal and external auditing, incident investigations, security and management.

Furthermore, a Safety Training Observation Program (STOP) has been provided to TGL personnel in order to prevent injuries by increasing safety awareness and helping people talk with each other about safety. .

Table 5.1: EHS Training in 2012

Description of training	Number of people who attended
COSHH – Control of Substances Hazardous to Health	14
NVQ 3 and 5 in Occupational Health and safety practices,	8
Confined Space and vessel entry training	3
IATA Dangerous Good Handling	33
Puwer/Loler	1
ISO 14001	2
Oil Spill Management UMAN113	1
COSHH	14
NEBOSH	28
NDT	1
Intermediate Food Hygiene	1
Environmental Training	1
Manual Handling Assessor	1
PEPE Inspector Course/Dropped Object Course	1
STOP Training	196
First Aid	19

PSs training has been carried out by D'Appolonia in June and November 2012 and involved about 60 members staff with EH&S and social background, both based in Accra and Takoradi. This training has been involuntarily not reported in the AMR. No further PSs training is foreseen unless an important staff turnover will justify the implementation of further sessions.

5.1.3 Certification

The project has successfully obtained in December 2011 the ISO 14001:2004 Certification for the Environmental Management System 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 by contract.*

TGL was originally certified by LRQA as meeting the requirements of ISO14001:2004 on the 20th of December 2011, subsequently TGL secured independent certification by LRQA on the 31st of October 2012.

The extensive review of the Project ESMS conducted within the auditing process, is also considered as satisfactorily compliant with the ESAP requirement #6, reported in Section 4, and concerning the periodical review of the ESMS related social and environmental aspects.

In addition to the above the FPSO is provided with all required marine certifications, that the independent external monitoring team has checked during the visit.

Specifically, from the environmental point of view, the FPSO is provided with the following marine certifications:

- 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.

5.1.4 Periodical review of ESAP related plans

Compliant with the ESAP requirement #6, TGL has provided an updated table of the achieved or forecasted milestones for the ESMS related plan review, as reported in the following.

Table 5.2: ESAP Related Plans and Guidance Reviewing Milestones

Doc.No	Description /Title	Rev.	Type	Issue Date	Doc.Live Cycle (Minimum)
TGL-EHS-PLN-04-0004	Jubilee Phase 1 Development - EMP	3	Plan	Jan-13	1 Year
TGL-EHS-PLN-04-0006	Jubilee Phase 1 Development Env. Monitoring Plan	1	Plan	Nov-12	1 Year
TGL-EHS-PLN-04-0008	Waste Management Plan	2	Plan	Jan-13	1 Year
TGL-EHS-PLN-04-0011	Decommissioning and Abandonment Plan	0	Plan	Jun-11	3 years
TGL-EHS-PLN-04-0013	Integrated EHSS Audit Plan - 2013	2	Plan	Jan-13	1 Year
TGL-EHS-PRC-04-0040	EHSS Audit Process - SOP	1	Procedure	Oct-12	1 Year
TGL-EHS-PRC-04-0041	EPA Chemical Clearance Permit Procedure	0	Procedure	Jul-12	1 Year
TGL-EHS-PRC-04-0045	EHSS Legal Compliance & Evaluation	1	Procedure	Oct-12	1 Year
TGL-EHS-PRC-04-0047	EHS Communications Procedure	1	Procedure	Oct-12	1 Year
TGL-EHS-PRC-04-0049	Aspects O&T EMP Procedure	1	Procedure	Oct-12	1 Year
TGL-EHS-PRC-04-0052	EMS Management Framework Process	1	Procedure	Oct-12	1 Year
TGL-EHS-PRC-04-0053	EHS Management Review Process	1	Procedure	Oct-12	1 Year
TGL-EHS-PRC-04-0057	Handling of ionising radiation source by TGL contractors	0	Procedure	Jul-12	1 Year
TGL-EHS-PRC-04-0058	Norm procedure	0	Procedure	Should be finalized	1 Year
TGL-EHS-PRC-04-0059	Radiation Management System Procedure	1	Procedure	Jul-12	1 Year
TGL-EHS-PRC-04-0060	Hazardous Chemicals Management Procedure	0	Procedure	Aug-12	1 Year
TGL-EHS-PRC-04-0061	MSDS Management and Chemical Selection Procedure	0	Procedure	Aug-12	1 Year
TGL-EHS-PRC-04-0062	MSDS Database Management	0	Procedure	Jan-13	1 Year
TGL-EHS-PRC-04-0064	Ambient Air Quality Monitoring	0	Procedure	Oct-12	1 Year
TGL-EHS-REG-04-0001	Environmental Aspects Register	1	Procedure	Oct-12	1 Year
TGJ	Public Consultation Disclosure Plan	0	Plan	Sept-10	Draft plan prepared in 2013 still to be finalised

No follow-up was implemented with respect to the last year suggestion of a systematic consistency check among the different documents to ensure their alignment with the actual requirements enforced. As an example, discrepancies for the allowable maximum limit of Oil On Cuttings (OCC) concentration was observed among the different plans in place³.

5.1.5 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 subjects responsible for the implementation of the changes and, in annex to the document, the MOC request, assess & approve and

³ Being understood that this discrepancy is due to the changes in permitting requirements as issued by Gh EPA (the limit was raised while drilling activities were ongoing), it is however recommended that all the plans in place always reflect the latest changes occurred in order to avoid any possible misunderstanding.

close out forms. This procedure does not foresee for external approval from IFC, but it is instead entirely managed internally by TGL EHS. No MOC was reportedly implemented by TGL in 2012.

5.1.6 Reporting

TGL EHS team informs about performed monitoring activities within a number of different reports, including statutory reports to Gh 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 as detailed in Sections 5.2, 5.3 and 5.4 of the report.

In addition to the above, a joint review of the report formatting and organization has been carried out in order to identify possible areas for improvement.

As already observed during the last year mission, some areas for improvement have been identified with respect to the AMR submitted to IFC. In order to improve the content, TGL should ensure that all monitoring data available are provided and that they are also integrated with some further information regarding the requirements in place.

5.2 BIOPHYSICAL COMPONENTS

The following paragraphs cover the outcomes of the conducted review of the biophysical environmental monitoring data and Project practice with respect to the EMP and the new revision (dated November 2012) of 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.

5.2.1 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).

5.2.1.1 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. Main EMP requirements applicable to this component are defined by MARPOL convention.

Based on the records and information provided, only Category 5 waste (sewage) is discharged to sea (see Waste Water Section). Reporting of quantities discharged appeared to be consistent with EMP requirements.

5.2.1.2 Drill cuttings and fluids

In the period under review (April 2011 – April 2012) five e wells (J-18, J-19, J-20, J-21 and J-22) have been drilled within the Phase 1A of the Jubilee Project. 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 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:

- oil on Cuttings (OOO) 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 would be imposed as reported in the following Table. In case of $OOO > 15\%$ the discharge to sea is prohibited.

Table 5.3: Surcharges on OOC

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

As reported in the following Table, for the period under review, an average OOC concentration of 2.78% was achieved by the Project, while the OOC concentration was found consistently in the Category 2 (included between 2% and 5%) of the Gh EPA requirements. A total of 6864t of Jubilee cuttings were discharged via a caisson from the drillings rig after they had been treated to remove excess NADF.

Table 5.4: Oil on Cuttings Summary for 2012

	Jubilee Field					
	J-18	J-19	J-20	J-21	J-22	
Average OOC%	2.17	4.17	2.17	2.72	2.66	2.78
Cutting Discharged (t)	1731	1500	1069	1598	966	6864

Finally, there were no additional updates on the Jubilee Field Drill Cuttings Study, issued in December 2011 upon request of Gh EPA to study the effect of drill cuttings and fluids on the sea bed.

5.2.1.3 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 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. Copy of one sample barite test was checked to verify consistency with the EMP requirements: the results confirmed the compliance with the above applicable limits. It is noted that tests are supplied by an external certified laboratory (in the specific case a certified laboratory appointed by the supplier Compagnie Marocaine des Barytes based in Morocco).

Log of quantities of barite used and disposed of/discharged to sea are reported in the Well Terminal Report.

5.2.1.4 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).

5.2.1.5 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 as yet, so natural occurring radioactive materials did not represent an issue for the period under review.

5.2.1.6 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.

A check of consistency between the Project waste tracking records and waste manifests available at the Zeal facilities was conducted showing full correspondence among the data collected.

Following the 2012 improvement suggestion, the independent external monitoring team positively acknowledged the adoption by Tullow of a new Waste Manifest Form (WMF) to improve the waste tracking system. The WMF is a document presented in six duplicate (carbon) pages in different colors (as presented in Appendix 1 of the new revision of the WMP) and must be completed and accompany any transfer of any waste between TGL facilities and /or all waste handlers. The compilation and maintenance of the Waste Register will be under the responsibility of the EHS /E Section. This new waste tracking system procedure is in place since a couple of months and during the visit it was possible to verify its correct implementation and the correspondence among the data collected. Also, the involved personnel interviewed during the site visit showed a good knowledge of the system.

5.2.1.7 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 and identify possible critical areas or areas of improvement with respect to the EMP and WMP requirements

All the facility visited, as detailed in Section 3, were found to be well managed and the housekeeping was observed as adequate and in line with Project standards. At the present time the main Waste Management Facility (WMF) in Takoradi is 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.



Figure 2: Oily water treatment plant and used drums compactor

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

The visit was focused on identifying the main areas of concern for the Zeal Management with respect to the processing and disposal of the waste produced by the Project. It is underlined that Zeal WMF is providing waste management services to several other private companies, including oil companies operating in the area.

The Zeal Management has showed, during the interview, a strong commitment to invest in the facility upgrade and the housekeeping appears to be adequate.

Zeal EMS is regularly (annually) audited by TGL. Copy of the last audit report, held on April 2012, was provided during the visit. Based on the audit outcomes several areas of improvement of the Zeal EMS have been identified by TGL and will be monitored in the next months.

Concerning the recycling option adopted by Zeal for drill cuttings and ash stabilization and recycling, the following suggestion for improvement were made to the Project during the close out meeting held in Accra:

- TGL should ensure that Zeal is providing on a regular basis documented follow up on the final destination of the produced bricks to ensure their use is limited to industrial facilities only; and
- within the quality system auditing activities to Zeal, TGL should also ensure that copy of all operational permits released by Ghana authorities to Zeal are available made for TGL consultation. to ensure that Zeal has proper and updated permits for processing all kind TGL wastes collected.



Figure 3: Drill Cuttings and Tullow Incineration Ash

5.2.2 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.

5.2.2.1 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 statutory reports to Gh EPA. No exceedance of the relevant limit or malfunction of the online analyzer has been reported for the period under review.

5.2.2.2 Sewage water

Sewage water is treated on board and checked for residual chlorine content before discharge ($Cl < 1 \text{ mg/L}$). 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.

It is noted that the quantities of sewage water produced and reported by the TGL, given the absence of a flow meter, are calculated based on empirical formulas starting from the number of personnel present on board.

5.2.2.3 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.

No exceedance of discharge limit was reported in the period under review, with the exception of few detections in the range of 15-20 ppm for bilge water, consistently reported in the AMR and handled through discharge stoppage and recirculation of fluid upstream the treatment unit.

Concerning export tankers an Export Tanker Vetting Procedure is in place: among safety and environmental requirements, export tankers must fully comply with IMO/MARPOL/International Convention for the Control and Management of Ships, Ballast and Sediments. To this aim export tankers are required to have segregated ballast water tanks and have in place a Ballast Water Management Plan. The Mooring Master is the TGL representative responsible for checking the implementation of the above requirements on board of the export tankers.

5.2.2.4 Ballast Water at FPSO

Ballast water at FPSO shall be managed according to the same requirements stated in the previous section. It is however observed that, based on the record and information provided, no ballast water has been used and discharged by the Project in the period under review or it is likely to be needed in the future (vessel stability is maintained through the crude oil storage).

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 ballast water.

5.2.2.5 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.

5.2.2.6 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.

5.2.2.7 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 collected by the Project.

5.2.2.8 Spills

Two oil recordable spill events occurred in the period under review, respectively on 06/02/2012 (63.4 barrels) and 08/07/2012 (20 barrels). Both spills are correctly reported by TGL and summarized in relevant reports (the 06/02/2012 Incident Report was provided during the visit). Investigation procedures are in place (see following Section on Health and Safety components).

5.2.2.9 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 TGL Shore Base is currently collecting sewage water through a septic tank periodically purged and disposed of. Similarly 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. Upon request of Gh EPA, the installation of a new sewage treatment unit serving the Shore Base is in phase of completion. When the new systems will be installed, TGL will implement the EMP requirements for liquid discharge monitoring (check of pH, O&G, TSS etc.).

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.



Figure 4: Open trench for sewage pipes to be connected with the shore base Treatment unit and chemical storage area at the Takoradi port

5.2.3 **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.

5.2.3.1 Emission testing

The Project is consistently reporting 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 following figure shows the GHG emissions from various sources within TGL operations.

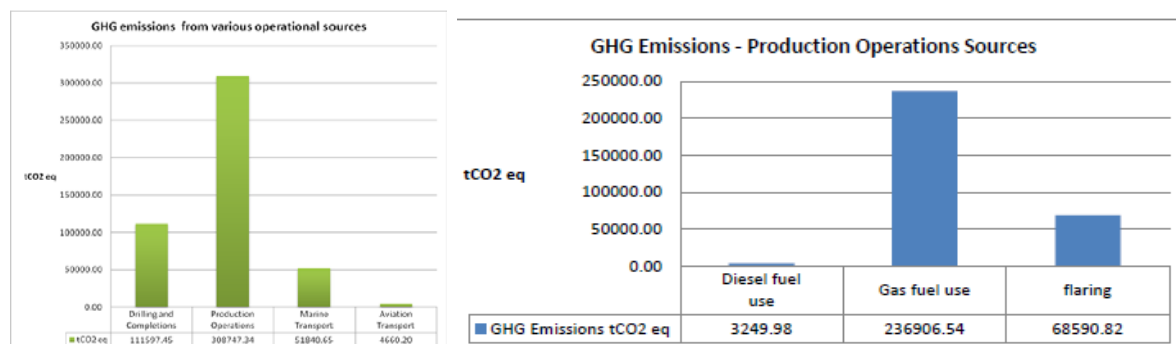


Figure 5: Graphical representation showing ghg emissions per activity and Breakdown of ghg emissions from production operations in 2012

In addition to the above the Project has carried out in November 2012 a stack and fugitive emission campaign at the FPSO 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, CH₄ and VOC and it has included fugitive sources, where visible emissions were noted.

Based on the results provided no exceedance of the Project reference limits was detected, with the exception of NO_x measured at GTG C (117mg/dsm³) and at GTG B (123.5 mg/dsm³) versus a reference limit of 51 mg/dsm³ (IFC applicable guidelines). This study (report issued by SGS on the 5th of December 2011) has been disclosed to Gh EPA, but it was not included in last AMR.

Since similar exceedance of NO_x were detected during the 2011 monitoring campaign, TGL is suggested to conduct an investigation in order to understand the reasons of these measures.

5.2.3.2 Flaring

Flare use is limited to discharges in case of process upsets and in case of maintenance of equipment/tanks. Flaring represents a challenge for the Project. Although no specific limit is enforced by Gh EPA⁴ 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 Gh EPA.

Based on the data reported in AMR and the data provided in the following table, it is understood that, flaring levels were well below the limit of 2.5% of the total gas produced for the period indicated in the following table.

Table 5.5: 2012 FPSO Flaring Data

		May	Jun	Jul	Aug	Sep	Oct	Nov
	Units							
Production of gas	MMscf	2375,3	2331,0	2577,3	3069,7	3050,0	3010,2	2904,42
Total gas flared	MMscf	73,9	49,6	64,3	78,1	53,3	7,8	5,6
Production of oil	bbls	1860213	1766348	1979585	2487858	2491398	2520131	2412042
% gas flared to total gas production	%	3.11	2,13	2.49	2.54	1.75	0.26	0.19

⁴ Gh EPA policy guidance is for Tullow to avoid routine flaring. Non-routine flaring is allowed during commissioning phase and on safety grounds but has to be limited to minimal amounts possible.

5.2.3.3 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 in April 2012 by SGS and the following conclusions were drawn:

- all locations onshore and offshore had acceptable ambient air quality levels in respect of the parameters tested, except at the commercial port area, where lime was being discharged during the sampling campaign and therefore could have accounted for the high levels of particulate matter; and
- the TSP and PM10 level recorded at the commercial port area was the highest and exceeded the EPA recommended limit set at 230 and 70 µg/m³ respectively. All other locations recorded concentration lower than the EPA limits;
- the concentration of both SO₂ and NO₂ recorded at all locations offshore and onshore were lower than the EPA guideline limit;
- concentrations of CO at all offshore and onshore locations were lower than the EPA guideline limit;
- Volatile Organic compounds concentrations measured at the offshore and onshore locations were below the recommended WHO limit;
- the SGS study also provided recommendations on the possible adoption by TGL of a continuous monitoring system to ensure more representative data are collected.

5.2.4 **Chemical Management**

Chemical Management EMP requirements are 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.

All these guidance documents are fully implemented by the Project. During the visits conducted at the FPSO, Shore Base pipe yard and chemical storage area, and the Takoradi port storage areas, a well implemented housekeeping was observed. Spot check of hazardous material labelling and availability of Material Safety Data Sheet (MSDS) was positively conducted at all facilities visited. All storage areas are properly contained and covered to prevent exposure from rain. When storm water drains are present, safety valves are available and kept closed to contain any possible release.

5.2.5 **Ecology**

Four EMP components are embedded in the Ecology monitoring requirements:

- the monitoring of marine avifauna at the FPSO;
- the seabed and water column monitoring at the Jubilee field;
- the marine mega fauna monitoring; and
- the near shore monitoring of seabed and water quality.

5.2.5.1 Marine Avifauna Monitoring

Copy of the logs of marine avifauna sightings relevant to the last three months of 2012 have been provided, showing that no significant observation was collected. Observation logs are reporting daily sightings indicating, when positive, the relevant time for the observation. No aggregation of data collected has been carried out by the Project so far.

5.2.5.2 Seabed and Water Column Monitoring at the Jubilee Field

The seabed and water column monitoring has been carried out consistently with the EMP requirements (annual monitoring) by the Project in 2011. Results of the study conducted and disclosed to Gh EPA are discussed under previous section on Waste Management.

5.2.5.3 Marine Mega fauna Monitoring

Copy of the logs of marine avifauna observations relevant to the last two months of 2012 have been provided, showing that no significant observation was collected. Additionally no follow-up on the Marine Mammals and Turtle Observation Report issued on March 2012 and the Fish and Fisheries Study issued on the 26th, September 2011, were implemented in the period under review.

5.2.6 Noise

Environmental Noise Monitoring is required by the EMP both at FPSO (at increasing distances from the vessel till 5nm) and at the onshore Project facilities.

In May 2012, a noise survey was conducted by SGS at the FPSO to monitor ambient noise levels at selected locations, monitor personal exposure noise levels of selected workers during typical shift of 12 hours, compare actual noise measured levels with predicted levels and recommend mitigation measures.

The Noise Survey Report was issued in September 2012. Ambient noise recorded for Poop deck and Turret at Topside Module and the accommodation/office areas were below the UK standard used for comparison: The Control of Noise at Work Regulations 2005 (No.1643). All other locations monitored at the Topside module, the Engine Room and Pump Room exceeded the UK standard.

For all locations where noise dose was found higher than 85 db (A), recommendations for the use of adequate Personal Protective Equipment (PPE) was provided.

In July 2012, an environmental noise survey was conducted out onshore at TGL operational base in Takoradi to assess noise baseline conditions within operational areas and to ascertain if noise levels emanating from operations has any detrimental impact to the local environment or has potential to cause nuisance at noise sensitive locations e.g. schools, health facilities or residential communities. The Onshore ambient noise survey was carried out at four selected locations: Shore base Pipe yard, Shore base – Office, Takoradi Port – FPSO Chemical Facility and Airport Ridge staff house.

Main findings can be summarized as follows:

- the noise was typically broadband at all locations and by the zoning classification as either commercial or industrial, potential noise receptors have adjusted to the background noise levels generated by the sources. However, the noise generated during helicopter take-offs and landings had the characteristics (intensity and loudness) to cause annoyance or disturbance to close-by offices;
- typically, some continuous and impulse sound pressure levels may pose an immediate threat to health and welfare. However measurements conducted at the various survey positions did have noise levels significantly lower than the thresholds that could cause immediate threat to health and welfare. Nevertheless, noise protection is recommended at all times for occupational noise exposures to prevent potential long-term hearing loss. Again it was found at that the intervention to reduce noise levels within offices with the installation of triple glazed glass windows proved effective; and
- the SGS study also provided recommendations on the possible adoption by TGL of a continuous monitoring system to ensure more representative data are collected.

It is understood that the above campaign was performed for occupational health and safety purposes and did not include the offshore locations downwind and upwind the FPSO as required by EMP. Similar observation was collected by D'Appolonia in 2012. The project should evaluate if an MOC has to be issued to align the procedure in place with the monitoring activities conducted.

5.3 HEALTH & SAFETY COMPONENTS

5.3.1 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 2012-April 2013) including among the others:

- TGL Safety Management System procedures;
- TGL incident and near miss recording, investigation and implementation of corrective actions;
- Oil Spill Response Plan drills exercise requirements and related training provisions;
- H&S Training activities;
- H&S internal and external auditing program implementation;
- Safety Critical Elements (SCE) identification and test program implementation;
- KPI; and
- Interview with Tullow and MODEC team representatives in Takoradi and Accra.

5.3.2 Occupational H&S

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

Specifically an adequate number of safety procedures is in place (and has been verified) in order to safely manage all operations and potential occupational hazards.

A “Risk Management Procedure”, doc. n° 0005-ACC60-15-SM-0401, rev. 1, March, 12th, 2013, recently updated, is in place in order to ensure an adequate hazard identification and risk assessment and management of all operations carried out on the FPSO.

Proper risk assessment and management of all non routine operations is ensured by the application of the Permit to Work (PTW) Procedure.

The PTW system consists of a main procedure, “Part I – Permit to work Procedures – Volume 1 – Main Procedure”, doc. 0245-MI20-OPSM-0403, rev. 1, November, 1st 2010, and, a series of specific procedures covering all possible non routine operations carried out on the FPSO (among which Working at Heights, Entry into Confined Spaces, Lifting Operations, Energy Isolation, Excavation, MOC, Process Safety, Hazardous Materials, Contractor Management, Health and Hygiene etc.).

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. Material Safety Data Sheets (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.

5.3.3 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, during the period under review, six audits were conducted onboard the FPSO which were categorized as follows:

- Client (TGL) Audits: EHS Integrated Management System Audit, ISO14001 Surveillance Audit;
- Internal (MODEC) Audit: Health and hygiene Audit; and
- 3rd Party Audit: Food Safety Audit, SCBA Audit and Gas Detector audit.

Furthermore, a specific procedure, “HSEQ Monitoring and Auditing”, doc. N° 0005-ACC60-15SM-1401, rev. 2, March, 25th, 2013, is in force to define the requirements and describe the purpose for monitoring and auditing the Worksite Management System for MODEC operations.

Based on the above procedure:

- Internal weekly audits are carried out on the FPSO;
- Specific audits are conducted on the application of PTW, through a formal check list, to verify the compliance with the PTW Procedures requirements (25% of PTW audited); and
- Formal Site Safety Inspections are performed on FPSO activities (including, Emergency Exit Walkways - Slip, trips and fall hazards - Fire extinguisher – Manual alarm call point & ESD – Tools and Equipment – Lightning and Emergency Lightning – Ladders and Scaffolding – Noise, heat – Personal Protective Equipment – Safety Instructions and Signs – General Area Conditions).

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 it was checked:

- report from External Audit carried out by TGL on October, 18-19th, 2011, doc. n° TGL 000012. The audit included the review of documents and records, interviewing of key FPSO staff with a high level operational responsibility and a tour of operational and non-operational areas of the vessel, making observations. The report contains the summary of findings and the identification of some corrective actions. The corrective actions were included in the Corrective Actions Close Out Report (CAR) management systems and it was verified the full implementation of all of them;
- 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”. Specifically, it was checked the record of the inspection carried out on April, 12th, 2013, work order KN-21-13, area Booster and Flash Gas Compressor. The identified actions were introduced in the CAR management system and fully implemented. Similarly, it was checked the record of the inspection carried out on August, 28th, 2012, work order KN-21-13/10546 and the follow up of the identified actions.

To 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 CAR MOC REGISTER.

For each identified action, a corrective action close out report is generated, as per HSEQ Corrective Actions Procedure, doc n° 0245-MI20-OPSM-1420, rev. 1, including the track 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.

5.3.4 Training activities

Extensive training activities have been carried out, for all H&S issues in the period under review , as stated in the “training summary” Table 5.1: EHS Training in 2012.

Furthermore, STOP has been implemented in order to prevent injuries by increasing safety awareness and helping people talk with each other about safety. A specific STOP training program has been provided to TGL personnel.

Basic Incident Investigation training has commenced for all FPSO crew and an advanced Incident Investigation, Root cause analysis and reporting training provided for all supervisory level roles onboard.

As, indeed, already stated in the *2012 Annual Monitoring Report - Tullow Ghana - IFC Project Number: 27918 - REPORTING PERIOD: (January /2012 through (December /2012)*, project personnel should be trained in health and safety matters including accident prevention, safe lifting practices, the use of Material Safety Data Sheets (MSDS), safe chemical handling practices, proper control and maintenance of equipment and facilities, emergency response, personal protective equipment (PPE), emergency response, etc

5.3.5 Incident investigation

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

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 for the recording and investigation of incident and near miss occurring on the FPSO. Such procedure is fully in accordance with 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,
 - spills 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 the overview of system process and procedures, the sequence of events, the observation by 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, called CAR MOC REGISTER, previously described.

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

- investigation report relevant to a threaded bolt attached to a davit arm for lifting the cover of a strainer that was found as being stripped (near miss, record n° NOI-WS245-2013-003), with consequent possibility of a drop object;
- investigation report relevant to an environmental incident (record n° NOI-WS245- 2012-010), that led to a spill of about 27 cubic meters of diesel. In addition to the high level report, MODEC Incident Report, a detailed technical “Investigation – Environmental Report”, doc n° NOI-WS245-2012-010, including the overview of system process and procedures, the sequence of events, the observation by investigation team and the root causes analysis was issued; and
- investigation report relevant to a first aid case due to hand injury, n° NOI-WS245- 2012-021. After this event, a hand injury awareness presentation has been roll out and awareness CBTA has been performed in small groups.

Corrective Action Close out Reports have been verified for all actions resulting from the previous investigations and it was found the full implementation of such actions.

5.3.6 Oil Spill Response

The 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 modelling 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 in 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.

5.3.7 Oil Spill Response Plan Specific Training

During 2012 TGL carried out specific training for the IMO level 1 trained personnel in order that they could be better prepared to respond to a spill in the Harbour areas of Takoradi and Sekondi.

Specifically:

- IMO1 Site Supervisor Qualification – 17th April 2012: a number of staff from Takoradi have undergone IMO1 Site Supervisor training. This three-day training package leads to an internationally recognized qualification;
- as part of the ongoing training programme, a practical deployment of the emergency oil spill equipment stored at Takoradi Commercial Port was held on Thursday 14th June 2012. This has involved the use of two response trailers containing dedicated harbour and shoreline containment boom, recovery skimmer and temporary storage tanks; and
- a practical deployment of the emergency oil spill equipment stored at Takoradi Commercial Port was held on Thursday 20th and Monday 24th September 2012.

5.3.8 Oil Spill Response Plan Drills

A no notice drill based around a fictitious spill scenario within Takoradi Harbour has been held on 2nd October in order to better gauge the level of understanding and competence of the port response team following the training and whilst also testing the Incident Management Team (IMT).

The following objectives would be met as a means of measuring performance and overall success:

- no injuries, accidents or incidents;
- rapid mobilization of equipment from the storage containers to the exercise site;
- refresh and test individuals who had undergone supervisor training in a spill situation;
- unaided correct identification and selection of equipment; and
- demonstrate the ability to use the equipment in the correct manner as shown during training.

As a major finding from the drill, it results that the content of the training the responders had received, was well understood and has been retained.

The actions resulting from the analysis of the exercise (n° 4 actions) have been fully implemented.

During 2012 TGL another In-Country Oil Spill Response Capability has been performed, with a two day exercise with the offshore element being carried out on the afternoon of the 27th Nov and the onshore response being carried out on the 28th November.

Further, specific drills and exercise are carried out on the FPSO, in accordance with the “Offshore Drills and Exercise Schedule”, doc n° 0245-MI20-OPSM-1005. The drills and exercise programme covers 19 different scenarios, which represent most of the possible scenarios that could occur in an emergency situation on board (e.g. Oil&Gas release in process module, Oil&Gas release in pipeline module, helicopter crash, ship collision spill of hazardous substance, facility evacuation etc.).

All 19 scenarios are performed accordingly during the 12 months basis. An emergency drills and exercise report is completed for each drill carried out. All corrective actions and non-conformance's identified as a result of the exercise are reported on the "Emergency Drills Exercise Report Form". Action items specify the person responsible and the due date for the implementation.

During the visit on the FPSO, a couple of Emergency Muster/Drill Record and relevant Corrective Actions Close Out Report have been checked (specifically the record of a drill relevant to Helicopter Crash and of a drill relevant to Fire & Gas scenario).

5.3.9 Safety Critical Elements

Specific design systems are in place to avoid or minimize the risk of major loss of containments (ESD, Emergency Shut Down systems, depressurizing systems, remote isolation valves, fire & gas systems, fire fighting systems, closed drain system etc). All of such systems are included into the Safety Critical Elements and, hence, subject to stringent test procedures.

Safety Critical Elements have been identified on the basis of the results of JUBILEE OPERATIONS SAFETY CASE – PART 5: MANAGEMENT OF SAFETY CRITICAL ELEMENTS (ref. Doc. TGJ-OPS-SSFS-00-0001, rev. 1, December 2010).

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 computerized system (AMOS Maintenance and Integrity Management System).

For each SCE are identified maintenance, inspection and testing requirements, ensuring that maintenance/inspection/testing are performed at appropriate time by competent personnel.

A record of such activities and resulting findings is 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. SCE maintenance routines that fail to meet their performance standards will be identified through generation of a priority work order to rectify.

Sample records of test carried out on safety critical elements have been verified during the visit on-board.

5.3.10 Prevention of spills of hazardous substances during marine operations

In order to prevent any oil spill that could occur during marine operations, the TGL document "TERMINAL MANUAL" dated the 26th September, 2011, which sets out the policies and procedures which apply to the mooring of Export Tankers and related cargo oil, Export operations in connection with the Jubilee Field has been issued. The document also provides general procedures and information to Captains of the field support vessels operating in the field, technicians and other personnel belonging to or contracted to either the Company, the Owner, its Affiliates or the Co-venturers. This document assigns responsibility for ensuring all operations are conducted safely with minimal risk of damage or pollution.

Specifically, in order to minimize the risk of spillages of oil during cargo offloading operations, the procedure “Operation Manual for Cargo Offloading”, doc. 0245-MI20-OPSM-0712, 04.02.2010 is in force.

5.3.11 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 as the target KPI's have been mostly fulfilled in 2012 and, also, a significant improvement compared with 2011 results has been achieved.

5.4 SOCIAL COMPONENTS

5.4.1 Documental review

Since the last Independent Monitoring visit, two additional documents have been prepared, namely the new Social Investment Strategy and an update of the 2010 PCDP. Both documents are still in a draft format and will likely be analyzed in-depth during next year's visit. To date, documents prepared are in line with quality standards and are exhaustive in terms of Project requirements.

As mentioned in the 2012 Independent Monitoring Report, no social action is contained in the EMP; the 2010 PCDP constitutes the Project social management plan and has been prepared in accordance with Gh 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 the changes in the industry and lessons learned. Updates are exclusively a Gh EPA regulatory requirement; therefore, in terms of ESAP, no further plan/update is needed.

The revision envisaged for 2013 is underway; the already available draft document takes account of of: i) the situation on the ground and to the developments in the industry, ii) reflecting a major philosophical change in the way TGL intends to approach social engagement, iii) finding effective ways to manage the

high expectations of the affected population and finally iv) making the document shorter and easier to grasp for community members.

5.4.2 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 recently been completed, sponsored by Tullow Group. Dissemination of the report to external audiences is planned. This information together with analysis of collected monitoring data and the need to properly manage both the social impacts of TGL operations as well as copious communities expectations, guided the development of a renewed approach to social investment. The new Social Investment Strategy was prepared under the leadership of the CA Manager CSR Manager and involved focusing and tailoring activities and social investments to local needs and to the long-term objectives of TGL in Ghana. Still in a draft format, the document will be finalised as soon as comments are received and compiled from interested staff and departments. In addition, it is reported that TGL Social Performance Standards will be developed in the near future.

The SI Strategy builds on previously prepared documents and strategies⁵; most of them will be replaced to better focus investments to ensure they are effectively linked to the ESIA and respond to established (and revised) criteria. The SI Strategy moves from the previous corporate social responsibility to social investment. 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 localisation) and risk management (identifying and managing socially based non-technical risks). The strategy intends to maximise economic benefit for the beneficiaries and be performed in a cost-efficient manner in those areas where the private sector is more likely to have success (without attempting to substitute a development or government agency, therefore limiting the boundaries of what can be done and what cannot be done). Every intervention should try to address multiple SI objectives so that the greatest possible range of benefits can be derived from each project.

The SI Strategy focuses on two 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. Investment opportunities are identified through the ESIA process and through on-going engagement with stakeholders.

5.4.3 Community Engagement/Consultation

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

- 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, 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

⁵ The 2010 PCDP identified the need to develop a number of documents/plans which were effectively prepared, among others: i) the Community Investment Plan (CIP), ii) the Communication Strategy, iii) the Corporate Social Responsibility, iv) EH&S policies.

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 2012 as Jubilee on-going consultations and the upcoming T.E.N. project: in 2012 in addition to the Jubilees consultations, the upcoming 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;
- vi) During the development of any new social investment: each new project/activity entails a good effort to engage with communities; and
- vii) During the 2013 Jubilee 4D seismic surveys: a survey vessel is currently surveying the area updating the oil and gas field; the vessel carries equipment which can endanger lives and/or damage fishermen's equipment; therefore a round of intensive engagements and consultations with coastal communities have recently taken place.

The 2012 community consultations have been recorded and a summary table is contained in the 2012AMR, issued in March 2013.

5.4.4 Disclosure

As already underlined in the 2012 Independent Monitoring Report, 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 PCDP⁶. The PCDP revision has therefore 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); stakeholders are identified in the database contained in the 2010 PCDP (which was updated during the preparation of the CIP and further

⁶ The current EMP does not contain any social action; in fact the revision description sheet, at page 3 of the EMP informs of the presence of: *a clarification paragraph explaining the purpose of the plan (the EMP) as it relates to the specific technical environmental issues identified and associated with the Jubilee operational phase i.e. social and community related mitigation and management issues are dealt with in the PCDP and other Stakeholder Framework documentation/agreements.*

more during the first phase implementation of the PCDP). These elements are being considered in the draft version of the 2013 PCDP.

The PCDP and the grievance mechanism to be adopted for people to express their concerns and complains 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 villages chiefs, chiefs 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 and positively it is planned to be further adopted to disclose information to communities concerning the new PCDP. Publication on concerned websites can be considered in order to reach other possibly interested stakeholders.

5.4.5 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 being given consideration.

Grievances are received verbally and in writing through the compilation of a special form⁷. Grievance management has been tested in 2011 and again in 2012. The process has been strengthened: CLOs have been trained, equipped with computers and other communication facilities and further empowered so that they not only receive the grievance but also undertake a preliminary investigation before passing the information to the SI staff in Takoradi, together with their recommendations for handling the issue. CLOs are embedded in the communities and are themselves community members; positively, no turnover has been registered over the year: they are effectively becoming the community point of reference to interact with the Jubilee projects, slowly reducing the previous more chaotic situation where each monitoring visit, independently from who was the person, was taken as an occasion to report eventual complaints (at present as witnessed during the independent monitoring visit, it is difficult to avoid community members to present their long wishing list to anybody approaching them). The close-out process has been strengthened to ensure the complainant has been appropriately provided with an answer to his/her request.

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. At present there is the intention to create a Community based Grievance Redress Committee to deal with issues which cannot be solved at the first tier.

Records of grievances are kept, analyzed and summarized in a report which is attached to the AMR where it is possible to appreciate reporting of 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 (reference is made to the attachments to the 2011 and 2012 AMR). 2012 AMR appropriately reports an analysis of the occurrence and re-occurrence of certain grievances in an attempt to produce statistics and identify issues which can be solved and closed or which continue to be on-going. Based on this analysis, the strategy for communicating with stakeholders is being improved.

Statistics indicate over 120 grievances in 2012 classified into 9 typologies out of which 3 are complaints carried forward from 2011 (not yet solved), 7 are recurrent from 2011 and 2 are new emerging issues. Most complaints found a positive resolution with the exception of 2 which are still under investigation.

⁷ The form elaborated in the PCDP and revised in the PCDP detailed implementation plan prepared by STRATCOMM Africa is still in use.

As explained in the 2012 Independent Monitoring Report, the single most recurrent complaint refers to the restriction from the Safety Zone and the gradual decrease of fish stocks: 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.

TGL approach to this situation has been to increase engagements with the communities (apparently 84 engagements were held in 42 critical communities) utilizing the TEN EIA consultation platform as an occasion to inform stakeholders on the importance of non-intruding into the Safety Zone for security reasons. At the same time, the FPSO is becoming a sort of *protected* breeding field for fishes which may also turn beneficial for the entire fishing activity in the long run. Although this problem is likely to be always recurrent, fishermen apparently slowly understand the issue and the level of complaint decreases from time to time.

The lack of employment opportunities continues to be the second most recurrent complaint. The new SI approach is a correct answer to this problem by 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.

Notwithstanding the above mentioned grievances, significant confrontations between community members and TGL have never occurred which is certainly an indicator of the effectiveness of the activities undertaken in terms of community engagement.

5.4.5.1 Exclusion Zone Management

TGL has worked and is still working 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. Recently legislation has passed considering intrusion in the Safety Zone a criminal offence.

Training activities carried out by TGL are giving results and at present incursions in the Safety Zone are limited. Fishermen also claim that the presence of vessels disturb their fishing; It is however noted that the area is interested by several different marine traffic sources, even from other countries, which is certainly difficult to control.

5.4.5.2 Training

Training for the management of the Safety Zone and of the ATBA is 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 is used, as appreciated during the site visit. Apparently people's awareness and understanding has increased: the level of complains has reduced as well as the level of incursion in the Safety Zone where no presence has been lately registered, apart from the month of December 2012 where

there was a boom in the presence of canoes around the area. Complete control is difficult to be achieved as fishermen and operators from other regions and from other countries are not reached by the training.

5.4.6 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 favour of the communities of the six districts of the Western Region⁸. 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.

The new SI strategy orients new investments at the community level and towards new established criteria and objectives. Following suggestions made in the 2011 Independent Monitoring Report, appropriately the SI intends to avoid an excessive atomization of projects while providing more focused and long-term investments; it refrains from addressing government obligations but it is tailored to the type of support the private sector can offer. There is still a large number of projects on-going but the 2013 budget has been reduced to focus on first leading activities to successful conclusion before planning new investments under the new SI approach. TGL standing alone projects have gradually decreased (in terms of number and of budget) and the Jubilee Partners are now jointly providing most of their social support. The 2012 annual budget allocated to Jubilee and Tullow discretionary SI initiatives was US\$ 10.5M allocated to about 25 projects (out of which US\$ 260,000 for TGL standing-alone).

The four areas identified for social mitigation projects under the CIP and previous strategies are maintained: Health; Education; Business development and Environment; however Health and Environment activities must be clearly linked to ESIA findings and overall investments must respond to the two focus area of the new approach, that is: i) Education and specifically TVET and ii) Capacity building of local businesses through ED. Cross-regional impact is sought (reducing to the maximum possible rivalries among communities) and working on the visibility of the client (avoiding the confusion between Jubilee partners and TGL). This is key for TGL success as notwithstanding the intensive extractive activities from many different operators, apparently this is the first time a commercial company undertakes specific mitigation projects in favour of the Western Region local communities and overall TGL has long-term objectives in the country industry.

⁸ The Western Region is composed of six Districts: Shama, Sekondi-Takoradi Metropolitan Area (STMA), Ellembele, Ahanta West, Nzema East and Jomoro.

Table 5.6: CIP Area of Intervention

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

Once the general concept of the project is identified, the bidding process starts and companies/NGOs develop and submit their proposals. The bidding and evaluation processes follow generally accepted standards; under the new SI strategy criteria will be more stringent to ensure response to the new approach.

The AMR 2012 lists all projects under implementation in the reporting period.

5.4.6.1 Projects description according to site visit

The site visit included the Jubilee Technical Training Centre at the Takoradi Polytechnic to appreciate progress since last year. The Centre is almost ready (completion envisaged for May 2013) and 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.

Due to its distance and with the purpose to visit a different area from those visited last year, only the Ahobre community was visited, in Jomoro District. The community benefits from a large number of initiatives among which i) the already mentioned LEED project providing both training in business management and accountancy and improved ovens for fish smoking; ii) the potable water system which is already in function and serves about 4,000 people and iii) the Half Assini High School where the science laboratory is being equipped providing for good quality training in a quite remote area.

5.4.6.2 Monitoring

Monitoring is still provided through project officers and CLOs, utilizing previous criteria and the Maximo system, a software which covers both accounting and quality monitoring. Implementing Partners must follow established requirements for monitoring and reporting. The SI Strategy accords great importance to monitoring and the system is being revised.

The main challenges experienced by the project have not changed since last year and include:

- the management of expectations;
- troubles in being recognized: people have difficulties in distinguishing which activities can be covered by a commercial company and which are the exclusive responsibility of a government or official institution agency;
- communication of results; and
- managing delays.

The new SI strategy contains appropriate elements to address these challenges as well as most of the suggestions made during last year independent monitoring visit such as avoid risk of atomization (less projects, more visible and significant); increase TGL visibility; consider the possibility to support the area of business development with micro-finance to facilitate starting of new businesses. Hopefully next year it will be possible to appreciate results as soon as the strategy is put under implementation.

This year suggestions for improvement concern:

- increase the fluidity of the AMR text as far as the social component is concerned;
- include information on the training conducted on IFC PSs in the AMR;
- consider avoiding reference to the FPSO as a Sanctuary or Marine Reserve; and
- attempt to plan and estimate the costs of activities such as i) sharing the new PCDP with community members in different languages and appropriate culturally ways, ii) reach out communities outside of the Western Region.

6 CONCLUDING REMARKS

The review conducted by the external monitoring group provided an overview of all the Project related environmental, health & safety and social monitoring activities conducted through check of records and reports, visit of Project facilities, meetings with local communities and interview of TGL personnel.

All actions foreseen by the latest version of the ESAP, dated December 2010, are consistently implemented and a timeline for the review and update of the ESAP related plans is established by the Project.

Environmental monitoring actions, as foreseen by the Project EMP and E Mon P, are as well carried out by the Project in compliance with the relevant time schedule and external reporting requirements. For all the components required but not yet implemented in the period under review (April 2012 – April 2013), plans are in place for their completion in the upcoming months.

The H&S management system is 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.

The EMP does not contain social actions; all social activities and issues are contained in the PCDP prepared in September 2010.

The social component has undergone a major reorganization with all the team seconded to Takoradi and responding to the Head of Corporate Affairs in Accra. A new Social Investment Strategy is being finalized and will soon be put under implementation. The Strategy responds to most of the suggestions made in the 2012 Independent Monitoring Report; it is early to assess its implementation but on paper it goes towards the direction of addressing some of the major challenges identified. The new SI Team has been strengthened and CLOs further empowered.

The PCDP is under revision as a Ghana EPA requirement; as soon as finalized, it will be disclosed to communities using appropriate cultural ways. In addition to the Jubilee on-going consultations, in 2012 a large number of community engagement actions have been undertaken using the platform of the upcoming T.E.N. project and the need to inform communities of the on-going seismic surveys, overall providing occasions for engagement.

Grievance management has been strengthened and all complaints are being addressed. More than 120 grievances were received in 2012, some of which are recurrent from the previous year and only 2 are new emerging issues. CLOs have been further empowered and are able to conduct preliminary investigations of any new issue and transmit the information to the SI Team together with a recommendation for handling it.

Training activities carried out by TGL with both maritime authorities (i.e. respectful ways of managing intrusions in the Safety Zone) and fishermen (warning boats away from the Safety Zone) continue from last year due to both staff turnover and fishermen coming from different areas of the country and even from abroad. Apart from the last month of December when a boom in the presence of canoes around the area was observed, overall intrusion decreases. Complete control will always be difficult.

Communities' development projects are being implemented; in the future they will respond to the new SI strategy and be almost always jointly provided by the Jubilee partners while reducing TGL standalone activities. Some projects are already showing impact or at least attracting great interest (water boreholes, Jubilee Training Centre, Assini school science laboratories to mention a few of them).