
Typical Mubi River - Gobi pipeline reinstatement


Well Pad D


Hides Gas Conditioning Plant - nearing completion

REPORT OF THE:

INDEPENDENT ENVIRONMENTAL & SOCIAL CONSULTANT

ENVIRONMENTAL & SOCIAL COMPLIANCE MONITORING

PAPUA NEW GUINEA LNG PROJECT

Site Visit: October – November 2013

Prepared for

Export-Import Bank of the United States

Export Finance and Insurance Corporation

Japan Bank for International Cooperation

Società Italiana di Assicurazione dei Crediti all'Esportazione

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ACRONYMS

AFGU	Alternate Fuel Gas Unit
BD	Business Development
BDPEP	Benefits Distribution Project Execution Plan
BMP	Biodiversity Monitoring Plan
BOD	Biological Oxygen Demand
BODP	Biodiversity Offset Delivery Plan
BSA	Benefits Sharing Agreement
CBD	Convention on Biological Diversity
CBI	Chicago Bridge and Iron
CBIC	Chicago Bridge and Iron & Clough JV (EPC4)
CCJV	Clough Curtain Brothers JV (C1)
CDS	Community Development Support
CEA	Cumulative Effects Analysis
CHMP	Cultural Heritage Management Plan
CI	Conservation International
CIC	Contractor Interface and Compliance
CIC	Community Issues Committee (at EPC5B)
CIC	Contractor Interface Coordinator (labor issues)
CIP	Contractor Implementation Plan
CJJV	Chiyoda JGC JV (EPC3)
COD	Chemical Oxygen Demand
CP	Cathodic Protection
CPF	Central Processing Facility (Kutubu – OSL)
CPUE	Catch per Unit Effort
CRP	Communal Resource Plan
CSS	Community Support Strategy
CSSAP	Community Support Strategy Action Plan
CTA	Common Terms Agreement
CTF	Construction Training Facility
DEC	Department of Environment and Conservation
DLIR	Department of Labor and Industrial Relations
DLPP	Department of Land and Physical Planning
DPE	Department of Petroleum and Energy
EHL	Esso Highlands Limited
EIS	Environmental Impact Statement
ELC	Environmental Law Centre
EMDC	ExxonMobil Development Company
EMP	Environmental Management Plan
EMPC	ExxonMobil Production Company
EPC	Engineering – Procurement - Construction
EPT	Ephemeroptera (mayfly), Plecoptera (stonefly), and Trichopera (caddisfly)
ESIA	Environmental and Social Impact Assessment
ESMP	Environment and Social Management Plan
ESMS	Environmental and Social Management System
FOC	Fiber Optic Cable
FRV	Full Replacement Value
GFE	Gobe Field Engineering
CIC	Community Issues Committee
GoPNG	Government of PNG
HDD	Horizontal Directional Drilling
HGCP	Hides Gas Conditioning Plant

HGSF	Hides Gas Security Force
HH	Highlands Highway
HRM	Human Resource Management
HWMA	Hides Waste Management Area
IBBM	Institute of Banking and Business Management
ICT	Information and Communication Technology
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
iHDSS	Integrated Health Demographic Surveillance System
ILG	Incorporated Land Groups
ILO	International Labor Organization
ILO 1998 Declaration	ILO Declaration on Fundamental Principles and Rights at Work (1998)
ILS	International Labor Standards
IMR	Papua New Guinea Institute of Medical Research
iPi Catering	integrity…Proactive…innovative Catering
IR	Industrial Relations
IPIECA	International Petroleum Industry Environmental Conservation Association
IWSF	Interim Waste Storage Facility
KP	Kilometer Point
KPI	Key Performance Indicator
LBBSA	License-Based Benefit Sharing Agreement
LBSA	License Area Benefits Sharing Agreement
L&CA	Land and Community Affairs
LR	Livelihood Restoration
MCH	Maternal and Child Health
MCJV	McConnell Dowell CC Group JV (EPC5B)
MESL	Monitoring Social Environmental Law, Ltd
MOC	Management of Change
MOF	Marine Offloading Facility
MOH	Medicine &Occupational Health
MoU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
MTPA	Million Tons per Annum
MWMA	Mobile Waste Management Areas
NAQIA	National Agriculture Quarantine and Inspection Authority
NBSAP	National Biodiversity Strategy and Action Plan
NCD	National Capital District
NCDC	National Capital District Commission
NGO	Non-Governmental Organization
NLB	Northern Logistics Base
OCN	Other Country National
OGP	International Association of Oil and Gas Producers
OIMS	Operations Integrity Management System
OSCP	Oil Spill Contingency Plan
OSL	Oil Search Limited
Para.	Paragraph
PCS	Pre-Construction Survey
PFC	Permanent Facilities Compound
PIG	Project Infrastructure Grant
PIIM	Project Induced In-Migration
PMA	Program Monitoring Activity
PNG LNG	Papua New Guinea Liquefied Natural Gas Project
PNG TUC	Papua New Guinea Trade Union Congress

POEA	Philippines Overseas Employment Agency
PoO	Point of Origin
PS	Performance Standard
PVT	Personal Viability Training
Q	Quarter
QMP	Quarantine Management Program
RAP	Resettlement Action Plan
RoW	Right-of-Way
RPF	Resettlement Policy Framework
RPNGC	Royal Papua New Guinea Constabulary
SELCA	Socio-Economic, Land & Community Affairs
SMP	Social Management Plan
SoL	Standard of Living
SSH&E	Safety, Security, Health and Environmental
STI	Sexually Transmitted Infections
TOR	Terms of Reference
TOU	Thermal Oxidizer Unit
TSHD	Trailing Suction Hopper Dredger
TSS	Total Suspended Solids
UBSA	Umbrella Benefits Sharing Agreement
UNEP-WCMC	United Nations Environmental Program – World Conservation Monitoring Centre
U-PNG	University of PNG
WAA	Waste Accumulation Area
WAP	Workplace Assistance Program
WMA	Wildlife Management Area
WPAR	Well Pad Access Road
WWF	World Wildlife Fund
WWTP	Wastewater Treatment Plant
YTD	Year to Date

EXECUTIVE SUMMARY AND CONCLUSIONS

This report represents the tenth post-financial close field visit to Papua New Guinea (PNG) made by D'Appolonia S.p.A. of Genoa, Italy serving in the role of the Independent Environmental and Social Consultant (IESC) for the Papua New Guinea Liquefied Natural Gas (PNG LNG) Project with Esso Highlands Limited (EHL) as the Operator (a subsidiary of ExxonMobil Corporation) on behalf of Export Credit Agencies (ECAs) and commercial banks providing Project financing (Lenders). The purpose of this visit has been to monitor conformance with Project environmental and social commitments made during actual Project development. This visit was conducted from October 22 – November 2, 2013 in PNG.

The commitments made by the Project for environmental and social management are defined in three documents. The Environmental and Social Management Plan (ESMP) is the main document defining EHL's environmental and social commitments. An additional document termed the Lender Environmental and Social Requirements (LESR) was prepared to supplement the ESMP and provides a single point of reference to all information and documents that do not form part of the ESMP, but are required to demonstrate compliance with Lender Group requirements. At the time of Financial Close in February 2010, it was not practical for EHL to fulfill all of the Lender requirements to finalize aspects of environmental and social management. Therefore, a third document termed Environmental and Social Milestones (Milestones Schedule) was prepared as Appendix H3 to the Common Terms Agreement (CTA) to reflect twenty additional time-bound commitments. These three documents together define the roadmap to achieve Lender compliance as defined in the International Finance Corporation (IFC) Performance Standards (PS) and Equator Principles and are the benchmarks against which the IESC audits the Project.

EHL has begun the process of commercializing the undeveloped petroleum resources in the Hides, Angore and Juha fields and the associated gas resources in the currently operating oil fields of Kutubu, Agogo, Gobe and Moran in the Southern Highlands and Western provinces of PNG. The gas will be conditioned for transportation by pipeline to an LNG facility twenty kilometers northwest of Port Moresby on the coast of the Gulf of Papua. There, the gas will be liquefied and the resulting LNG product (approximately 6.9 million tons per annum) loaded onto ocean going tankers and shipped to gas markets overseas. At the time of this visit, work was mainly associated with EPC3 (LNG Plant construction), EPC4 (HGDP construction), and EPC5A (onshore pipeline). EPC Contractors C1 (Early Works), EPC1 (telecommunications) and EPC2 (offshore pipeline) have completed their work scopes, although the C1 Contractor (Clough Curtain Brothers JV – CCJV) has been reengaged to support EPC5A in the construction of pipelines in the Hides area. The Komo airport is fully constructed and EPC5B is fully demobilized except for a small team dedicated to reinstatement.

The Project is now nearing the production phase. Gas has been flowing since August 2013 from OSL's Kutubu Processing Facility to Train 1 at the LNG plant such that commissioning activities are starting. Systems are fully in place for the effective management of social, health & safety, environmental and labor issues. Accordingly, this report focuses mainly on the issues to be resolved associated with the transition to operations.

Environmental and Social Management System (ESMS) – Transition to Operations

Gas from OSL's Kutubu Processing Facility has been flowing into the onshore and offshore pipelines since the end of August 2013 and gas has been at the LNG Plant since the beginning of September. Accordingly, aspects of Operations are starting, while at the same time construction is still ongoing for the onshore pipeline, the HGCP is still being constructed and wells are still being drilled along the Hides Spineline. Plans and procedures are in place for this transitional phase prior to full turnover to Operations. The transitional Pipeline Right of Way Management Plan to define the transitional environmental, social and physical requirements until the construction phase was completed in February 2013. The Operations ESAP is complete and was approved by IESC on September 11, 2013 with only some support Management Plans still pending finalization. This is in accordance with the completion indicator specified in Milestone Schedule Item 6.

The IESC has reviewed the Oil Spill Response Plan (referred to as the Oil Spill Contingency Plan – OSCP) for the Production phase of the Project, which is a requirement of Milestone Schedule item 7, and EHL is in the process of making revisions. The requirement for finalizing the OSCP is at least six months prior to the introduction of process hydrocarbons. The hydrocarbon of primary concern to the OSCP is condensate, which can flow as a liquid and is highly combustible. IESC expects to review a revised version of the OSCP in the near future, as EHL is approaching the stage when "process hydrocarbons" will be introduced.

Completion of the OSCP is the primary task still pending for completion of the requirements of the Milestone Schedule. IESC has come to a conceptual agreement with EHL with respect to closing the remaining Milestone Schedule tasks associated with biodiversity management, pending some administrative action that need to be undertaken by EHL. It is expected that the Milestone Schedule can be closed by the time of the next IESC field visit. In any case, IESC expects that EHL will complete the Milestone Schedule requirements prior to the IESC preparing the required Environmental and Social Completion Certificate at the end of the Construction Phase of the Project.

Environmental Management – Waste and Wastewater

Waste management continues to fall in the arena of "best" practice, as reported in the previous IESC report. A major achievement ongoing at the time of the last field visit in June - July 2013 was the commissioning of the hazardous waste incinerator at the Hides Waste Management Area (HWMA). Unfortunately, the commissioning process is still underway and the difficulties encountered with this sophisticated equipment have been such that Operations is considering abandoning this facility in favor of a different incinerator. The situation does not represent a non-conformance with commitments, but IESC hopes that the large effort to procure and install this equipment does not end up to be for naught.

As a result of a major cross-contractor initiative, deficiencies with respect to WWTPs ongoing at the time of the June – July field visit have been reduced. The situation is still not fully resolved and the IESC will continue to post the situation as an Observation. It should be noted that the WWTPs are not causing significant environmental impact and for the most part are functioning within standards. It any case, it also needs to be recognized that most of the WWTPs will be discontinued in the relatively near future with the close of construction.

Erosion and Sediment Control

One of the activities undertaken by the IESC during this field visit was a helicopter flyover over the entire length of the onshore pipeline from the area of the well pads to the Omati River landfall. This flyover allows us to confirm our previous observation, that a dedicated effort to minimize erosion continues to be evident across the Project. Erosion and sediment control continues to be challenging for the pipeline construction, but appropriate effort is undertaken and best practice procedures are being followed. Reinstatement of the Komo airfield is essentially complete, and the few remaining EPC5B staff are dedicated to completing the last of the reinstatement. The erosion and sediment controls are benefitting from the use of leftover tires where the rims are removed with an "Ecoflex" system and overall the results look good.

Ecological Management and Biodiversity

The 3rd revision to the Biodiversity Strategy is underway. IESC/Project dialogue continues on refinement of the Offset Delivery Plan/Framework and Biodiversity Monitoring Plan documents, and good early developments are being made in the Projects application of remote sensing and analysis for indirect impacts. The Project plans to implement a full initial post-construction assessment to determine the scale of ecological change from the pre-Project baseline situation. EHL's conservation capacity program progresses with the University of PNG and expects first intake early 2014. Progress with conservation programs at Lake Kutubu continue at a slower pace than anticipated due to tensions at the community level, although meetings with the WMA Committee have restarted and early achievements are now evolving. Dialogue with villages in the Lower Kikori has progressed with several communities signing-up to conservation elements of the developing Lower Kikori Resources Use Management Program

Recommendations focus on the reconsideration of input on developing a national strategy for invasive species as part of the Project support towards PNGs National Biodiversity Strategy and Action Plan.

Induced Access

The Government of PNG is anticipated to request the retention of the Project's Kikori River Bridge (also known as the Kaiam Bridge). The Government has long planned to increase connectivity between the Southern Highlands Province and the Kikori area in the Gulf Province. In the Kikori River area around Kaiam, an existing network of old logging tracks already exists. Government plans to further develop infrastructure in the area have included road construction and the building of a bridge to replace the public ferry at Kaiam. Construction of the road section between Erave and Samberigi is currently in progress by Government. To complete the road link south to the Kikori area, the Government had funded construction of a bridge to replace the ferry; but with the onset of the Project's plans to build a bridge in the same area, a

Government-funded bridge was not constructed. Instead the IESC has been informed that the Government will request EHL to transfer ownership of the Project's Kikori River Bridge in order to complete their southern road link. In anticipation of the transfer of the Kikori River Bridge, the timing of which is not yet formalized, EHL is undertaking internal risk analyses in relation to how they can continue to meet their commitments, especially in relation to management of induced access and weed control. EHL is working with the Government of PNG to achieve awareness of potential environmental and social risks associated with additional uncontrolled access to the Lower Kikori. EHL is aware that further situations could arise across the Project where temporary infrastructure might also be requested for transfer in the future.

Construction access controls continue to be in place and observed as operational. Permanent operational access requirements are progressing through the internal MOC approval process; a large proportion of these currently state the preference for temporary construction access roads to remain permanently open for the purposes of maintenance and refueling remote pipeline facilities such as generators at main line valve stations. New settlements were observed in several locations on both post-construction RoW and RoW access roads during our drive-through between Angore WP-B to Awatangi.

Recommendations focus on: expediting the internal risk analyses being undertaken as part of the MOC process; to continue working with the Government of PNG to achieve awareness of potential environmental and social risks associated with uncontrolled access to the Lower Kikori and recommend mitigation measures that could be applied to address these risks; to continue the monitoring and appropriate analysis of other potential situations project-wide where a request for access to project infrastructure could be anticipated; to generate a mechanism to aid the management and tracking of controls to induced access (whether natural terrain features or project-created) at every public intersection along the RoW; and a reconsideration of the number of permanent vehicular access requirements within the Access Control table to only those where no other access method is feasible (along with the inclusion of currently missing project roads from the table).

Reinstatement

Reinstatement efforts along the RoW and at Komo airfield are generally progressing very well. The RoW is considered 76% fully reinstated and handed over to EHL; a bridging document exists between Contractor and EHL Production to identify handover and early operational mitigation measures and stated responsibilities. The Komo airfield is considered 98% reinstated at the time of our visit, and IESC was encouraged to see that Contractors have remained on-site to complete the work. At the HGCP and LNG Plant, draft reinstatement plans are now in place and full-scale active reinstatement due to commence on a prioritized, sectional approach. At the pipeline landfall, some localized mangrove root-systems are establishing from planted seedlings, although not yet widespread.

Recommendations focus on: the adoption at HGCP and LNG Plant of targeted reinstatement planning, scheduling, resource allocation and tracking practices developed and successfully used at Komo.

Invasive Species and Quarantine Management

An updated Weeds ID Guide will be published shortly and a finalized Rev.3 Weeds Management Plan completed imminently. This latter document formalizes the weed management zones and quarantine zones established earlier this year following input from BioTropica, EHL's weed experts. BioTropica conducts weed audits project-wide against these zones, however centralized EHL weed management does not yet utilize this management zone approach for tracking weed distribution, expansion, abundance and management.

As Contractors are demobilized, risks exists that local knowledge and expertise may be lost from the Project. Local priority weed eradications are progressing and we observed a higher level of Contractor engagement on weed management during this visit, but with instances of increases in both distribution and abundance, with instances of weeds crossing management boundaries and localized eradication challenges. A stronger glyphosate herbicide is being imported to help eradicate resistant Priority 1 weeds. BioTropica is due to undertaken a second 2013 audit in Nov. The IESC was assured that prior to EHL sanctioning any applications, BioTropica will train personnel in the targeted use of glyphosate 540 (non-residual, but non-selective), and advise on weed control equipment.

Regarding quarantine, overall Contractors have experienced a decrease in the proportion of consignment inspections required by NAQIA officers during 2013 (and a reduction from 2012), but there has been an increased need for fumigations as a direct result of those inspections. This is especially relevant for EPC4

and Drilling, and also EPC5A. Areas that require performance improvement for better compliance with EHL's Quarantine Procedure include more effective fumigations at point of origin, more effective use of packing procedures, and ensuring only ISPM-15 compliant pallets and wood-bracing are used. EHL now requires all Contractors to have quarterly meetings with NAQIA.

Recommendations focus on: the need for EHL to move towards a centralized weed management data analysis at a zonal level, not simply through reliance on external audit; to ensure that BioTropica weed audits continue into the operational phase; the opportunity to roll-out a reinvigorated Weeds awareness campaign, to coincide with the publication of an updated Weeds Identification Guide shortly; and a lessons learned exercise to be conducted on EPC5A's inspection/fumigation performance i.e. an increased number of consignments requiring fumigation as a result of findings from NAQIA inspections (increasing year on year, and further increasing during 2013).

Freshwater and Marine Ecology

The 2013 freshwater survey results are expected shortly, and results of data analysis will give a valuable reference point to compare findings during non-extreme weather influences and build on biogeographical references. The latest biannual Water Quality and Marine Sedimentation monitoring survey commenced in September 2013, but results are also not yet available. Planning for 2014 Caution Bay monitoring, including marine ecology has commenced. Results of previous monitoring of the ecology of Caution Bay indicate some coral reef areas near the pipeline were impacted by construction. The assumption that the impacts would be temporary still needs to be confirmed based on monitoring, expected to take place in early 2014.

Omati River and Caution Bay Fisheries Studies

Preliminary results for Q1 and Q2 2013 of the Caution Bay and Omati River fisheries studies were made available during the site visit. Although the Project has not yet developed a reliable CPUE statistic, the available information shows wide variation in species composition and landings, influenced by weather, season and village activities. The Project is commended for committing to monitor fisheries through 2015, and maintaining well-trained village assistants, as demonstrated by continued increase in participation fishers in the monitoring program. Several community fishery-related programs are being considered.

Land Access and Resettlement

L&CA has begun to demobilize some staff and, to date, demobilized staff have been largely assistants and "casuals", while key staff will be retained until the group is handed over to Production. Proposed staffing for Production seems adequate, with the exception of the need for a Coordinator for outcome evaluation tasks. Additionally, outcome evaluation needs to be noted as a key task during Production.

The resettlement process is nearly complete, with the exception of some resettlement agreements, land agreements, and compensation payments. Resettlement agreements are expected to be completed by January 2014, consistent with the end of construction activities. Signing of land agreements is on-going. Relatively few issues regarding compensation payment have occurred recently, attributed to the integrated team approach that uses landowner support teams.

It is now critically important that evaluation of the outcomes of standard of living and livelihood restoration efforts be expedited to avoid intervening variables obscuring differences between project and non-project related impacts. Outcome evaluation of standard of living has recently begun using the new approach agreed between the Project and the IESC during the last IESC visit. During this visit, the IESC worked with POM-based and field staff on methodological improvements.

The standard of living of the 28 households relocated by the Project is better than their pre-displacement conditions. Evaluation of the standard of living of the remaining Type 1 (physically displaced) households, all of whom opted for self-relocation, is in progress. Additional training is likely to be needed, especially for the data analysis and follow up procedures that must be completed prior to the resettlement completion audit. The Project has planned and budgeted for resettlement completion audits by an independent third party as specified in the Resettlement Policy Framework.

The IESC reviewed and approved for disclosure five RAP/CRP and addenda. In addition to these documents, a short RAP for the Permanent Facilities Complex should be prepared and submitted to the IESC for approval to disclose. This PFC RAP will document the impacts of land acquisition and the

mitigation measures carried out by the owner. The IESC deems the owner's actions meet the requirements of PS 5.

L&CA has agreed to a water accessibility closure strategy for relocated households using the standard of living evaluation to determine whether any remedial actions are needed.

L&CA is currently developing a methodology to determine the (i) extent of the need for top up payments and (ii) a formula for determining Full Replacement Value (FRV) for trees/crops. Any additional compensation needed to bring rates to FRV may be paid in cash or in kind.

Coordination between L&CA and the Independent Advocate, Monitoring Social Environmental Law, Ltd – MESL (formerly Environmental Law Centre – ELC) has greatly improved. MESL and L&CA jointly prepare weekly work plans signing of resettlement agreements by land owners and for assessments of vulnerable people. L&CA also provides MESL with draft resettlement agreements prior to the land owner meetings.

Livelihood Restoration

The IESC's overall impression of the LR program is positive, though outcome evaluation results will determine whether the goal of restoring or, preferably, improving livelihood status of economically displaced households has been achieved. Delivery of planting materials and animal husbandry activities continues in some areas. Surveys conducted recently indicate good results, such as the first fruiting of trees distributed in 2011, diversification of crops, sharing of second generation cuttings, and marketable surpluses available for income earning.

Discussion with L&CA staff indicate some uncertainty about whether livelihood restoration was or should have been offered to Type 3 economically displaced persons/households. Type 3 refers to persons/households whose dwellings and main gardens were not affected by the Project, but who lost small plots of land without gardens or land used primarily for hunting or other non-agricultural purposes. These persons/households received compensation, but appear not to have been offered livelihood restoration assistance. To close out resettlement activities, the Project should document for the IESC that all displaced persons/households whose livelihoods were adversely affected by their loss of land were offered the entitlement to livelihood restoration assistance.

Community Impacts Management

Monitoring of demobilization impact on communities to date indicates that increased violence has not occurred as a result. Monitoring should continue as demobilization ramps up toward the end of the year.

The road connecting communities around the Komo airfield is completed, greatly facilitating the access of local communities to the main roads.

Community Security

Careful monitoring by project security (Hides Gas Security Force – HGSF) and others (such as L&CA field staff) continues. Relationships with local communities have been relatively calm, though occasional flare ups occur. Demobilization to date has not exacerbated security conditions.

Project Induced In-Migration (PIIM)

The project has begun systematic in-migration assessment using a new definition of "in-migrant" that includes all persons who moved into Project areas even for a short time, as well as persons who came as a result of *wantok* influence. Hot spots for in-migration have been identified and will receive special attention. PIIM data are organized by categories and consist of data from a variety of sources, including the bi-annual iHDSS data that is now available to the project. The issue of the use of use of iHDSS data is now closed.

Procurement and Supply

Procedures and monitoring are in place to ensure that core labor standards, including harmful child and forced labor, are implemented by Contractors. The Contractor Interface Coordinator (CIC) role is housed within L&CA and individuals are embedded within EPCs. The CIC conducts formal monitoring and informal monitoring continues via CIC and EPC monthly reporting.

Community Support Strategy

The Community Development Support (CDS) program now includes a plan and budget for close out of *construction phase* community programs. A Community Development Support Management Plan for the *Production phase* has been completed as part of the Production ESMP. A CDS Implementation Plan for the first 18 months is being developed by L&CA, in collaboration with BTPO, MOH, P&GA, Environment, and other stakeholders. Planning is geographically oriented (driven by needs of individual project areas), and is based on workshops with each field team. Once activities have been prioritized, communities will be involved in decision-making on priority activities and implementation strategies.

Within a geographical framework, topical themes (education, livelihoods, etc.) have been identified that fit well with Project impacts, interests, and opportunities. Support for livelihood enhancement, particularly programs focusing on women, will include micro credit and business management training, market assessment for locally produced products, and gender assessment. An outcome based evaluation process, similar to the process being used for resettlement evaluation, will be used to measure achievement of program goals. Additionally, the Project will take a more strategic approach to water accessibility that would involve partnering with Government and other entities (such as bi-laterals and international NGOs).

Main recommendations include input from the IESC on program level indicators, keeping CDS components to a reasonably small number, and giving priority for livelihood enhancement to areas with large numbers of vulnerable females and demobilized workers.

The observation on gender assessment included in the issues table from the last IESC trip report is closed.

Stakeholder Engagement and Consultation

The Project continues to engage with communities on a regular basis. In 2013 to date, 1,410 engagements with 143 communities and 48,907 attendees across the project area have occurred. Special community engagement on demobilization is conducted separately. Community engagement focusing on the issues associated with Production RoW management and safety has also been conducted.

Grievance Management

The grievance management system continues to function well, with an annualized closure rate for all grievances of 75%, and rates for July and August of 94% and 95%, respectively. Formal grievances in recent months have regarded compensation and other issues in the pipeline RoW. Thirty resettlement grievances, most related to compensation, were filed from April to September, with 29 closed and one under investigation.

Benefit sharing

The Government is mandated by the Oil and Gas Act to make benefits payments to clans affected by the Project. As a means to facilitate these payments, EHL developed a Benefits Distribution Project Execution Plan (BDPEP) that outlines the processes for vetting, amounts distribution, communications to recipients, dispute resolution, etc. The Plan was reviewed and accepted by DPE, but subsequently some issues arose. A BDPEP Steering Team has been formed, led by DPE with EHL and OSL as members. EHL has formed a team dedicated to working with DPE to ensure progress is made in a timely manner.

Labor and Worker Conditions

The IESC has reviewed labor procedures, processes, and conditions during past reviews. Based on the information provided during this visit, no new issues have arisen and previous recommendations have been addressed. An industrial relations model, initiated in the 3rd quarter of 2011, uses KPIs within core "enabler" categories to measure EPC labor performance. Each EPC completed a self-analysis with results showing that performance in all enabler categories has improved across all EPCs. Focus is now on demobilization and communication regarding demobilization.

Demobilization

Demobilization is occurring somewhat later than originally estimated, with a peak expected in December. HGCP, for example, has 1,400 national workers and had demobilized only 115 of them at the time of the visit. Demobilization planning and communications appear to be working well. Sufficiently detailed and well-conceived demobilization plans have been developed by all EPCs, following guidance provided by EHL. The Project is undertaking frequent engagement on demobilization with communities, using a

variety of methods, include dramas and visual tools. Village committees, community/village liaison officers, and warden committees along the pipeline route are also addressing demobilization issues with communities.

Gender in the Workforce

The use of female "women's champions/confidants" and the health/hygiene/nutrition training is making a positive contribution to the working and living conditions of female employees. The IESC recommends that these measures, as well as psychological counseling services, be provided to female employees during the Production phase.

Camp Management

Improvements in camp accommodation continue to be made, even though construction is nearly complete. Worker Committees are functioning well by providing management with early notification of issues, as well as the wishes of camp dwellers. Improvements made as a result are instrumental in reducing absentee rates.

Health and Safety

The Project has a well-developed program to manage both occupational health and safety of workers, as well as a community health and safety program. The Health Group focuses on worker and community health issues, whereas the Safety Group focuses primarily on occupational safety of workers.

Worker Health: occupational health continues to be a "best" practice program. One of the contributors to the success of this program is the manner in which the Health Team has established health program criteria and then assessed effectiveness of program implementation through the collection of key performance indicators (i.e., in areas of clinical operations, disease prevention/control, food and potable water safety, camp hygiene and sanitation and industrial hygiene). These key (health) performance indicators are routinely reported to site and senior level management. We believe this has provided Project Management the ability to efficiently assess health program implementation and enabled quick and focused attention as needed. Since the introduction of health program indicators in 2011, the Project has demonstrated significant improvements in all health categories, with consistently strong performance in 2012 and 2013. The increase in these leading indicators has also seemed to correspond with a reduction of illness cases (i.e., zero food, waterborne or sanitation illness outbreaks since Q3 2011).

Worker Safety is also a "best" practice program and worker safety continues to be a primary focus of EHL and the EPC Contractors. Safety statistics presented by EHL show a continuing decrease in the Total Recordable Incident Rate (TRIR). In March 2012 this rate was 0.46 for the entire Project; in October 2012 this rate was further reduced to 0.39; in June 2013 it was 0.33; and it is currently (September) at 0.3. The Lost Time Incident Rate (LTIR) has also continued to decrease and is currently 0.02. The Project completed more than 16 million hours Lost Time Incident free since July 2013; EPC3 currently has more than 58 million hours Lost Time Incident free since the last Lost Time Incident in March 2012. There have been no fatalities since the October 2012 site visit. The low LTI rates are exceptional.

Community Health: the Community Health Program (CHP) is functioning effectively by the Project Health Team and their partners PNG Institute of Medical Research (PNG IMR) and Population Services International (PSI). The Health Team has demonstrated excellent engagement and support of CHP partners as well as internal/external stakeholders that has led to successful implementation of CHP objectives. PNG IMR continues to implement the integrated Health Demographic Surveillance System (iHDSS) to accurately characterize and track social-economic indicators or health status. In addition, IMR is conducting health studies to reliably diagnose and track disease occurrence in communities of interest. IMR recently published their Bi-Annual Scientific Progress Report for Jan-June 2013. PSI has continued to implement their community based mitigation efforts including the Water Sanitation and Wash, as well as the Health Meri/Healthy Program.

Cultural Heritage Management

Cultural heritage continues to be an important component of the Project. Pre-construction surveys (PCSs) with identification of cultural finds have been undertaken since the last IESC field visit only in association with the pipeline and these studies are now complete. Avoidance is still the preferred solution when cultural sites are identified and this is solution that is generally followed. Out of 23 cultural heritage sites encountered from July through September along the pipeline RoW, 11 were avoided and 12 otherwise mitigated. Occasional chance finds are still being made at various locations, but most of the effort towards

cultural heritage has been the study and reporting of previous work. Monash University has submitted a series of reports summarizing the results of their investigations. This is a major accomplishment. EHL has also undertaken community engagement by means of developing fact sheets and fliers for communication and preparing a community awareness poster. Cultural heritage fact sheets/significant stories feature are also available in articles published by EHL: LNG Toktok; Environmental and Social Quarterly Reports.

1 INTRODUCTION

D'Appolonia S.p.A. (D'Appolonia), located in Genoa, Italy, has been appointed as the post-financial close Independent Environmental and Social Consultant (IESC)[1] for the Papua New Guinea Liquefied Natural Gas Project (PNG LNG or the "Project") being developed by Esso Highlands Limited (EHL), the designated Operator and a subsidiary of ExxonMobil Corporation and also representing a consortium of co-venturers including Oil Search Limited (OSL), Santos Ltd, JX Nippon Oil & Gas Exploration Corporation and PNG State and landowners as represented by Mineral Resources Development Company (MRDC) and Petromin PNG Holdings Limited. D'Appolonia's role as the IESC is to support the Export Credit Agencies (ECAs) providing Project financing, including the Export-Import Bank of the United States (USEXIM); Japan Bank for International Cooperation (JBIC); Export Finance and Insurance Corporation (EFIC) of Australia; Servizi Assicurativi del Commercio Estero (SACE) from Italy; Export-Import Bank of China (CEXIM); and Nippon Export and Investment Insurance (NEXI), as well as a group of commercial banks, collectively referred to as the Lenders or Lender Group.

The overall role of D'Appolonia as the IESC within the PNG LNG Project is to assess and report to the Lender Group on the compliance with the environmental and social provisions contained within the Environmental and Social Management Plan (ESMP), the associated Lender Environmental and Social Requirements (LESR) document, and Schedule H3 Environmental and Social Milestones Schedule to the Common Terms Agreement (CTA) (herein referred to as "Milestones Schedule"). Specifically within the IESC scope of work, the following requirements for an audit visit are identified:

- Evaluate the Project's compliance with Environmental and Social Laws, the Environmental and Social Management Plan and Applicable Lender Environmental and Social Standards ("Environmental and Social Requirements") and evaluate the Project's proposed corrective action regarding any failure by the Project to comply with Environmental and Social Requirements in all material respects;
- Evaluate issues identified during previous monitoring visits relating to compliance with the Environmental and Social Requirements;
- Evaluate the Project's environmental and social reports, described in Section 12.2(b)(vi) of the CTA; and
- Evaluate compliance by the Project in all material respects with the Milestones Schedule.

The above Terms of Reference (TOR) requirements refer to an evaluation of Project "compliance", whereas the reporting requirements of the TOR state that the reporting will include a "list of non-conformance findings". Within this report the terms "compliance" and "conformance" are considered to be equivalent. In general, issues to be resolved are identified as non-conformances, but one of the requirements of the IESC is to identify any "material non-conformances" within the context of the CTA. The IESC believes that a "material non-conformance" within the context of the CTA would need to be a Lender decision, but for the purposes of this report a potential "material non-conformance" would be a Level III non-conformance or repeated Level II non-conformances as defined in the Section 2 Issues Table. It is emphasized that a Level III non-conformance is not necessarily equivalent to a "material non-conformance" and that extensive discussions among EHL, Lenders and the IESC would need to take place before any "material non-conformance" is identified.

IESC's review has included the environmental and social (E&S) and health and safety (H&S) management activities of EHL and the individual Engineering, Procurement and Construction (EPC) Contractors and infrastructure currently active in the field. Emphasis has been placed on evaluating conformance based on written information provided by EHL and observations made in the field including discussions with EHL and Contractor personnel. Most of the findings identified in this report have been based on field observations and interactions with the individuals actually responsible for the field implementation of the ESMP, as well as meetings with stakeholders.

[1] *IESC Team members in the field: William J. Johnson (Earth Scientist/Cultural Heritage Specialist – Field Team Lead), Kerry Connor (Social Development Specialist), and Louise Johnson (Biodiversity and Natural Resource Management Specialist). IESC Team members not in the field: Giovanni DeFranchi (Project Manager and Team Lead) and Mark Pedersen (Aquatic/Marine Specialist).*

An activity that does not fall under the category of "monitoring" yet is within the scope of the CTA is a requirement for the IESC to certify certain non-Project operations (section 14.2(m)(iii) of CTA). During this field visit D'Appolonia was not asked to provide any non-Project certifications.

1.1 CONSTRUCTION STATUS

The Project consists of three components:

- *LNG Plant and Marine Facilities Site* (plant and marine terminal facilities) at a location designated Portions 2487 and 2457 located approximately 20 km northwest of the capitol city of Port Moresby, PNG. A significant component of the marine facilities component is the jetty, constructed as a trestle on pile foundations;
- *Upstream Offshore Pipeline (Marine Project Area)* extending 407 km that begins at the Omati River landfall and extends to the marine facilities located at the LNG Plant site;
- *Upstream Facilities and Onshore Pipeline* consisting of wells at the Juha, Hides, Angore, Agogo, and Southeast Hedinia fields, a new Hides Gas Conditioning Plant (HGCP), a new Juha Production Facility, expansion of the existing Agogo Production Facility, and expansion of the existing Kutubu and Gobe Production Facilities, which all tie into a main onshore pipeline 292 km from the Hides Plant to the Omati River landfall where it connects with the offshore pipeline.

The development of the above three components is well underway and all of the EPC contractors are still in the field. Their overall responsibilities and current construction status are as follows:

- *C1 – Upstream Infrastructure (Clough Curtain Brothers JV - CCJV)*: responsible for Kopi Shore Base; Southern Supply Route; Highlands Highway upgrades; HGCP access road and site preparation; Hides well pads and access roads; construction of the Hides Waste Management Area (HWMA); and associated work camps. The C1 scope of work is 100% complete. CCJV is currently still working in the Hides area to provide pipeline construction support to EPC5A, outside of the original scope of the C1 contract;
- *EPC 1 – Telecommunications (TransTel Engineering)*: occupation primarily of sites already used by Oil Search for c*ommunications towers.* 100% complete;
- *EPC 2 – Offshore Pipeline (Saipem)*: 407 km of offshore pipeline beginning at the Omati River landfall and extending to the marine facilities located at the LNG Plant site. The EPC2 scope of work is 100% complete;
- *EPC3 – LNG Plant and Marine Terminal (Chiyoda JGC JV - CJJV)*: this joint-venture EPC contract between Chiyoda and JGC Corporation, both engineering and construction firms headquartered in Yokohama, Japan, is for construction of the 6.9 million tons per annum (MTPA) LNG plant, with two per 50% trains, including facilities for inlet processing, treating, liquefaction, storage, and the marine terminal. Construction is approaching completion. Current activities relate to the commissioning of Train 1 with the introduction of Kutubu Gas in September 2013. Train 2 is transitioning to commissioning activities;
- *EPC4 – Upstream Facilities including Hides Gas Conditioning Plant (HGCP) and Well Pads (CBI Clough JV - CBIC)*: this joint venture of Chicago Bridge & Iron Company (CBI) from Amsterdam, Netherlands and Clough Limited from Perth, Australia is responsible for the design and construction of the production facility, the 960 Mcfd/day capacity HGCP, the HGCP Industrial Park, and the Rotator Housing Community. Overall, construction has accelerated with the completion of the Antonov flights into the new Komo airfield and is currently 87% complete;

- *EPC5A – Onshore Pipelines and Infrastructure (Spiecapag)*: SpieCapag SA of Colombes, France is developing onshore pipelines and infrastructures for the Project. This effort includes the construction of a 32 – 34-inch gas pipeline for a distance of 292 km (328 km including spurlines), 109 km of 8-inch condensate pipeline, and also including above ground facilities (e.g. mainline valve stations, meter stations, pig launcher/receiver stations, cathodic protection equipment), power and optic telecommunications cables. Infrastructure includes road upgrades, access road construction, bridge improvements, camps and associated facilities for waste management, vehicle washdowns, helipads, etc. At the time of the visit, approximately 264 km of pipe has been hydrotested and dried. 236 km of the RoW is reinstated. In terms of camps, the Kopi Shore Base Camp is still open. Along the pipeline RoW Camp 1 (KP 266), Camp 2 (KP 226), and Camp 3 at Gobe (KP 191) and Camp 4 at Tamadigi (KP 145) are closed and reinstated. Camp 5 at Moro (KP 93), Camp 6 at Homa-Paua (KP 64), and Camp 7 (KP24) are still open;
- *EPC5B – Komo Airfield (McConnell Dowell CC Group JV - MCJV)*: a joint venture of McConnell Dowell Corporation Limited (Victoria, Australia) and Consolidated Contractors Company (Athens, Greece) responsible for construction of the Komo airfield, 10 kilometers southeast of the HGCP. The runway began operations with the first Antonov flight on May 3, 2013. MCJV is effectively demobilized, except for a few individuals currently finishing the reinstatement;
- *Drilling - Nabors Drilling International Limited*: the current work scope is to drill 10 high-rate gas wells (8-Hides; 2-Angore) with two produced water disposal wells. Rig 702 started drilling in July 2012 at Wellpad B, completed drilling B1 and B2 and has been moved to Wellpad D where D1 was spudded on September 20, 2013. Rig 703 spudded at Wellpad C on April 4, 2013 and is currently close to completing C1. The Drilling Support Base is operational and nearing completion with HQ3 civil works complete, including a functioning Schlumberger/Baker weld shop shelter and logistics warehouse electrical fit-out.
- *Associated Gas Development:* Oil Search-operated Associated Gas Project activities continue to progress. The first gas was sent to the LNG plant from the Kutubu Processing Facility in August 2013. Specifically at Kutubu, final performance testing of the Thermal Oxidizer Unit (TOU) is complete; dynamic commissioning is complete at the Alternate Fuel Gas Unit (AFGU); loss prevention activities are complete at the Northern and Southern Tank Farm; and commissioning is complete for the Fire Water Pumps (except for pump B);
- *China LNG Tanker Construction:* The first vessel (HZ1670A) is on schedule to be delivered in January 2015; construction began with steel cutting for the second PNG vessel (HZ1673A) on September 6th.

New construction is currently underway at the 28 Ha Permanent Facilities Compound near the Port Moresby Airport. At the time of the visit, most of the work undertaken was in association with earthworks. This compound will include offices and associated service facilities for EHL Production staff. It was originally intended for this to include a housing compound, but this concept has been abandoned and will essentially be offices and associated facilities.

After a peak workforce of 21,220 by the end of 2012, demobilization has continued. At the time of this field visit a total workforce of about 17,300 was reported. Demobilization is starting to accelerate and the projected workforce at the end of 2013 is less than 14,000.

1.2 SOURCES OF INFORMATION

The main sources of information used to prepare this ninth IESC trip report are primarily those provided by EHL, but D'Appolonia also obtained information by means of interviews with local stakeholders including Lancos during the field visit in PNG as well as Project employees and contractor staff. The information provided by EHL has included presentations made to the IESC and additional documents consistent with the trip schedule provided in Appendix A.

1.3 REPORT ORGANIZATION

Subsequent sections of this report are organized as follows:

- Section 2.0 – Issues Table;
- Section 3.0 – Environmental and Social Management;
- Section 4.0 – Environment;

- Section 5.0 – Social;
- Section 6.0 – Labor and Human Resources;
- Section 7.0 – Health and Safety;
- Section 8.0 – Cultural Heritage.

The basic findings of the review are presented in the form of observations, comments and recommendations that are generally described according to topics within each section. The findings are summarized in the Issues Table provided in Section 2.0.

2 ISSUES TABLE

This Chapter tabulates a summary of the non-conformances raised in this report, consistent with our TOR as discussed in Section 1.0. The Table has been structured to provide a color-coding for strict non-conformances raised during each site visit, as well as IESC observations for situations that if left unattended could result in a non-conformance. Non-conformance is referenced with respect to Project commitments as included in the ESMP and associated Management Plans, the LESR, the Milestones Schedule, the Project Safety Management Plan, the Project Health Management Plan, the Project Regulatory Compliance Plan, and the Project Security Management Plan (collectively referred to as "Project documents" in the definitions below) and with respect to on-going compliance with Applicable Lender Environmental and Social Standards. As noted in Section 1.0 of this report, "Applicable Lender Environmental and Social Standards" means the environmental and social standards applied by the Loan Facility Lenders to the Project in the form attached to Schedule H-1 (Environmental and Social – Applicable Lender Environmental and Social Standards) of the CTA. The Project should note that compliance with the Applicable Lender Environmental and Social Standards is not limited to the pre-construction due diligence, but is an on-going process. The nomenclature of the color-coded categorizations are assigned based on non-conformance levels similar to the non-conformance levels defined in the ESMP, somewhat revised to reflect the point of view of the IESC and to address that certain non-conformances need to be framed in the context of the Applicable Lender Environmental and Social Standards. The following descriptions are provided:

- **High:** Level III critical non-conformance, typically including observed damage to or a reasonable expectation of impending damage or irreversible impact to an identified resource or community and/or a major breach to a commitment as defined in Project documents or the Applicable Lender Environmental and Social Standards. A Level III non-conformance can also be based on repeated Level II non-conformances or intentional disregard of specific prohibitions or Project standards. In some cases, Level III non-conformances or repeated Level III non-conformances may, but not necessarily, represent a material non-compliance with the CTA. This would be decided on a case-by-case basis;
- **Medium:** Level II non-conformance representing a situation that has not yet resulted in clearly identified damage or irreversible impact to a sensitive or important resource or community, but requires expeditious corrective action and site-specific attention to prevent such effects. A Level II non-conformance can also represent a significant breach of a commitment, or a risk of a significant breach if not expeditiously addressed, requiring corrective action as defined in Project documents or Applicable Lender Environmental and Social Standards. A Level II non-conformance can also be based on repeated Level I non-conformances;
- **Low:** Level I non-conformance not consistent with stated commitments as defined in Project documents, but not believed to represent an immediate threat or impact to an identified important resource or community. A Level I non-conformance can also represent a minor breach of a commitment requiring corrective action as defined in Applicable Lender Environmental and Social Standards;
- **IESC Observation:** A potential non-conformance situation that could eventually become inconsistent with stated commitments as defined in Project documents or the Applicable Lender Environmental and Social Standards.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Environment and Social Management							
Environmental Issues – Waste and Wastewater Treatment							
[2] M8.2	October '12		WWTPs at all of the EPC Contractors except EPC3 have shown persistent discharge compliance problems.	IESC Observation	Water Management Plan	Open	IESC recognizes that significant effort continues to be undertaken to resolve this situation and that overall improvements are currently much improved. At this stage of the Project the situation is short-term in that WWTPs are going to be decommissioned with the completion of construction.
Environmental Issues – Biodiversity and Ecological Management							
M3.10	March '11	November '13	Reinstatement, erosion control and induced access control commitments along access roads in the 'interim period' after Spiecapag's initial reinstatement efforts (during construction phase) and before operations, when EHL will assume full responsibility, are not defined.	IESC Observation	Performance Standard 6	Closed	As construction progresses, responsibility for the management and stewardship of completed facilities and infrastructure is transferred, in some cases from one EPC Contractor to another, and in other cases from EPC Contractor to EHL. As part of early operations RoW management, EHL has developed a Bridging Document between EPC5A and EHL Production to define stewardship and responsibilities. An Early Operations Environmental Mitigations Register appended to the Bridging Document sets out specific environmental management and mitigation actions to be undertaken, with responsibilities assigned, and overall stewardship of the Register is assigned to an Environmental Advisor. We therefore close this observation (Oct 2013). (Report Reference Section 4.7.2)

[2] *In order to better track project progress and accomplishments, the issues identified during each site visit are identified by a letter (M) and number (e.g. M1) that identifies the site visit (e.g.: M1 for the first visit, M2 for the second visit, etc.) followed by a digit that identifies the specific issue found (e.g. M2.4 refers to issue 4 found in visit 2).*

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M8.3	October '12		As the pipeline RoW passes through the Lake Kutubu Wildlife Management Area, an internationally recognized Ramsar wetland area, the Project is required to "implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area" (PS-6, para.11). Milestone #16 was identified to highlight that additional work was required following Due Diligence to ensure the Project met PS6 with regard to their presence within the Lake Kutubu WMA.	IESC Observation	Performance Standard 6	Open	Regarding the Milestone Schedule, the Project currently has the Completion Indicator "Operator finalizes design of programs in the Lake Kutubu Wildlife Management Area". EHL now consider the conservation program at Lake Kutubu to be managed under delivery of the Offset Delivery Plan, The IESC concurs that the management of a Lake Kutubu conservation program falls within the remit of the offset delivery plan. In the interim, and to close out MS16, the Project needs to revert to the original milestone Completion Indicator "Operator has integrated programs in the Lake Kutubu Wildlife Management Area in the offset delivery plan". Until the Indicator is reverted to its original, the Project is not in conformance with Milestone Schedule #16. Once the Completion Indicator is reverted, IESC can then re-consider completion of this Milestone. EHL continues to progress conservation intentions at Kutubu, although external dialogue has been slower than ideal during 2013. The MoU with OSL on the collaborative conservation program remains unsigned. Dialogue with communities remains stalled pending resolution of grievances related to the earlier fish kill incidents. Dialogue with the WMA Committee has restarted, and some progress is being made in provision of early support to the WMA. Dialogue continues between the IESC and EHL in relation to programs in the WMA to promote and enhance the conservation aims of the protected area. (Report Reference Section 4.7.2.1)

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M9.1	June '13	November '13	The scale of tilapia-farming near Lake Kutubu has recently come to light. EHL's original conservation intentions at Lake Kutubu included a sustainable fisheries management plan. As described in Observation M8.3, the proposed conservation program has changed over time, so this work has not been undertaken. There is the risk that if tilapia have or were to be introduced into the lake ecosystem, this could have potentially dire implications on the endemic species for which the lake has attracted international protection status. This in turn could have implications on the feasibility and success of any conservation program undertaken at Lake Kutubu.	IESC Observation	Performance Standard 6	Closed	The anticipated Enhancement Program (see M8.3 above) proposes that biodiversity and fish composition surveys be undertaken at Lake Kutubu, to assist in establishing its biodiversity and conservation values. Considering the potential threat to the lakes unique ecological value by the introduction of tilapia into the lake, EHL should ensure these surveys are conducted and analyzed at the earliest possible opportunity, regardless of the timing of any joint program of work previously planned. The Observation can now be closed as partially covered in Recommendations and in the Observation above M8.3 Report reference 4.7.2.1.and 4.7.2.5.
M8.4	October '12		Results of marine monitoring conducted in February – March 2012 were available in May 2012, but not provided to the IESC until February 2013. Accordingly, this observation is a modification from the situation reported based on information available in October 2012. Monitoring indicates some coral reef monitoring points in Caution Bay were impacted by pipeline construction, especially sites CF-9 and CF-10.	IESC Observation	Performance Standard 6	Open	The IESC is concerned that submission of information to resolve whether or not the Project impacted coral reefs to a degree beyond that predicted in the EIS has not been timely and sampling adjusted as recommended, or presented in sufficient detail. The marine ecology monitoring survey protocols planned for 2014 should focus on coral areas impacted by construction. Report reference 4.7.2.5.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Social Issues – Resettlement							
M6.5	March '12		The RPF specifies that external, outcome monitoring will begin approximately six months following relocation and will be continued biannually for a sufficient period for the effectiveness of measures to be evaluated (RPF, Section 10.1.2).	IESC Observation	RPF, Section 10.1	Open	Agreement was reached between the Project and the IESC on a combination of internal outcome evaluation of standard of living and livelihood restoration using objectively verifiable indicators, followed by IESC verification of results using a sub-sample of affected households. As outcome evaluation has recently begun, and this approach will be used for outcome evaluations that are undertaken during the construction phase and for the Production phase, the latter phase being the period during which much of the evaluation of livelihood restoration will be done. IESC outcome evaluation verification for the next IESC visit (Feb/March 2014) will focus on standard of living. For the IESC to carry out its verification function, the Project needs to complete a preliminary analysis of outcome evaluation data, select a sample for verification and get IESC approval of the sample, and schedule the verification visits with each of the sample households. The focus of IESC verification for each subsequent visit will be agreed during each previous visit. See Section 5.6.2 for additional observations and recommendations.
Social Issues – Community Health and Security							
M6.6	March '12	November '13	There has been a protracted delay in releasing the results of the Integrated Health and Demographic Surveillance System baseline socio-economic survey and baseline nutrition survey. It is now more than 9 months since the surveys were completed. The Project team could not provide any clear commitment as to when the results would be released. The iHDSS surveys were designed to provide a platform for both community health and broader social monitoring. A critical Project monitoring commitment has not been delivered.	IESC Observation	Community Health, Safety and Security MP	Closed	The Project is now receiving the Integrated Health and Demographic Surveillance System (iHDSS) data on a bi-annual basis. The data are used by the MOH for community health tracking and by the L&CA as part of in-migration tracking and for CDS planning and evaluation purposes.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Labor and Human Resources – Gender							
6.12	March '12	November '13	The impact of employment on women's conditions is a major issue. Across the Project, but especially in the Huli area, women often experience violence by menfolk who demand their women hand over their earnings. Males tend to use the money to purchase alcohol and weapons, leading to more violence. As a result, many women express the desire to have bank accounts in which to keep their earnings. Bank accounts are useful, especially for those women in the community who are starting businesses. Bank accounts, however, are not a completely satisfactory solution as males can force their women to withdraw money. The IESC has recommended that the Project use its Community Health Program's 'marriage and relations counseling' component to address the issue of violence against women who are employed. The IESC also recommended that the Project sponsor a Gender expert to assess women's issues, particularly in the Hides area, and to identify solutions. (Issue restated from original identified in March 2012).	IESC Observation	Labor and Workers Conditions Management Plan + Camp Management Plan	Closed	Planning for the CDS Production phase program will include a gender assessment that will consider the full range of issues relating to gender, including the issue of violence against women. Additionally, the project is monitoring communities as demobilization occurs. The IESC expects to be updated on the situation in communities during demobilization and the results of the gender assessment and the ways it informs CDS programs.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Cultural Resource Management							
M9.2	June – July '13	November '13	As the construction phase is nearing completion, a reminder needs to be made that some construction-related activities may extend into production, in particular as relates to the documentation aspects of the cultural heritage program. PS8 requires that "the client will protect and support cultural heritage by undertaking internationally recognized practices for the protection, field-based study, and documentation of cultural heritage." The cultural heritage program does not end when the excavations are complete. The artifacts excavated need to be studied and the results disseminated to stakeholders.	IESC Observation	CRM Plan	Closed	Monash University has submitted a series of reports summarizing the results of their investigations. This is a major accomplishment. EHL has also undertaken community engagement by means of developing fact sheets and fliers for communication and preparing a community awareness poster. Cultural heritage fact sheets/significant stories feature are also available in articles published by EHL: LNG Toktok; Environmental and Social Quarterly Reports.

3 ENVIRONMENTAL AND SOCIAL MANAGEMENT

Environmental and social management for the construction phase of the PNG LNG Project is defined in three documents. The Environmental and Social Management Plan (ESMP) is the main document defining EHL's environmental and social commitments. An additional document termed the Lender Environmental and Social Requirements (LESR) was prepared to supplement the ESMP and provide a single point of reference to all information and documents that do not form part of the ESMP, but are required to demonstrate compliance with Lender Group requirements. At the time of Financial Close in March 2010, it was not practical for EHL to fulfill all of the Lender requirements to finalize aspects of environmental and social management. Therefore, the Milestones Schedule was prepared as Appendix H3 to the CTA to reflect twenty additional time-bound commitments. These three documents together define the roadmap to achieve Lender compliance as defined in the Applicable Lender Environmental and Social Standards in Schedule H1 of the CTA and are the benchmarks against which the IESC audits the Project.

3.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

At the present time, the Project is approaching the transition into Production, referred to interchangeably as the Operations phase. As such, the benchmarks against which the IESC will audit the Project will change. The Project has developed an Operations ESMP that has been reviewed and approved by the IESC and the overall Environmental and Social Management System (ESMS) that will serve for Production has been developed. The new ESMS does not include a LESR and there are currently no LESR-related issues that require review in this report. The Milestone Schedule is now effectively fulfilled, with the exception of the Oil Spill Response Plan (OSRP), referred to as the Oil Spill Contingency Plan – OSCP, that is still pending, which is a requirement of MS# 7. The IESC has reviewed the first draft of this document and EHL is in the process of making revisions. Further iterations between the IESC and EHL might be needed until the document is finalized. With respect to the biodiversity components, requirements of the construction phase Milestones Schedule are now considered fulfilled for MS#15 as a Rev.0 Biodiversity Offset Delivery Plan has been delivered; dialogue continues on Rev.1. MS#14 can now also be considered closed with delivery of Rev.0 of the Biodiversity Monitoring Plan. Dialogue continues on Rev.1. Closure of MS#16, related to the Lake Kutubu conservation program, is under discussion and is anticipated shortly. Further information on these issues is presented in Section 4.7.2.1.

The overall content of the overall Production ESMS is as presented in the IESC report for June – July 2013 (Doc. No. 10-874-H8 Rev.3) and is not repeated here. The documents within this system have all been approved by the IESC, although the documents continually evolve and the IESC has involvement with the development of revisions to the base management plans.

The PNG LNG Project is somewhat unique from other projects in that the onshore and offshore pipelines from Kutubu to the LNG Plant are filled with gas that is being used to commission Train 1 at the LNG Plant. The final weld of the offshore pipeline was completed in December 2012, but the onshore pipeline is still being constructed while the portion from Kutubu to the Omati Delta is operational, with essential systems transferred to EHL Production for care, custody and control. EHL have developed specific bridging documents to provide appropriate procedures to manage environmental, social and physical requirements during this transitional period until the Operations ESMP is fully implemented; this includes an Early Operations Register of Environmental Management and Mitigation Actions.

Environmental and social management of the Kutubu-Omati RoW is under stewardship of EHL Production, with some existing ongoing responsibilities for EPC5A/Spiecapag defined in the bridging document. The main changes to RoW management with gas in the pipeline are as follows:

- Upstream Pipeline personnel are mobilized and stationed at Moro EHL Camp B and are responsible for coordinating normal operation and maintenance activities at the remote main line valve sites on daily basis, and are also prepared to respond to pipeline emergency situations;
- The pipeline from the Kutubu CPF to the LNG Plant is controlled and monitored by the LNG Plant control room on a continuous basis, with the EHL control room technician in constant communication with the OSL Kutubu CPF control room and the EHL pipeline supervisor;
- The pipeline is monitored for leak detection by the LNG Plant Control Room and Operations personnel conduct bi-weekly helicopter patrols of the onshore RoW to monitor for encroachment, geohazards, and any erosion along the RoW;

- EHL Production has also contracted a local aviation company to fly a monthly fixed wing aerial patrol of the offshore gas pipeline and to submit a report to Operations of any potential hazardous conditions along the underwater section of pipeline;
- Operations has assisted the L&CA department with rolling out community awareness engagement sessions designed to teach local villagers of the various activities that will be performed along the RoW and, most importantly, the hazards associated with the gas pipeline and associated equipment.

Community engagement has also included community responsibilities (restricted activities along the RoW), what communities might expect to see (such as aerial surveillance) and an overview of where community assistance may be solicited (such as the cutting of vegetation). More than 1,000 people have been engaged by the L&CA staff as part of this orientation process.

3.2 MANAGEMENT OF CHANGE

The ESMP has requirements for the Project to communicate changes to Lenders on the basis of significance. One significant change to the pipeline reported since the last IESC visit was a pipeline reroute between KP 89 to KP 90 near Lake Kutubu. On August 5, on the fourth attempt of pulling the pipeline through string through the tunnel created by horizontal directional drilling (HDD), the hole collapsed trapping part of the pipe. Subsequent attempts to recover the pipe and rescue the hole failed. This situation required that the pipeline be rerouted, which involved undertaking pre-construction surveys (environmental and social), and communication with the Lake Kutubu Wildlife Management Area Committee and the Papua New Guinea Department of Environmental Protection. Construction started on August 29 for the reroute and was still underway at the time of the field visit. No other significant changes to the Project have been reported since the last IESC field visit in June – July 2013.

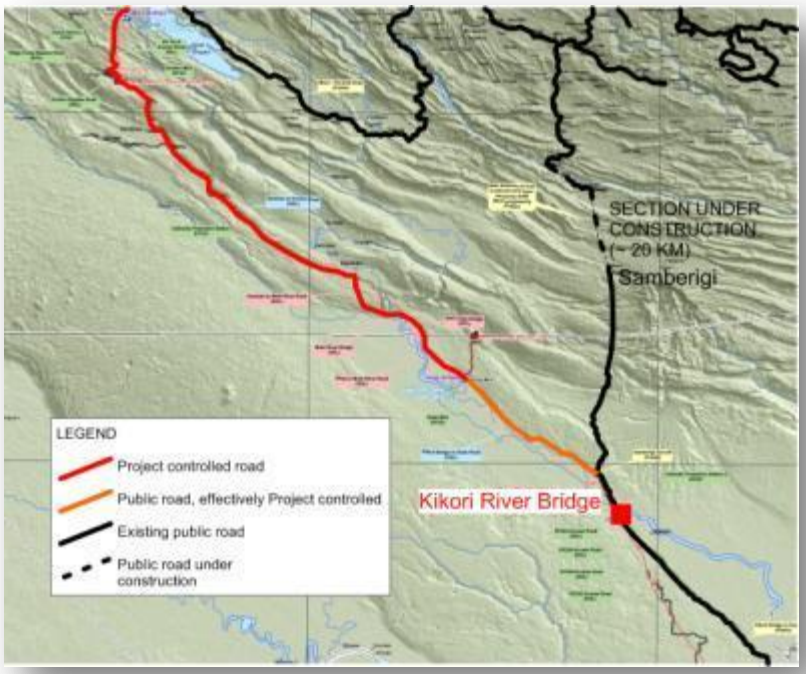

Figure 3.1: Location of Kikori River Bridge with respect to public and Project roads

A significant upcoming change involves the Government of PNG requesting retention of the Project's Kikori River Bridge (also known as the Kaiam Bridge, see Figure 3.1) following completion of the construction phase, in lieu of a bridge that they had already planned. This bridge was constructed by EPC Contractor C1 as part of the Southern Logistics Route for transporting materials for pipeline construction. The commitment in the Environmental Impact Statement (EIS) and Construction Environmental

Management Plan (EMP), as well as in the Environmental Permit for the Project was for the Project to maintain control to Project use only.

Because EHL has committed within the EIS and ESMP to control access to new Project roads, transfer of the Kikori River Bridge represents a change and will require an MOC. EHL has initiated the MOC process, as part of which the environmental and social risks associated with the transfer of the Kikori River Bridge are being assessed, and the MOC has been categorized by EHL as a Level II in accordance with the criteria established in the ESMP.

In general, uncontrolled access to roads in relatively undeveloped areas creates the potential for impacts to biodiversity through loss and degradation of natural forest, and the potential for social impacts relating to new settlement and in-migration. EHL's EIS noted the possibility of additional Government-planned infrastructure, and therefore a primary tenet of EHL's induced access and weed control mitigations were based on maintaining access control.

As the Samberigi road connection is currently being constructed, EHL is encouraged to expedite the preparation of the MOC analyses and document.

3.3 INCIDENTS

Significant incidents have not taken place since the last IESC field visit in June – July 2013. From an environmental standpoint, there have been no significant spills (> one barrel – EHL internal definition) over the past year. There have been three Level 1 incidents internally raised by EHL, two related to releases of untreated wastewater and one related to the spread of Priority 1 weeds, all of which were mitigated. On the social side there have been some work stoppages, in particular with respect to the main pipeline construction, but nothing out of the ordinary. On July 9, 2013, shortly after the last IESC visit, there was an accident whereby a pipe fitter working for a subcontractor received a blunt force trauma when he was caught between a trench box and the pipeline when a pipe clamp released. He died from cardiac arrest after he had been transported to a hospital. It is not known if the worker had a pre-existing condition that would have been associated with the heart attack. EHL has undertaken a comprehensive review of the root cause of the accident.

4 ENVIRONMENT

4.1 WASTE AND WATER MANAGEMENT

4.1.1 Project Strategy

The Project strategy for the management and disposal of waste and wastewater associated with construction is defined in the Waste Management Plan and in the Water Management Plan developed by EHL and included as appendices to the ESMP. Both documents identify minimum general requirements for the management of waste and wastewater, including the identification of potential sources of impacts, the proposed mitigation and management options, monitoring requirements and responsibilities. As outlined in these documents, the main objective of the Project is to be self-sufficient regarding waste management processes. The Water Management Plan is in turn supported by the Project Standards document that defines the effluent discharge standards associated with the operation of wastewater treatment plants (WWTPs).

4.1.2 Observations

Waste Management

Waste management continues to be well implemented. As shown on Figure 4.1, much of the waste generated by the Project is recycled or re-used, especially by Drilling. Waste that is not recycled or re-used is either incinerated or landfilled at the Hides Waste Management Area (HWMA) at Kopeanda, which continues to be a "best" practice facility for solid waste management.

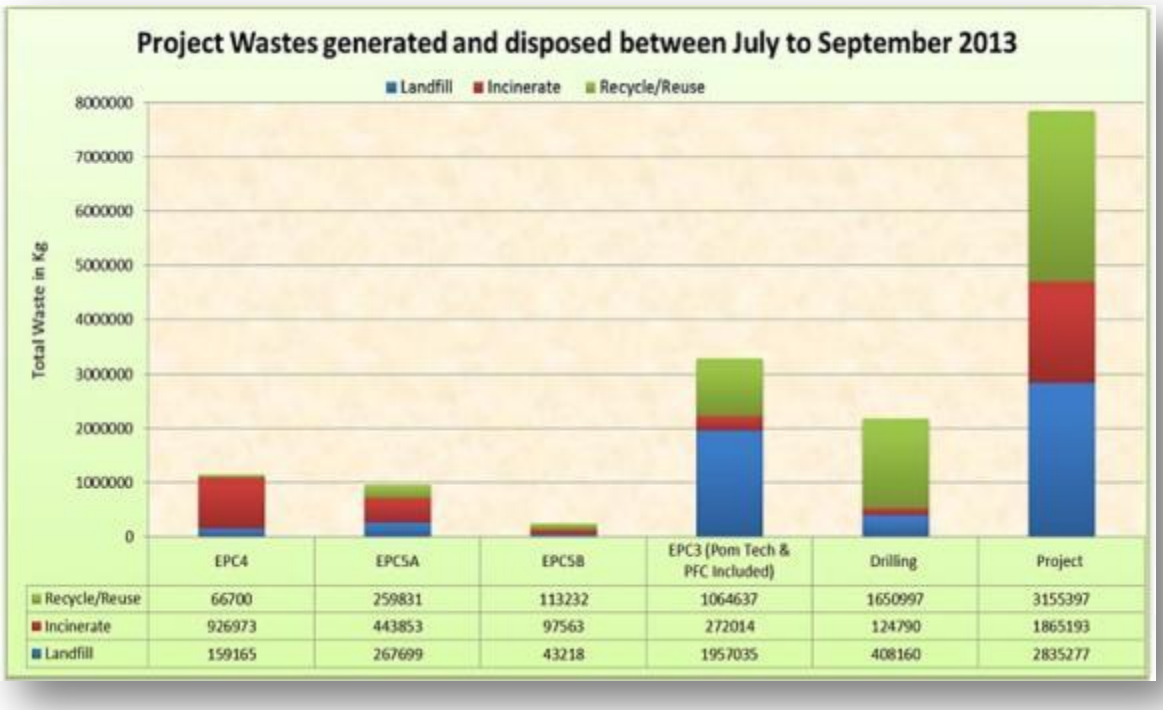

Figure 4.1: Project Waste Profile

Highlights of EHL's waste management program since the IESC field visit in June – July 2013 include the following:

- Cell 1 at the HWMA is 30% filled, below what was expected;
- Implementing Ecoflex (a system whereby tires are stripped of their rims and used for civil and reinstatement applications, especially as a means to stabilize slopes without resorting to gabions) has now reached the point where more than 3,500 tires cover 3,600 square meters at Komo and plans are to use this system for the reinstatement efforts at the HGCP;

- Recycling programs continue to expand with waste oil now sent to Ramu Sugar and 3 Suns Ltd; used oil filters, oily rags and plastics and grease cartridges are now sent to Total Waste Management Ltd in Australia for recycling; nine third-party facilities are now approved for the recycling or disposal of waste;
- Drilling is showing exceptionally effective waste management: 6,905 tons of cuttings have been processed at the Thermal Cuttings Cleaner (TCC) YTD, allowing for 3,025 barrels of oil to be sent to the Liquid Mud Plant (LMP) for recycling; 1,300 barrels have been re-used in the TCC.

The large industrial incinerator at the HWMF is operational, but there have been many difficulties with respect to the startup of this facility, in particular associated with electrical and instrumentation issues that have prevented achieving a stable burn capacity. Accordingly, only non-restricted wastes are being incinerated and it is uncertain whether or not this incinerator will be suitable for Production. Given the level of effort undertaken to install this incinerator, IESC hope that its difficulties can be resolved and it does not prove necessary for the Production team to have to develop an alternative facility.

Wastewater and Water Management

Wastewater management has been flagged as a persistent problem over the past several field visits, still recognizing that effluent has not been discharged to surface water and that there are few community grievance related to wastewater. As observed this visit, the Project has continued to invest in the improvement of the wastewater treatment plants to a significant degree and the overall situation has improved since the last visit. Wastewater management still has some difficulties, but is generally compliant. Testing capabilities in the Hides are have improved by moving the laboratory to a larger area at Komo. These centralized laboratory services at Komo represent an increased capacity to manage in-situ monitoring requirements for timely response to operational upsets and effective treatment processes. Having a laboratory at Komo also facilitates sending out samples by air to external laboratories. Issues will be reduced with demobilization. Currently, there are 23 WWTPs in operation, but by the end of the year the number will be close to half.

A unique aspect of the PNG LNG Project is the loss of foam used to drill through the Darai Limestone, which extends from the surface to as deep as about two kilometers along Hides Ridge. Significant releases of foam have not taken place since the drilling of the first well.

4.2 HAZARDOUS MATERIALS MANAGEMENT AND POLLUTION PREVENTION

4.2.1 Project Strategy

The Project strategy for the management of hazardous materials is defined in the Hazardous Materials Management Plan and in the Spill Prevention and Response Plan, both included as appendices of the ESMP. These documents describe the Project approach and strategy to identify and mitigate potential impacts associated with the handling and transport of hazardous materials. The overall objective is to prevent uncontrolled releases of any hazardous material during transportation, handling, storage and use of hazardous materials. Spills have been classified according to the Tier I to III categorization depending upon the potential impact of the spill and the capability of the available resources to face the emergency. The plans require that fuel and chemicals are properly stored in designated areas provided with secondary containment (e.g. double-walled tanks/lined containment bunds, drip trays) to prevent spills and enable containment of complete volume stored.

Because of the remote location and the significant amounts of materials mobilized throughout PNG, the Hazardous Materials and the Spill Prevention and Response management Plans have been supplemented by a Journey and Traffic Management Procedure that defines the requirements to ensure that the journeys are properly planned, approved and managed, and provide rules and applicable standard for light vehicles, buses and heavy goods vehicles operations. The document includes requirements for drivers, vehicles, training and authorization requirements for drivers, monitoring of journeys in terms of safety and assistance in the case of incidents, including requirements for emergencies and hazardous material spill response.

The main hazardous materials used by the Project are fuel for vehicles and diesel generators, paints and other chemicals used throughout the different construction sites, supplied to the different Project locations by local contractors on as-needed-basis.

4.2.2 Observations

Spill management is effectively managed across the Project. No spills greater than one barrel (ExxonMobil reportable spills) have occurred in 2013. The spill rate per 200K man-hours for spills greater than five liters is currently 0.13, representing a continuous improvement since a rate of 0.6 recorded for 2011 and 0.2 recorded for 2012. Spill records continue to be properly maintained by both the Project and the Contractors with results included in the environmental monthly reports. Ongoing spill response training takes place across the Project.

Overall, from what was observed in the field, hazardous materials continue to be well managed throughout the Project. Spill kits and fire extinguishers were found to be available and properly located throughout the sites and hazardous material drums and containers were observed to be appropriately labeled.

4.3 AIR QUALITY

Project air emissions since the last IESC visit have been limited to dust from roads and earthworks, equipment and incinerator exhausts and greenhouse gas emissions. Stack emissions will be required for the LNG Plant and the HGCP once production has commenced. The same will be true for the incinerator at the Hides Waste Management Area, assuming that it is actually commissioned. Dust was not a significant issue in the Hides area at the time of the visit due to rainfall and at the LNG Plant dust is no longer a significant issue, as earthworks are complete and most roads are paved. Dust, however, was observed to be affecting local communities where earthmoving is taking place at the Permanent Facilities Compound (PFC). Although a water bowser was being used in an attempt to minimize fugitive dust, high winds and dry conditions were not enough. Greenhouse gas emissions are reported in the EHL Quarterly reports and the results are not repeated here.

4.3.1 Recommendation

1. Evaluate if the dust control measures currently taking place at the PFC can be strengthened.

4.4 NOISE AND VIBRATIONS

With the completion of Antonov flights at the Komo airfield, the impact from the takeoffs and landings of smaller aircraft is relatively minimal and no longer considered to be an issue. Perimeter noise monitoring continues to take place around the HGCP, and noise levels are generally compliant and noise has not been a community complaint. Noise monitoring at the LNG Plant site has not uncovered exceedances to Project standards and no noise-related grievances have been recorded over the past year.

4.5 EROSION AND SEDIMENT CONTROL

4.5.1 Project Strategy

EHL has developed an Erosion and Sediment Control Management Plan (ESCMP) as a fundamental part of the ESMP. The basic objectives of the ESCMP are to:

- Maintain stable landforms to reduce erosion and enhance reinstatement;
- Maintain integrity of assets (through stable landforms); and
- Reduce adverse impacts on stream water quality, and associated beneficial values, and in-stream sedimentation.

The Ecological Management Plan requires comprehensive pre-construction survey such that the potential for soil erosion is well defined, potential receptors are identified and a plan is in place to minimize the mobilization and dispersion of sediment into freshwater and estuarine environments. The plan defines requirements for assessing and establishing erosion and sediment control requirements (particularly in relation to site preparation earthworks, road construction across watercourses, watercourse diversions, and site drainage), detailing specific erosion and sediment controls to be implemented (e.g., diversion drains, sediment ponds and fabric silt curtains). Monitoring requirements are also defined.

4.5.2 Observations

Erosion and sediment control are critical components of construction activities. Significant effort continues to be placed on controlling erosion and generally good success was encountered. One of the activities undertaken by the IESC during this field visit was a helicopter flyover over the entire length of the onshore

pipeline from the area of the well pads to the Omati River landfall. This flyover allows us to confirm our previous observation, that a dedicated effort to minimize erosion continues to be evident across the Project. Erosion and sediment control continues to be challenging for the pipeline construction, but appropriate effort is undertaken and best practice procedures are being followed. Reinstatement of the Komo airfield is essentially complete, and the few remaining EPC5B staff is dedicated to completing the last of the reinstatement.

One of the positive activities associated with the establishment of erosion and sediment controls continues to be the use of leftover tires where the rims are removed with an "Ecoflex" system and overall the results look good. As noted in Section 4.1.2, more than 3,500 tires cover 3,600 square meters at Komo as part of the effort to control slopes and runoff. It is understood that plans are in place to use this system for the reinstatement efforts at the HGCP when permanent reinstatement starts, expected to begin shortly after the completion of the IESC field visit.

4.6 BIODIVERSITY AND ECOLOGICAL MANAGEMENT

4.6.1 Project Strategy

The Project's strategy for biodiversity and ecological management is illustrated in several management plans that appear as appendices to the Construction-phase ESMP and in EHL's Project-wide Biodiversity Strategy document. Mitigation measures within the Construction-phase Ecological Management Plan, the Weeds, Plant Pathogens and Pest Management Plan (which covers alien invasive species; herein referred to as the 'Weeds Management Plan'), the Induced Access Management Plan and the Reinstatement Management Plan will be implemented by contractors during the construction phase, and, in some cases by EHL. In addition, EHL has developed a Quarantine Management Program (QMP), which is a Project-wide document designed to prevent the importation and spread of pests, plant pathogens or disease (including invasive species) via project personnel and cargo.

Central to the Construction-phase Ecological Management Plan and the Weeds Management Plan is the 'pre-construction survey' (PCS), which seeks to identify through on-the-ground investigation a number of ecological attributes, including (but not restricted to): pinnacles that contain bat colonies; potential Bulmer's fruit bat (Aproteles bulmerae) colonies; bird-of-paradise and bowerbird display grounds and trees; large individual trees (>1m diameter breast height); areas of Pandanus swamp forest; swamps in sinkholes less than 50m deep on Hides Ridge; and Nothofagus (beech) forest that will require special hygiene measures (due to risk of dieback as caused by pathogens such as Phytophthora cinnamomi). All PCS have now been undertaken, whether by EHL with their designated staff/consultant experts or by contractors with sub-contractor teams.

Mitigation measures are often specific to one project area (Upstream Project Area, Marine Project Area or LNG and Marine Facilities Site), and are sometimes site-specific (e.g., the Ecological Management Plan contains a section on Hides Ridge). During the Operations phase, biodiversity and ecological management will be achieved through the separate Upstream & Pipeline and LNG Plant ESMPs, and will continue to be guided by the Biodiversity Strategy and associated documents. The Biodiversity Strategy was developed to address long-term mitigation of biodiversity for both the construction and operation phases within the Upstream Project area. The Strategy provides an overview of EHL's overall approach to mitigating impacts on biodiversity in alignment with the mitigation hierarchy. In accordance with the Biodiversity Strategy, EHL has developed an Offset Delivery Plan and Framework, providing detail on initial offset design and framework, and are finalizing their Biodiversity Monitoring Plan. The Biodiversity Monitoring Program comprises four Programmed Monitoring Activities (PMA), which are as follows:

- PMA1 Remote Sensing of Residual Impacts: involves the use of remote sensing to determine the extent to which broad scale direct and indirect residual impacts eventuate as a result of the PNG LNG Project.
- PMA2 Condition Surveys: involves aerial and ground surveillance of the Right of Way (ROW) and other relevant areas to inspect the status of ecology related aspects such as priority invasive species and pathogens, focal habitats and other sensitivities, and use of PNG LNG Project roads and infrastructure.
- PMA3 Biodiversity Surveys: involves in-field biodiversity surveys providing flora and fauna species data in and around the areas affected as part of PNG LNG Project and protected areas enhanced and / or established as part of the biodiversity offset program.

– PMA4 Efficacy of Biodiversity Offsets: gathers data in respect of the biodiversity offset program, where a monitoring system will be utilized for each component of the biodiversity offset program to evaluate whether objectives are being achieved.

4.6.2 Observations

4.6.2.1 Ecological Management and Biodiversity

As highlighted in previous reports, a revision to the current Biodiversity Strategy vers.2 has been anticipated. To retain its validity as the Project transitions from construction into the production phase, and make some small amendments, EHL have provided IESC with a draft Rev.3 of the Strategy. Following IESC input, EHL anticipate publication during the first half of 2014.

Ecological Management and Protected Areas

The initial implementation of efforts within the Lake Kutubu Enhancement Program continues at a slower pace than anticipated. Negotiations with OSL have not progressed within the timeframe anticipated previously, and EHL's Enhancement Program planning document is yet to be finalized. There have been further delays to engagement with villages on the Program, as a result of reported negativity felt by some communities following a fish incident earlier in 2013. Department of Environment and Conservation (DEC) have not released their investigation report (expected in June of this year), which was to offer insight into the contributory causes behind the fish kill. EHL have informed the IESC of local animosity in the area, and they believe the current situation has not been conducive to engagement on the Enhancement Program. Nevertheless, some progress has restarted locally. EHL have re-established meetings with members of the Wildlife Management Authority (WMA) Committee – see Offsets section below. EHL expects that wider engagement can re-start in the next few months.

As project construction nears completion, EHL will be able to define the extent of habitat loss versus that anticipated; it is anticipated that the ROW footprint remains within the original requirements provided to the pipeline Contractor. As a result of the collapsed hole at KP89-90, a small additional footprint will be required within the Lake Kutubu WMA as the re-route will be surface-laid rather than directional drilled; but due to footprint-gains elsewhere in the WMA, the project is still under its projected footprint within the protected area.

The Project has recently committed to a further 3 years of funding for the Pig Nosed Turtle (Piku) Conservation Project. A recent highlight by the Piku team has been the publication of a children's book concerning tilapia and the dangers of the release of invasive species. The book will be rolled out to schools and school children around Lake Kutubu and the Kikori Delta.

Biodiversity Offsets to address Residual Impacts

EHL will shortly provide IESC with a Rev.1 of the Offset Delivery Plan and Framework documents following extensive IESC comment and discussion since provision of Rev.0 late 2012. Discussion points remain on: defining what 'no net loss' means in the context of this project; refining the overall objectives of the offset program; ensuring that the 'additionality' of the offset program is sound and demonstrable; managing how the project will track and react to risks, uncertainties and unforeseen challenges; and how conservation gain (and thus no net loss) will be demonstrated.

EHL intends to publish a Summary of the offset program, to aid in stakeholder consultation and partnership development. As observed during the April 2013 stakeholder workshop arranged by EHL, there is an appetite for involvement from a variety of national NGO's and institutions. The Summary document should provide stakeholders with their first public description of the detailed framework and components of the whole program.

EHL continues with early implementation of the separate components of their offset program. Components 4 and 5 are the core of the offset, and the primary mechanisms by which the program will achieve no net loss of biodiversity.

- Component 1: Kikori-wide landscape scale. This component seeks to assist DEC in meeting its international Convention on Biological Diversity (CBD) commitments via production of a paper-based 'Protected Area Plan' for a Kikori-wide protected area. EHL has initiated dialogue with several departments within DEC, including those with responsibility for progressing PNG's World Heritage status for the Kikori River catchment. EHL advise that feedback from national and international NGO's has so far been positive, both in the need for such a plan and in their contribution to its development. The lead NGO partner is currently being finalized.
- Component 2: support to DEC to achieve 'actions for improvement' of the National Biodiversity Strategy and Action Plan (NBSAP). EHL plans to contribute by supporting the establishment of the bi-annual Conservation Forum for PNG NGO's. Discussions with the lead NGO partner are being finalized. Other elements within this component discussed previously with the IESC are not currently being progressed.
- Component 3: enhancing conservation capacity. EHL's support is focused on developing and institutionalizing Post-Graduate and Diploma courses at University-PNG (U-PNG), providing scholarships, and establishing a framework for placements and mentorships with field-based conservation NGOs. Good progress has been made in dialogue with U-PNG and the fund disbursement organization Mama Graun, resulting in the first planned student intakes for both courses occurring in early 2014. However, much work remains before that time, in appointing new Lecturers and finalizing the three new modules for delivery.
- Component 4: support to existing protected areas. Support to the Lake Kutubu WMA is the primary focus for achieving this component. However, as stated above, progress has been slow during 2013 due to community grievances following the fish death incident at the lake. Nevertheless, two Lake Kutubu WMA Committee meetings have been held since our last visit, and discussions are progressing on early support projects. Committee members are currently focusing on educating local communities about the dangers of the introduced species tilapia on the lakes endemic fish species. Due to the extent of Tilapia farming around Lake Kutubu (see IESC June-July 2013 visit report – Doc. No. 10-874-H8 Rev.3), plus recent newspaper articles[3] alleging tilapia downstream of the lake, EHL is mindful not only of the negative consequences this could have on the lakes endemic fish species, but also the implications this could have on the offset program at Lake Kutubu.
- Component 5: establishing new protected areas. Following earlier stakeholder input, EHL is currently focusing efforts on engaging communities to establish a Lower Kikori Resource Use Management Plan (LKRUMP). EHL intends that the Plan will integrate conservation with sustainable forestry and fisheries components. Cognizant of the need for any viable protection to be community owned and managed, local discussions have resulted in eight tribes agreeing to be part of the conservation component of the LKRUMP. A conservation workshop in the Lower Kikori is being planned for November. The intention for the conservation component is to initially focus on the existing Aird Hills WMA, with a view to future protection across a wider legally-designated Conservation Area.

Monitoring of Biodiversity Impacts and Mitigation

Following extensive IESC comment on the Rev.0 Biodiversity Monitoring Plan earlier in 2013, EHL have provided a draft Rev.1 for additional review. The IESC will review the document following this visit, and provide comments to EHL.

Worthy of note is that EHL intends to undertake a full initial post-construction assessment, using a combination of satellite imagery, aerial and ground-survey techniques. This should provide a comprehensive assessment of whether the mitigation measures of the Construction-phase Ecological Management Plan have been implemented successfully, and whether the objectives of the Biodiversity Strategy are being met.

Regarding long-term Programmed Monitoring Activities (PMA), EHL has made progress on utilizing and ground-truthing satellite imagery as part of PMA-1. In the short term, PMA-1 will allow the pre-construction baseline to be compared to the post-construction situation, and then be undertaken at regular

3 *The National newspaper, 1st Nov 2013, Weekender section p.3: "Tilapias invade the Kikori region".*

intervals during operations to compare subsequent situations against baseline. The objectives for PMA-1 are to detect and map broad scale changes to forest cover in the Upstream Project Area, and distinguish between those resulting from natural versus anthropogenic processes (e.g. new roads, logging, settlements, and cultivation). Of these anthropogenic processes, the analysis seeks to determine which are attributable to the project and hence represent indirect residual impacts.

In conjunction with EHL, external expert consultants Coffey and satellite imagery analyzers Firescape Science are close to finalizing the analyses of remote sensing data from 2009, 2011 and 2013 satellite imagery. The 2009 pre-construction baseline conditions have been determined by use of archive Landsat imagery (with 30m resolution); 2011 and 2013 analyses have used RapidEye (with 5m resolution). The simultaneous analyses for all 3 years is nearing completion, and each year's output has been fine-tuned in conjunction with writing the PMA-1 protocol methodology (to enable future analyses to be repeated comparably). The analyses for 2009 and 2011, along with the finalized protocol, will be presented to IESC during our next visit in early 2014.

4.6.2.2 Induced Access

The Government of PNG is anticipated to request the retention of the Project's Kikori River Bridge (also known as the Kaiam Bridge). The Government has long planned to increase connectivity between the Southern Highlands Province and the Kikori area in the Gulf Province. In the Kikori River area around Kaiam, an existing network of old logging tracks already exists. Government plans to further develop infrastructure in the area have included the building of a bridge to replace the public ferry at Kaiam and undertake road construction (see Figure 3.1). To complete the road link south to the Kikori area, the Government had funded construction of a bridge to replace the ferry; but with the onset of the Project's plans to build a bridge in the same area, a Government-funded bridge was not constructed. Instead the IESC has been informed that the Government will request EHL to transfer ownership of the Project's Kikori River Bridge in order to complete their southern road link.

The transfer of the bridge to the National Roads Authority, in conjunction with the construction of the new Samberigi road, is expected to result in an increase in traffic by public and commercial vehicles, including the possibility of logging operations by road. Logging has occurred in the area and has been limited to tracks and river transport. This Government request highlights the ongoing risk that future requests for use of other Project infrastructure might yet occur, requiring careful analysis and consideration through the MOC process.

In anticipation of the transfer of the Kikori River Bridge, the timing of which is not yet formalized, EHL is undertaking internal risk analyses in relation to how they can continue to meet their commitments, especially in relation to induced access and weed control. EHL is working with the Government of PNG to achieve awareness of potential environmental and social risks associated with additional uncontrolled access to the Lower Kikori. EHL is aware that further situations could arise across the Project where temporary infrastructure might also be requested for transfer in the future.

During this visit, the IESC was provided with an overview of construction RoW access controls. For Operations-phase permanent access requirements, the IESC was informed that Class II MOC internal approvals are in progress for situations where either the non-reinstatement of construction track and/or the provision of gates are required. An update to the Operations Access Control table was provided. It confirms that EHL's preference is to retain stretches of construction track for permanent vehicular access for the vast majority of valve locations and RoW access points; the IESC has requested background information to review each permanent vehicle access decision (as was given on all permanent access control decisions prior to Oct 2012), but this has not yet been provided.

Settlement onto the RoW is an indirect impact observed during this visit. At various locations along the RoW, we observed newly built houses and villages that were not present at the time of the baseline survey. We were informed that at one village a saw-mill has been established to aid in the use of wood felled during RoW clearance. It is intended that PMA-1 and PMA-2 of the Biodiversity Monitoring Plan will capture evidence of these instances and any associated forest clearance, but in the interim natural terrain features are intended to be sufficient to deter access.

4.6.2.3 Reinstatement

Project-wide, all areas deemed for reinstatement (or retained as permanent project land-use) are recorded and tracked through the Reinstatement Register.

Reinstatement efforts are critical at this stage of the Project, as the Construction phase nears completion. As contractors terminate at work sites, this can result in uncompleted work sites being handed over to the Project through 'snag-lists' and unnecessary delays can ensue. Timely reinstatement at the Komo airfield site is especially important, where construction of the airfield within the 228ha site was completed in April. As highlighted in our last report, the majority of active reinstatement was due to occur during the 2nd half of this year, and IESC can report that the site is now considered 98% complete. Although visible re-growth is not yet extensive, slopes are stable, topsoil reapplied, carpet grass cuttings and local grass seed is sown and growing (Japanese Millet has proved successful in establishing ground-cover over difficult slope areas), and nursery yearlings are becoming established. The Contractor and EHL staff have used a systematic approach to plan and track progress, and efforts have been staged to focus stabilization and reinstatement on areas when they are released from construction activities. There remain two priority-two areas ('difficult to reinstate') observed either side of the turning area at the southern end of the runway. Areas awaiting final reinstatement include the Pioneer Camp, a small portion of the asphalt plant and the bulk fuel bay area; handover back to Company is signed off for all other areas. The contractor was due to depart the site the week after our visit, when it was envisioned 100% reinstatement would be achieved.

Pipeline reinstatement is progressing well; we have been advised that 76% of the total ROW is now reinstated, and formally signed-over from contractor to Company. Apart from KP 89-90, all ROW sections are reinstated between Omati landfall and KP73 (KP89-90 required a re-route of the ROW following tunnel collapse, and its reinstatement will be tracked during our next visit). The IESC flew over sections of the ROW, and observed successful re-vegetation maturing at most sections between Mubi and Omati. 'Special sections' representing challenging erosion and sediment control areas will require close monitoring during operations; examples of areas now stabilized and reinstated include KP59-55 (Homa Ridge) and KP63-64. Also reinstated are Tamadigi and Kaiam campsites, along with certain pipe-yards and horizontal direction drilling sites. The section between KP5-KP0 (HGCP) will be stabilized but its reinstatement will comprise returning to former use i.e. agricultural use; future land use will be monitored via PMA-1 remote sensing.

Drilling confirmed that all of their Hides Ridge support sites are considered temporary and will therefore be reinstated when no longer required to support drilling operations.

At both the HGCP and LNG Plants, draft reinstatement plans are now in place. At the HGCP, priority areas have been identified, and the team is determining the correct form of slope stabilization and reinstatement of the separate sections of the site. At the LNG Plant, due to potential plans for expansion, a category system is being adopted to identify which Project activities will likely occur at each section of site; this then indicates what actions and type of reinstatement should occur at that section. Mangrove seed harvesting and replanting continues, and though not yet widespread, there appears to be more successful re-growth than during previous visits, and some localized evidence of spreading root-systems.

4.6.2.4 Invasive Species Management and Quarantine Management Program

Weeds, Pests and Pathogens (Invasive Species)

An updated version of EHL's Weed ID Guide has been prepared to include an expanded range of invasive species and make the guide easier to use; the guide will shortly be circulated to all Contractors and sites. Revision 3 of the Weeds Management Plan is nearing finalization, as efforts are made to align it with the forthcoming Operational phase Environmental Management Plans. A draft Rev.3a was issued for use in February 2013, which as presented in our last report delineates the Upstream area into specific weed management zones and quarantine zones. The weed management zones are based on broad ecological units traversed by the project, and patterns of distribution and abundance of the weed populations within each zone. Each zone has specific objectives pertinent to the weed data gathered via PCS or expert weed audit. BioTropica, EHL's external weed experts, helped prepare this management zone approach, and results of their bi-annual weed distribution & abundance audits are structured to focus on management zones. The zones are (moving generally south-east to north-west across the project footprint):

- LNG Plant;
- Omati Landfall to Kikori River Crossing (Kaiam);
- Kikori River crossing to Mubi River (incl. Gobe Production Facility and Mubi River Bridge);

- Mubi River to Lake Kutubu (incl. Moro camp);
- Lake Kutubu;
- Lake Kutubu to HGCP (including the Homa-Benaria sub-section, Idauwi, Angore, the HGCP area and the approach to Hides Ridge up to the 'clean line');
- Highlands Highway (Tari to HGCP);
- HGCP to Komo; and
- Hides Ridge.

However, the information provided to the IESC does not indicate that EHL has yet centralized the analysis of weed management using this management zone approach. At the moment, weed management remains structured around contractor provision, and only the external expert audits provide an analysis of EHL's project-wide weed management zone data. As this new strategy seeks to contain weeds within their current management zone and stop movement between zones, as a management response to previous trends, it would seem logical to use these zones as discrete units for the project-wide management of weeds. BioTropica are due to make their second 2013 audit during November.

EHL is currently arranging for the import of a stronger glyphosate for targeted eradication of resistant Priority 1 weeds, where management using a weaker glyphosate has not previously been successful. Glyphosate 540 is non-residual but also non-selective, so prior to any application EHL plans that BioTropica will train personnel in its use and advice on weed control equipment.

Following on from a perceived lower level of contractor engagement at field sites during our last visit, the IESC now observed a higher level of engagement on weed management. As the Project approaches the transition from Construction to Operations, several contractors are approaching contract end, and there is a risk that the local experience and expertise of Contractor personnel built through the Construction phase will be lost. This situation has the potential to become critical with the project being at its greatest extent of bare ground across sites, prior to natural re-vegetation becoming mature. A RoW Management and Maintenance Plan with Bridging Document (and environmental mitigation register) has been developed to steward early operations activities and responsibilities as EPC5A nears demobilization. Nevertheless, with site contractor personnel also moving on, EHL needs to ensure to keep the issue a high priority across all field sites, and avoid complacency in both weed monitoring and management. During discussions with the Field Environment Team, it is clear that localized weed management is progressing and taken seriously at several sites we visited; for example, targeted improvements at Hides Wellpad-B have now resulted in successful localized P1 weed eradication. But with instances of priority weeds increasing in both abundance and distribution, with instances of weeds crossing management boundaries, and localized eradication challenges, the IESC continues to seek a stronger strategic approach to weed management.

The RoW Management Plan includes provisions for future community involvement in activities such as weed identification and clearance.

Quarantine Management

EHL is progressing with implementation of their Quarantine Management Plan through tracking of Contractor consignments into PNG, and monitoring of Contractor adherence to the Quarantine Procedure. EHL data analysis focuses on the number of consignments per Contractor and instances of inspections and NAQIA-required fumigations, with any non-conformances tracked centrally within EHL.

Overall, there has been a slight decrease in the proportion of consignments requiring inspection from our last visit (previously 57% for 1Q 2013, now 51% for 1Q-3Q 2013); however, there has been an increase in fumigation following those inspections (previously 5% for 1Q 2013, now 15% for 1Q-3Q 2013). This information is presented as an annual breakdown and 2013 year-to-date (YTD) in the IESC-generated graphs below.

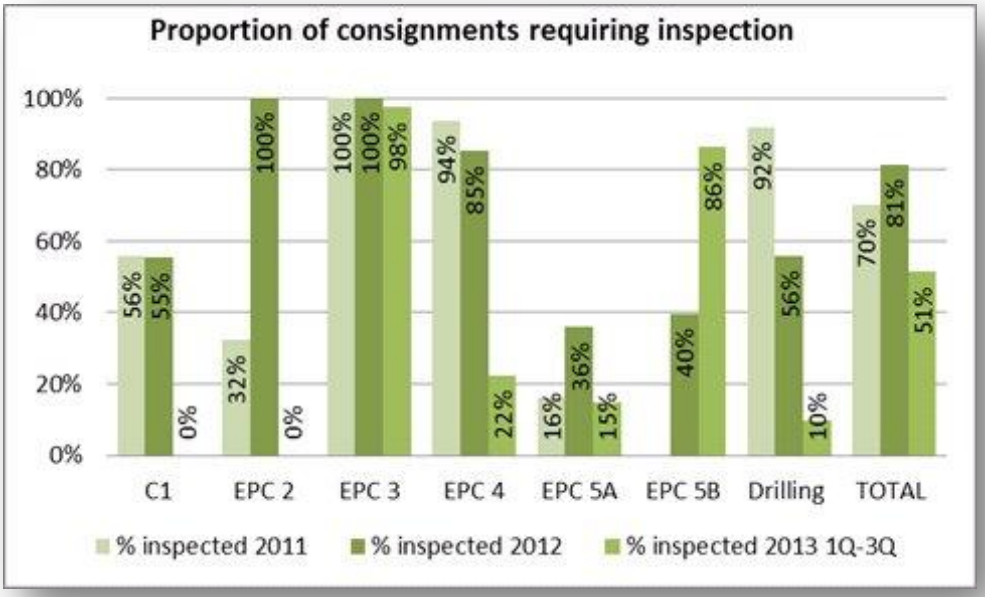

Figure 4.2: Quarantine Management: Consignment Breakdowns

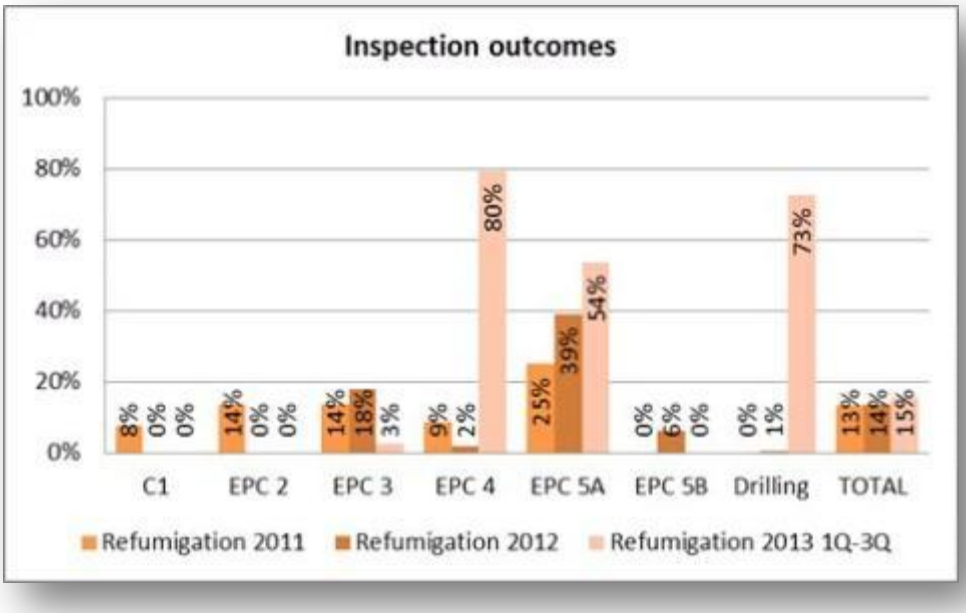

Figure 4.3: Inspection outcomes - need for fumigation following inspection

There have been some notable improvements in Contractor performance since our last visit, but also cases which have required increased NAQIA intervention and therefore indicate a reduction in performance:

- C1 continue to require no inspections, a significant improvement over previous years. This therefore has triggered no fumigations. C1 are now in the process of demobilizing;
- EPC-2 have fully demobilised, so no consignments.
- EPC-3 through 2011-13 continue to incur a high number of inspections of their consignments primarily due to point of origin and imports being break-bulk in nature. However, low rates of fumigation are required by NAQIA (and even lower than previously); the Contractor has made significant efforts by managing the fumigation of their own consignments on arrival in PNG;

- The proportion of EPC-4 consignments requiring inspection has increased during 2013, but is still much lower than required in previous years. Unfortunately, a high proportion of NAQIA inspections are resulting in the need for fumigation (80%, representing 4 of 5 consignments), and although less than in 1Q, is very much higher than previous years;
- EPC-5A has seen a reduction in inspections during the year, and compared to the previous year. However the proportion of fumigations required continues to increase, both year on year, and quarter by quarter through 2013 (by 3Q 2013 54% YTD). Although only representing 8% of EPC5A's total consignments, it does show that over half of consignments inspected result in fumigation due to NAQIA inspection findings;
- Although EPC5B received no consignments during 1Q 2013, by 3Q YTD they are showing a marked increase in the number of inspections required over 2012 (to 86% at 3Q YTD). However no fumigations have been required by NAQIA. EPC5B are now demobilising, so no further consignments are expected; and
- Drilling inspections have remained low during 2013, and are much lower than in previous years. However the number of fumigations necessary following NAQIA inspection has significantly increased this year compared to previous years.

EHL has shifted focus from EPC3 and EPC5A, to seeking performance improvement from EPC4 and Drilling. Areas for improvement now target more effective fumigations at points of origin, packing procedures, and ensuring use of only ISPM15-compliant pallets and wood bracing; corrective actions have been identified for both Contractors. In addition, EHL have requested all Contractors to hold quarterly performance meetings with NAQIA. The results of corrective actions taken and outcomes from Contractor-NAQIA meetings will be the focus of the next IESC visit.

4.6.2.5 Freshwater and Marine Ecology

Scoping of the 2013 freshwater survey (which started in early October) targeted sites that had not been surveying within a 'during construction phase' recognizing the linear progress of the Project. The 2013 survey results are not yet available, but the analysis of the data will give a valuable reference point to compare findings during non-extreme weather influences and build on biogeographical references. Recently added sites that were demonstrating an impact were re-visited in 2013 to gain additional reference data during a non-extreme event and build on preliminary findings obtained during 2012. The 2013 monitoring will also start to show trends on invertebrate recovery times with pipeline crossings occurring within three and six months of the 2013 survey.

Stream invertebrate communities at four sampling locations are likely to have been impacted by project construction activities (bulk earthworks). The Project has undertaken remedial works in affected areas around Komo and HGCP. Pipeline construction is only expected to have short term impacts and monitoring of recovery times will come out in future sampling events. Work to date demonstrates the sensitivity of the upland stream invertebrate communities to variables such as sedimentation. No other impacts were detected in the Upstream Project area or were not discernible from natural variability. The Freshwater Ecological Monitoring Program should provide confidence that construction impacts (and their recovery), will be detectable should they occur.

The IESC continues discussion with EHL regarding interpretation and potential implications of results of the 2012 Marine Ecology Survey of Caution Bay, which indicated that sediment from pipeline construction activities had affected coral at three of the seven monitoring points located within two kilometers of the pipeline. The IESC will work with EHL in early 2014 to design and implement marine ecology surveys that both satisfy Project needs as well as demonstrate compliance with the approved ESMP and IFC PS6.

4.6.2.6 Omati River and Caution Bay Fisheries Studies

Preliminary summary results for Q1 and Q2 2013 of the Caution Bay and Omati River fisheries studies were presented during the site visit. The available information shows wide variation in species composition and landings, influenced by weather, season and village activities. The project currently calculates catch per unit effort (CPUE) by pooling all catch of all species caught by all fishing gears and areas, divided by the number of hours fished. The IESC encourages the Project to use a standardized CPUE (catch/effort by time fished, fishing gear, fishing ground/target species) to assess the effects of the Project. Full analysis of the 2013 data should be available sometime in 2014. Discussion with some of the community members involved with fishing does not indicate that the Project construction has had any

unmitigatable adverse effects on the fisheries segment of the economy, but the available data do not serve to confirm that observation. The Project is commended for committing to monitor fisheries through 2015, and maintaining well-trained village assistants.

Several fisheries livelihood-related concepts are under consideration, including and in-shore Fisheries Aggregate Device (2013-14) and a Milk-Fish Aqua-culture Survey (2013-2014). The Project has assisted fishers with submitting proposals to National Fisheries Authority (NFA) during 2013. It has also strengthened its partnership with NFA, considering a Mangrove Planting & Nursery project for 2013-14 and a NFC-Fisheries training program involving sea-food handling, business skills, and net mending, planned for 2013 -14). These programs were not reviewed during this field visit, but will be evaluated during subsequent field visits.

4.6.3 Recommendations

Ecological Management and Biodiversity

1. Under biodiversity offset Component 2, the IESC suggests that EHL consider the re-inclusion of supporting a national strategy for invasive species i.e. one of the NBSAP 'action for improvement' areas identified by DEC for urgent review and consideration. Several participants at the 2013 multi-stakeholder workshop did support this, and EHL's work in project-related invasive species management would likely benefit PNG in developing a policy to guide national strategies on invasive species.
2. The Caution Bay marine ecology monitoring should be changed to be more efficient and capture the full extent of the reef damage. All CF sites greater than 2 km distant from the pipeline trench could be eliminated and at least 7 sites added within 2 km south of the pipeline trench. For example, at a minimum: a) add 2 sites to the west of CF N 02 (just S of P 03 and P 04, respectively), and b) add one to the W of CF N 01 and two to the E of CF N 01;c) Add one to the W of CF S 01 and one to the E of CF S 01(this assumes CF N 02, CF N 01, and CF S 01 are the same as the old CF-7, CF-9, and CF-10, and all sites will be located over coral reef habitat).
3. Develop a reliable CPUE statistic (hopefully from existing data) by area, season and gear for the Caution Bay fisheries in order to evaluate the effects on terminal operations on the fisheries.

Induced Access

4. With regard to the Governments request to transfer the Kikori Bridge to the National Roads Authority, the IESC recommends the Project expedite the internal risk analyses being undertaken as part of the MOC process, including additional mitigation measure necessary with regard to induced access and weed control;
5. We encourage EHL to continue working with the Government of PNG to achieve awareness of potential environmental and social risks associated with uncontrolled access to the Lower Kikori and recommend mitigation measures that could be applied to address these risks;
6. As recommended previously, EHL should continue the monitoring and appropriate analysis of other potential situations project-wide where a request for access to project infrastructure could be anticipated;
7. Regarding the mitigation of induced access along the ROW, the IESC recommends the generation of a mechanism to aid the management and tracking of controls to induced access (whether natural terrain or project-created) at every public intersection along the RoW;
8. With regard to permanent vehicle access approvals currently being progressed internally, the IESC encourages a reconsideration of the number of permanent vehicular access requirements within the Access Controls table to those only where no other access method is feasible; and the inclusion of missing project roads within the Access Control table e.g. the Tagari River By-pass road.

Reinstatement

9. Although learnings are shared between sites, reinstatement at both the HGCP and LNG Plants would benefit from the additional targeted planning, scheduling, resource allocation and tracking practices applied collaboratively with the Contractor during the Komo airfield reinstatement. Increased momentum at both sites should enhance early reinstatement and re-vegetation to avoid the likelihood of weed encroachment onto bare surfaces.

Weeds, Pests and Plant Pathogens

10. EHL's weed management, including any increases in distribution/abundance of priority weeds, needs to be analyzed and presented in such a way as to reflect challenges and management measures being taken at a management zone level as per the Weed Management Plan issued for use in Feb 2013.
11. We recommend that the bi-annual BioTropica weed audits continue through into the Operations phase.
12. With the forthcoming distribution of the newly revised Weed Identification Guide and the finalization of the Rev 3 Weed Management Plan, this is a timely opportunity to roll-out a Weeds awareness campaign across all remaining Contractors and staff at project sites. Input from EHL's expert weed consultants BioTropica would be beneficial.
13. Although the number of EPC5A consignments will shortly decrease (following the near-completion of pipeline construction), we suggest a lessons learned exercise be performed regarding their quarantine performance and management, as the number of consignments that resulted in fumigation following NAQIA inspection rose throughout construction, both year on year and quarter by quarter during 2013.

5 SOCIAL

5.1 INTRODUCTION

5.1.1 Scope of Social Review for this Site Visit

The IESC consulted with a variety of people and groups during its October/November 2013 visit. The social review included (but was not limited to) the following activities:

- Presentations by relevant project departments, including EHL management and staff in Port Moresby on construction status, land access, resettlement and livelihood restoration, fisheries program, community development support, in-migration, community benefits distribution, grievance management, demobilization, and occupational and community health and presentations and discussion on labor practices and demobilization issues with HGCP and LNG plant site staff;
- Review and revision of most recent CRPs/RAPs addenda;
- Field discussion with the Independent Advocate (Monitoring Social & Environmental Law);
- Visit to Hides quarry road and spoil dump areas;
- Observation along the HHR;
- Visit with KP 0-5 households resettled from pipeline ROW;
- Interviews with a selection of physically displaced households In Hides and Angore for preliminary verification of standard of living outcomes;
- Working sessions with L&CA and resettlement field and survey staff on outcome evaluation surveying procedures;
- Working sessions with L&CA core staff on outcome evaluation procedures and analysis;
- Observation of Komo airport road;
- Visit to Papa village (LNG plant affected area); and
- Visit to ANZ bank at HGDC.

Overall, IESC engagement with project affected communities was satisfactory for the purposes of this review. Resettlement outcome evaluation results were not yet at a sufficiently advanced stage to permit final verification by the IESC, thus working sessions were undertaken to further clarify procedures. Evaluation verification will begin during the next IESC visit (February/March 2014).

The Project has made notable progress in addressing issues identified from the last IESC visit (June/July 2013). Critical next steps to achieving the Project's goals for directly affected households (restoring/improving standard of living and livelihoods) and for wider community development (livelihood self-reliance) will be:

- Fully effective resettlement outcome evaluation to determine all obligations met & acceptability of results;
- Ensuring livelihood restoration entitlement fully meets requirements of PS5;
- Adequate and effective Production phase organizational structure & staffing, particularly for remaining livelihood restoration and outcome evaluation;
- Completion of top up payments for trees; and
- Timely initiation of targeted and longer term CDS efforts.

5.1.2 Waiver

The IESC social review is substantially based on interviews conducted with project staff, project affected people, the independent advocate, and other stakeholders. It was not within the remit of the IESC to verify or substantiate the statements made by interviewees and, unless otherwise indicated, the IESC has taken no steps to verify or substantiate such statements. Due caution should therefore be attributed to all statements reported to have been made by interviewees. Accordingly, the IESC makes no representation as to the substance of reported 'perceptions' or 'beliefs' of interviewees and notes that hearsay evidence should not be treated as proof of any specific statement or concern expressed.

The IESC review provides a "snapshot" of the PNG LNG Project's state of compliance with the commitments and standards defined in the Project Environmental and Social Requirements, including but not limited to the RPF or LARLA, component RAPs and other Social Management Plans. As such, the review does not purport to be a fully comprehensive evaluation of compliance.

5.2 LAND AND COMMUNITY AFFAIRS (L&CA) - ORGANIZATION AND RESOURCES

5.2.1 Project Strategy

The Project will provide the organization, personnel and resources necessary to comply with national legislative requirements and to deliver commitments contained in the ESMP.

Since the last IESC review, L&CA has distilled its role and functions into the following.

Goal:

- Sustain access to resources by developing and maintain our social license to operate.

Objectives (refined since the July – August 2011 review):

- Secure and facilitate ongoing land access;
- Anticipate and mitigate construction and production interruptions;
- Develop EHL's Social License to Operate through its relationships with the communities where it works;
- Facilitate compliance with company policies & Project socioeconomic commitments; and
- Develop EHL national staff into the corporations' socioeconomic leaders of the future.

5.2.2 Observations

L&CA staff currently includes 230 PNG nationals and contractors and 40 expatriates. Some of the existing staff, largely field assistants and "casuals", have already been demobilized. Key staff will be retained until the group is handed over to Production.

The proposed staffing for the Production phase consists of 100 PNG nationals and five expatriates. In general, the numbers and positions seem adequate, with the important exception of staffing for resettlement and CDS outcome evaluations. The proposed staffing chart does not show evaluation as a key task under Social Impacts Management with a link to the field teams who will do the data collection and field engagement. Additionally, outcome evaluation will require a Coordinator to ensure that the tasks done by different groups are properly coordinated. See Section 5.6 Outcome Evaluation.

5.2.3 Recommendations

1. Outcome evaluation should be assigned as a key task under Social Impact Management, with links to field teams.
2. A POM-based staff member should be assigned to coordinate all activities related to outcome evaluation. This "evaluation coordinator" should be trained in all aspects of outcome evaluation and should be responsible for confirming the results of data analysis.
3. A sufficient number of trained and field experienced personnel should be retained into the Production phase to assist in outcome evaluation and implementation of the remaining livelihood restoration activities.

5.3 LAND ACCESS AND RESETTLEMENT

5.3.1 Project Strategy

The Project strategy for achieving land access and resettlement is described in the RPF and individual RAPs. The RPF lists the following resettlement principles:

- Avoid and minimize the need for physical/economic displacement through alternatives analysis and siting, alignment and other design modifications (RPF, Sect 2.2, Resettlement Principles);
- Conduct consultation processes that achieve free prior and informed participation of affected people and communities (including hosts) in decision making related to resettlement and continuing participation during implementation and monitoring/evaluation;
- Compensate people affected by land acquisition for loss of assets at full replacement value;
- Improve the living conditions of physically displaced households;
- Design and implement in a timely manner culturally sensitive and economically sustainable income restoration measures;

- Provide measures to support physical relocation and re-establishment;
- Identify and provide special assistance to people who are especially vulnerable to displacement impacts; and
- Carefully monitor and evaluate to ensure that resettlement measures are meeting the needs of affected people and to identify the need for and implement corrective measures.

5.3.2 Observations

5.3.2.1 Status of Land Acquisition

Resettlement is in its final stages, with the exception of some land agreements and compensation payments. Land agreements are expected to be completed by January 2014. Out of the total compensation for direct losses of K49,032,285, only K910,233 remains to be paid, primarily for housing and other structures. The completion schedule is consistent with completion of construction activities. Relatively few issues regarding compensation payment and rations delivery have occurred recently with only 36 of the 184 grievances regarding land related to access and agreements, and all but one closed. This reduction in issues related to agreements is attributed to the integrated team approach using land owner support teams to monitor assets surveys and act as "assistants" for video photography that is meant to keep people off the land once the surveys are completed.

Deprivation payments during 2013 to date have included 124 payments made (representing 98% of all payments) and near completion of final undisputed payments. Payments to land owners in the Kopi Scraper Station, Gobe, Wellpad C, TB1 and some segments along the Onshore Pipeline are delayed by formal land disputes.

5.3.2.2 Water Accessibility for Physically Displaced Households

The last IESC report (June/July 2013 site visit) noted that some resettled households complained about lack of a convenient water source. This issue is problematic because nearly all the physically displaced households opted for the cash compensation and self-resettlement option, rather than the project resettlement option which would have included household water tanks. Though fewer grievances related to water accessibility have been filed in the last 12 months, the project has agreed to an acceptable issue closure strategy that includes the following steps:

- Comparison of water availability pre- and post-displacement will be used as a Standard of Living indicator for all Type 1 (physically displaced) households;
- Analysis of findings will show whether the Project needs to take any corrective actions;
- Corrective actions will be in kind (provision of water tanks or other acceptable in kind solution); and
- Corrective actions will be implemented in a timely manner and will conclude with a "sign off" between the project and the affected household.

In the event of any future displacement, a requirement for purchase of water tanks or demonstration that an acceptable source of water is accessible should be a requirement for full payment of compensation.

5.3.2.3 Full Replacement Value Top-up Payments

The Project gave the IESC an unequivocal undertaking that it would pay "full replacement value" for trees and crops based on the independent valuation study (March 2011). The Project and the IESC also agreed that any top-up arrangements would be delayed until land access activities were completed. Determining the difference between the Valuer General rates that were applied and Full Replacement Value (FRV) rates, as required by PS5, is complex, especially retrospectively, for a number of reasons including project induced inflation, the variability of the value of trees/crops across the project areas, the variability of the uses of trees/crops (subsistence or sale), the mix of productive versus speculative gardens that were affected, and large tracks of affected land that were used mainly for activities such as hunting rather than for the trees or gardens.

L&CA is currently developing a methodology to determine the (i) extent of the need for top up payments and (ii) a formula for determining FRV for trees/crops. First, the actual difference between Valuer General rates and FRV is not clear because FRV has not yet been determined. Second, the formula for FRV will include the cost to purchase seedlings, the cost to replant, and the loss of any income or subsistence in the

interval between loss and re-productivity. Any additional compensation to bring rates to FRV may be paid in cash or in kind.

5.3.2.4 Replacement Housing

The 28 households that opted for a project provided resettlement site have been relocated and their housing and amenities are good quality. The remaining Type 1 (physically displaced) households opted for self-relocation. Outcome evaluation of the standard of living (housing and other living condition aspects) for all Type 1 (physically displaced) households using objectively verifiable indicators is in progress. Indicators include security of tenure, structure of housing, and accessibility (to water, health clinics, schools, and roads). Final results should be available for sample verification by the IESC during its next visit (Feb/March 2014). See Section 5.6 Outcome Evaluation for more information.

5.3.2.5 Vulnerable Households

Assessment of the FN's on the Register of Vulnerables has been completed. Of the 66 households that met the vulnerability screening criteria, 22 cases were deemed by the Vulnerable Committee to require support over and above the standard resettlement package. These households have been provided with drum ovens, assistance to construct new houses, and additional livelihood support. Eighteen households were deemed medium priority and were provided with water structures (11) and/or recommended for additional livelihood support (5). Two assessments are currently being completed. The standard of living outcome evaluation will also verify VP FN living conditions and determine whether any additional assistance is needed for re-establishment.

The last IESC report (June/July 2013 site visit) noted that some women may have been made more vulnerable as a result of husbands' use of compensation to take another "wife" and abandon their families. The report indicated that outcome evaluation could be used to identify abandoned women/families and determine whether any additional assistance is needed. The Project should verify that outcome evaluation will consider the conditions of wives/families of households that were displaced or only the head of household's conditions.

5.3.2.6 Resettlement Documentation

PFC Complex: the IESC visited the Permanent Facilities Complex (PFC) construction site which is part of the Project under the Loan Agreement. The briefing indicates that the land acquired for the PFC was previously occupied by "squatters" who were resettled by the land owner to a nearby plot of land. The resettlement measures implemented by the land owner reportedly are more than adequate and comply with the requirements of PS5 regarding displacement of squatters. The Project, however, needs to prepare and disclose a short RAP describing the impacts and the mitigation measures.

Additional RAPs/CRPs and addenda: the IESC has reviewed and discussed comments with L&CA staff for the following five documents and approved them for disclosure:

- Kutubu to Hides (KP 0-80) – RAP addendum;
- HQ 1-3 – RAP addendum;
- Hides-Spineline Wellpad Access Road C-G – CRP;
- Kutubu to Kantobo KP 80-153 – CRP Addendum 2 (Construction); and
- Spineline & Wellpad C-G – CRP Addendum 1.

The documents are now in a consistent format which should be should be used for any future RAP/CRP documents. Any RAPs or CRPs needed for new facilities, such as for the expansion, will require a new loan agreement and will follow the requirements of the Lenders in place at the time of the due diligence.

5.3.3 Recommendations

1. In the event of any future displacement, households should be required to purchase water tanks or to demonstrate and sign off on acceptable accessibility to water prior to full payment of compensation.
2. Implement the water issue closure process through the standard of living outcome evaluation, corrective actions as indicated by evaluation results, and sign off by households.

3. Submit the proposed process for top up payments to the IESC for review prior to its implementation.
4. Clarify for the IESC whether outcome evaluation will consider wives in displaced households which have been abandoned by husbands or only the head of household (likely the husband) as listed in the original surveys.
5. Ensure that the CDS planning gender assessment considers women who have been made vulnerable by husband abandonment to determine the need for livelihood support.
6. Prepare and submit to the IESC for approval a short RAP describing the impacts of land acquired for the PFC and the mitigation measures implemented by the land owner.

5.4 RESETTLEMENT INDEPENDENT ADVOCATE

5.4.1 Project Strategy

EHL has retained the Monitoring Social and Environmental Law Ltd (MSEL), formerly the Environmental Law Centre, to act as an independent advocate on behalf of displaced people and to ensure displaced people are fully informed about the resettlement process as well as their rights and obligations. The MSEL team includes a former Chief Commissioner of the Land Titles Commission and a former magistrate highly experienced in complex land cases. Both these team members are actively involved in PNG LNG field work.

5.4.2 Observations

The IESC met with MESL at Juni camp. The MESL member confirmed that coordination with the Project has greatly improved. New procedures include the following:

- Weekly integrated work plans - A weekly work plan is developed in advance of the work activities for which MSEL presence is required;
- The Resettlement Field Lead contacts the MSEL Team Lead to ensure coordination of MSEL attendance at formal land owner meetings to witness the signing of Resettlement Agreements and the assessment of vulnerable people; and
- Draft resettlement agreements are provided by the Project to MESL in advance of land owner meetings.

5.4.3 Recommendations

None arising from the present review.

5.5 LIVELIHOOD RESTORATION

5.5.1 Project Strategy

The livelihood restoration strategy is described in the RPF and component-specific RAPs. Key elements of the strategy include:

- Delivery of weekly food rations or cash equivalent to ensure household food sufficiency for a nominal nine month or six-month period, in the case of linear routes, while food gardens are re-established;
- Agricultural extension services, a tool package and supply of pathogen-free sweet potatoes to facilitate re-establishment of food gardens and food sufficiency;
- Technical assistance to help resettlers to develop cash earning activities and enterprises; and
- Provision of Compensation Advisor to assist and to advise on compensation investment and business options.

5.5.2 Observations

5.5.2.1 Implementation

Livelihood restoration highlights during the last quarter (July through September 2013) are described below.

Project inputs

- Delivery of planting materials to 164 displaced households in the upstream north and south areas;
- 45 extension visits to propagation Service Providers on propagation of planting materials;
- Distribution of chickens and Muscovy ducks to 5 households (Angore well pad B);
- Completion of livestock baseline survey at Angore well pads and access roads;
- Extension services to 43 lead farmers and one vulnerable households resettled from Komo and Hides areas; and
- Mobilization of households (from Angore well pad areas) for construction of animal shelters, duck rearing training, and provision of improved chickens.

Outputs

- 13 existing Service Providers across Upstream locations propagating and bulking planting materials and poultry for sale back to the project; and
- Two new Women's Groups (Homa and Paua) establishing nurseries as hub for longer-term mass propagation of in-demand food crops for distribution to group members (~300-400 households).

Notable results

- The first fruiting of citrus trees (700+ seedlings) distributed to 164 households in 2011 has occurred;
- Resettled households are sharing second generation sweet potato cuttings with 3-5 other households on average and community (model) farmers are sharing second generation sweet potato cuttings with 10-15 households on average;
- Most households are selling marketable surpluses earning PGK100-150 per market day on average;
- Lead Farmers (former resettled households) from Komo and Hides are selling live chickens (K50) and ducks (K100) that were the offspring from breeders distributed in 2011/2012;
- Households are employing seed-saving techniques for sustainable seed supply locally; and
- About 70 % of LR participants from Homa and Paua have adopted new technologies and integrated farming practices and are diversifying crops to include new sweet potato varieties, OP corn, peanuts, soya beans, cassava.

5.5.2.2 Entitlement to Livelihood Restoration – Compliance with PS5

Discussions with L&CA core staff indicate that there is some uncertainty regarding the offer of livelihood restoration assistance to Type 3 economically displaced persons/households. As explained to the IESC, entitlement to LR support was offered to (i) all Type 1 physically displaced households because most were also economically displaced and (ii) Type 2 economically displaced persons/households that lost commercial/mixed use land, large gardens with basic food crops like sweet potato and coffee, or businesses such as trade stores. Type 3 persons/households who lost very small plots of land without gardens or land with some fruit trees or sugar cane and/or used largely for hunting, but lived and had their main gardens elsewhere, received compensation, but were not offered livelihood restoration support.

To close out resettlement activities, the project needs to document for the IESC that all displaced persons/households whose livelihoods were adversely affected by their loss of land were offered the entitlement to livelihood restoration assistance. This documentation should be made available to the IESC by the end of December 2013.

5.5.3 Recommendation

1. Documentation should be made available to the IESC by the end of December 2013 showing that all Type 2 economically displaced persons/households were offered livelihood restoration assistance and that all Type 3 economically displaced persons/households were either (i) offered livelihood restoration assistance or (ii) requested/agreed to take compensation only.

5.6 OUTCOME EVALUATION & COMPLETION AUDIT

5.6.1 Project Strategy

5.6.1.1 Outcome Evaluation

The original strategy, as outlined in the Resettlement Policy Framework, called for external resettlement experts to conduct outcome evaluations. Agreement was reached between the Project and the IESC on a combination of *internal* outcome evaluation of standard of living and livelihood restoration using objectively verifiable indicators, followed by IESC verification of results using a sub-sample of affected households. As outcome evaluation has recently begun, this approach will be used for outcome evaluations that are undertaken during the construction phase and for the Production phase, the latter phase being the period during which much of the evaluation of livelihood restoration will be done.

5.6.1.2 Completion Audit

A completion audit by an independent third party is specified in the Resettlement Policy Framework (RPF p. 31) noting that "completion audits will occur once all RAP measures have been implemented and, in terms of livelihood restoration, once a sufficient amount of time has passed to produce verifiable outcomes. The completion audit brings to a close the resettlement process. However, if the completion audit indicates that certain resettlement objectives have not yet been achieved, further action will be identified and implemented as appropriate."

5.6.2 Observations

5.6.2.1 Outcome Evaluation

The resettlement process is nearly completed, and many of the support programs for physically and economically displaced households began in 2009/2010. It is, thus, critically important that evaluation of the outcomes of the respective standard of living and livelihood restoration efforts be progressed before intervening variables obscure the distinction between project related and non-project related factors. This is particularly important in determining whether any households are experiencing declined (worse off) conditions than their pre-displacement conditions.

As of October 2013, the first standard of living evaluation was initiated in KAF, HGCP, HQR and HWMA (KLF) and a summary report prepared. The first evaluation is nearly always a "trial run" to determine whether the indicators that were selected are suitable and the data collection methods effective. The IESC reviewed the evaluation results and held discussions with staff that resulted in identification of the need for the following:

- Revision of some indicators; and
- Additional guidance on data collection and data analysis methods.

During the IESC visit, we (POM and field based staff) held "working sessions" at Juni to revise indicators and review outcome evaluation processes. Indicators were revised with the help of L&CA field staff who, knowing the households, could advise on indicators that more closely fit the social-economic context. Other working session topics included:

- Discussion of the purpose of the outcome evaluation for field staff to better appreciate the reason for data collection and the importance of the work;
- Review of data preparation and analysis procedures; and
- Re-interviewing of a selection of affected households whose standard of living had been evaluated to demonstrate the appropriate data gathering environment and the kind of follow up questions needed during the interviews.

The team will complete the standard of living evaluation prior to the next IESC visit. During the next visit, the IESC plans to visit a sample of the physically displaced households to verify the findings of the evaluation. This sample should contain households in all three categories (improved conditions, maintained conditions, and declined conditions), but with a larger proportion of declined condition households. The sample should reviewed by the IESC prior to its next visit. These verification consultations should be agreed and scheduled with each of the selected households prior to the IESC visit.

Based on the IESC's observations and the valuable opinions of the staff who participated, an evaluation Coordinator will be necessary to ensure that procedures are consistent and results acceptable and on-schedule. A workshop is also likely to be needed, particularly for the livelihood restoration evaluation which requires a more complex analysis than the analysis of standard of living data which are largely a visual comparison of pre- to post-displacement conditions. The IESC also agreed to prepare an outcome evaluation guide (Appendix B).

5.6.2.2 Resettlement Completion Audit

During the presentations in POM, the IESC was questioned on the need for a completion audit. The IESC noted that completion auditing by an independent third party is specified in the Resettlement Policy Framework. The IESC also explained that a completion audit is in the interest of both the project and the lenders. For the Project, it concludes responsibility for affected households (except for any further adverse impact caused by the project). For the Lenders, it expedites implementation of resettlement and livelihood assistance.

5.6.3 Recommendations

1. IESC to prepare evaluation guidance (Appendix B).
2. Evaluation Coordinator to be assigned (POM-based, but able to spend sufficient time in the field).
3. Consider a more formal workshop in preparation for livelihood restoration evaluation.
4. Complete the standard of living evaluation prior to the next IESC visit.
5. Select sample of households for IESC verification purposes and share the sample with the IESC prior to its next visit.
6. Organize IESC verification visits with each of the sample households.

5.7 COMMUNITY IMPACTS MANAGEMENT

5.7.1 Project Strategy

Project commitments related to community impacts management are contained in the Community Impacts Management Plan and the Community Health and Safety Management Plan. Some key provisions of these plans are as follows:

- *"where practicable minimize routing construction traffic through villages, past schools camps close to project sites";*
- *"limit pedestrian interaction with construction vehicles, etc.)…";*
- *"collaboration with local communities and responsible authorities…to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present";*
- *"collaboration with local communities on education about traffic and pedestrian safety (e.g. school education campaigns)";*
- *"employing safe traffic control measures, including road signs and flag persons to warn of dangerous conditions."*

Community safety is defined in terms of community awareness programs, as well as work protocols designed to minimize potential community impacts. Procedures are defined in the Community Health and Safety Management Plan and the Community Health, Safety and Security Management Plan in terms of defining procedures for community interaction in terms such as community awareness programs. In terms of defining Project procedures to protect the public is the Journey and Traffic Management Procedure, which defines the procedures for managing truck traffic.

5.7.2 Observations

5.7.2.1 Water Accessibility

Water *quality* related to project construction continues to be monitored and any issues addressed. Water *accessibility* remains an issue for many highland communities, but is not adversely affected by the Project,

thus the general issue of community water supply is discussed in the Community Development Support Section (See 5.11.22).

5.7.2.2 Demobilization Impacts on Community

The last IESC report recommended that the project monitor communities for signs of increased violence as local workers are demobilized. Monitoring results to date indicate that increased violence has not occurred. Only a small number of local workers, however, have been demobilized and a relatively large number have been re-mobilized or employed elsewhere, thus monitoring should continue as demobilization ramps up toward the end of the year.

5.7.2.3 Komo Airfield Periphery Road Update

The road connecting communities around the Komo airfield is completed, greatly facilitating the access of local communities to the main roads.

5.7.3 Recommendations

1. Continue to monitor community reactions and responses as demobilization of local workforce intensifies and for a reasonable period afterward.

5.8 COMMUNITY SECURITY

5.8.1 Project Strategy

The Project's security strategy insofar as it pertains to project social performance is described in the EHL Community Health Safety and Security Management Plan. The Operator also has a Project Security Management Plan, although the latter document is outside the scope of the IESC review. Key tenets of the Project security strategy include the following:

- The philosophy underpinning Project security is 'community partnerships';
- Security works closely with L&CA which is responsible for frontline community liaison and interaction;
- The Project is committed to adherence to the Voluntary Principles for Security and Human Rights;
- There are no armed private security personnel on the PNG LNG Project and there are no plans for such deployment;
- If any armed support is deemed necessary, such support will be provided by the PNG government through the police;
- EPC Contractors are responsible for providing their own security at their particular sites of responsibility in accordance with ExxonMobil standards, as reflected in the above Framework, and under the guidance of the ExxonMobil security team; and
- EPC Contractors may not directly communicate with the Royal Papua New Guinea Constabulary (RPNGC).

5.8.2 Observations

Careful monitoring by project security (HGSF) and others (such as L&CA field staff) continues. Relationships with local communities have been relatively calm, though occasional flare ups occur. Demobilization to date has not exacerbated security conditions. People consulted in the Angore area told the IESC that the Peace agreement between the warring groups, facilitated by the Project, has resulted in an increased number of households returning to the area.

5.8.3 Recommendations

None arising from the present review.

5.9 PROJECT INDUCED IN-MIGRATION

5.9.1 Project Strategy

The Community Support Strategy gives the following examples of potential adverse environmental, social and community health impacts from in-migration:

- Increased pressure on basic infrastructure and services of host communities;

- Increased competition for training and employment;
- Increased crime and violence in host communities;
- Increased prostitution and substance abuse;
- Health issues and problems with STI (sexually transmitted infections) and other diseases;
- Pregnancies outside of established relationships;
- Alcohol abuse and domestic violence;
- Ethnic tension;
- Erosion of cultural institutions; and
- Increased environmental degradation.

The CSS commitment was to undertake an in-migration risk assessment and an assessment of associated environmental and social impacts.

The Project also made the following commitment in the Labor and Working Conditions Management Plan:

"The Project shall discourage in-migration of persons in search of employment opportunities. As a minimum:

- *implement and publicize the recruitment procedure which gives preference to local applicants;*
- *recruit through Lancos who know all the persons living in their local area;*
- *communicate to the community the recruitment procedure which requires applicant's place of origin to be identified;*
- *communicate to the community sufficiently specific job descriptions so those without the necessary skills are less likely to apply; and*
- *actively assess, via monitoring or other means, in-migration to determine extent and relationships with workforce. If a positive relationship is evident, review hiring arrangements (e.g., worker rotations) or other measures that may act as disincentives to worker families who might otherwise move to the work location (ID 23.027)."*

5.9.2 Observations

The project has, as recommended by the last IESC report begun systematic in-migration assessment. Note that the issue of the use of iHDSS data is now closed.

Positive characteristics of the system include:

- Clear definition of "in-migrants" – includes all persons who have moved into the project areas, even for a short time and those who came as a result of *wantok* influence (being invited or allowed by clan);
- Hot spots will receive special attention. Preliminary identification includes the following areas:
  - Plant Site: Lealea and Papa; road to Plant Site;
  - ROW: Homa; Paua; Awatangi; Benaria; Moro; Kikori Station; Samberigi -Kikori Road; and
  - Hides – Komo: Komo station; Tamalia 1; Hides 4;Tari Town; Angore; Nogoli, road from Nogoli to Tari.
- PIIM data will be organized by categories (demographic, socio-economic, infrastructure and services, health, and in-migration related grievances) and will consist of data from a variety of sources including:
  - IMR 6 monthly iHDSS data;
  - CDS Annual School Profiles (2011-2013);
  - Monthly Grievance reports;
  - Quarterly GIS aerial photography (Plant Site accessible);
  - Site visits and observations of "hot spots";
  - Site by site (Upstream South/North, RoW and Plant Site) data collection by L&CA representatives; and
  - Case studies.

The IESC notes that most of the in-migration induced by a project such as PNG LNG typically occurs just before and during construction when income opportunities are at their highest. PIIMs will be able to note residual effects (people staying and people leaving) as long as it has a good baseline. As the Government intends to open bridges and build roads for the public, PIIMs will be able to capture these changes, and help to distinguish between these impacts and the more direct impacts of the project during construction.

5.9.3 Recommendation

1. Ensure that in-migration analysis distinguishes trends occurring post construction from trends occurring during construction.

5.10 PROCUREMENT AND SUPPLY MANAGEMENT

5.10.1 Project Strategy

The Project strategy is described in the Procurement and Supply Management Plan. The plan states that division of responsibility between EHL and its contractors (and its subcontractors) is either stated in the Procurement and Supply Management Plan or will be defined in Contractor Implementation Plans to be prepared by the contractors.

Objectives with respect to procurement and supply are stated as follows:

- Maximize project procurement from local suppliers and economic benefits for local businesses;
- Improve capacity and skills of local business to capture business opportunities associated with the project both locally and nationally; and
- Ensure that Project environmental and social standards and commitments are adequately communicated by the contractor to its subcontractors and suppliers and included in their contractual arrangements.

5.10.2 Observations

5.10.2.1 Contractor Performance IFC PS2 on Harmful Child and Forced Labor

Procedures and monitoring are in place to ensure that core labor standards, including harmful child and forced labor, are implemented by Contractors. The Contractor Interface Coordinator (CIC) role is housed within L&CA and individuals are embedded within EPCs. CIC conducts formal monitoring and informal monitoring continues via CIC and EPC monthly reporting.

5.10.3 Recommendations

None arising from this review.

5.11 COMMUNITY SUPPORT STRATEGY

5.11.1 Project Strategy

Project commitments related to community development support are described in the Community Support Strategy (CSS).

The overriding objective of the CSS is stated as to promote the development of conditions conducive to enhancing the livelihoods of PNG communities, thereby fostering the development and maintenance of stable operating conditions for the Project. From a compliance perspective, the objective is to meet local regulatory requirements and IFC PS7. Associated requirements for the project are expressed as follows:

- Engage in effective, transparent and culturally appropriate community consultation;
- Build trust between the Project, community members and other stakeholders;
- Manage community expectations;
- Develop appropriate capacity with community development skills and experience;
- Mobilize core competencies to support the facilitation of community development support;
- Set measurable goals and progress reporting;
- Forge strategic partnerships; and
- Maximize sustainability to extend impacts beyond the project involvement.

The original Community Development Support Plan (CDSP) identified the following objectives:

- Avoid or reduce the risk of adverse social impacts on PNG communities during Project construction and production; and
- Provide opportunities for sustainable development benefits in a culturally appropriate manner.

The implementation outcomes defined for the CDSP were that it would mitigate business risk as well as contribute to improvements in:

- The ability of communities affected by the Project to anticipate, understand and deal with potential harmful effects;
- The ability of communities to take advantage of positive opportunities afforded by the Project, including increased local economic activity; and
- Self-reliant livelihoods.

For the Production phase, objectives are stated as:

- Promote the development of conditions to strengthen communities to benefit from the Project's presence;
- Avoid or reduce the risk of adverse social impacts on Papua New Guinean communities during production;
- Provide opportunities for sustainable development benefits in a culturally appropriate manner;
- Ensure that the development process fosters full respect for the dignity, human rights, aspirations, cultures and natural resource-based livelihoods of Indigenous Peoples; and

Meet local regulatory requirements and Performance Standard 7: Indigenous Peoples (International Finance Corporation, 2006) expectations.

5.11.2 Observations

5.11.2.1 Community Support Strategy and Planning

Construction Phase

CDS has developed a plan and budget for close out of construction phase community programs. The Social Impact Team has been restructured for CDS to achieve a more geographical approach. Current focus is on the following initiatives:

- Plant Site –fisheries program and agricultural projects;
- ROW - Barging Route Waterways MOU projects & Community Group Support; and
- Upstream North – School support, agricultural projects, Personal Viability.

Key learnings from the construction CDS experience being considered for Production phase CDS planning include the following:

- *School contributions*: the main impediment to children achieving a good education is the fundamental lack of school governance. The IESC observes that lack of effective governance and teachers is a common theme in the "developing" world.
- *Women's groups*: need to provide additional support to help groups grow as functioning organizations.
- *Personal Viability* training has provided a useful foundation for project support to entrepreneur development.
- *Livelihood enhancement:* activities need to be done *in collaboration with o*ther funding and/or implementation agencies (National Fisheries College, ANUE, and other PNG NGO's, Government agencies, international groups). Access to markets needs to be improved.

Production Phase

The Community Development Support Management Plan for the Production phase has been approved as part of the ESMP for Operations and a CDS Implementation Plan is being developed by L&CA, in collaboration with BTPO, MOH, P&GA, Environment, and other stakeholders. The Plan will cover the first 18 months of Production (July 2014 - December 2015). A gender assessment for each of the plan components will be done to determine the best ways to enhance female self-reliance and avoid violence. The previous Observation on gender assessment is closed.

CDS outcome evaluation will employ a system similar to the process now in place for resettlement outcomes. Selection of objectively verifiable indicators is in progress and any additional data needed to measure outcomes against indicators will be collected.

The overall goal of the CDS Production Phase plan is to promote community self-reliance. Planning is geographically oriented (driven by needs of individual project areas), and is based on workshops with each field team. Once activities have been prioritized, communities will be involved in decision-making on priority activities and implementation strategies. Over 80 projects have been assessed for each site, and are being analyzed to determine viability, potential partners, and implementation approaches. In addition to strategic projects, some small infrastructure projects will be done in the short term to gain access to and build positive relationships with communities.

Within the geographical framework, six themes have been identified that fit well with Project impacts, interests, and opportunities. These themes and the rationales for their selection include:

- *Institutional Capacity Building*: support to institutional capacity building which is the key limitation to PNG development.
- *Law and Order*: improvement to safety and law and order conditions by helping communities around the PNG LNG sites to self-regulate and manage law and order, thus minimizing risk of de-stabilization.
- *Education*: increase society's ability to realise its development aspirations, thereby reducing future dependency on the project.
- *Health*: reduce factors currently limiting Papua New Guineans' capacity to improve livelihoods.
- *Livelihood enhancement*: help diversify economic livelihoods to reduce risk of dependence on PNG LNG and more effectively spread Project benefits. Key aspects include micro credit and business management training, gender assessment to determine the best way to promote female self-reliance, and market assessments for locally produced products.

5.11.2.2 Community Water Accessibility

Most highland communities lack easily accessible water supply. Complaints and work stoppages related to water supply led the Project to provide water capture tanks to some communities. Provision of tanks, however, proved to be an ineffective approach, partly because it encouraged dependence on the project and partly because the tanks were not properly used. In the Hides area, for example, the project provided 70 tanks, but an audit later showed that only 30 tanks were operating and available to the community, 21 tanks were "privatized" by the owner of the land on which the tanks were placed, 10 tanks had been vandalized, and 9 tanks were inaccessible for various reasons. As a result, the Project ceased providing water tanks about a year ago, except to community facilities such as women's training centers, schools, and health clinics. Interestingly, complaints regarding water declined during the last 12 months to about one per month and only three requests for community tanks were received.

The project is now planning a more strategic approach that would partner with Government and may involve other partners (such as bi-laterals and international NGOs). The PNG Special Purpose Authority is already implementing some successful water programs in the area. In the near term water tanks are available for sale to businesses and individuals at the Para commercial center.

5.11.2.3 Community Support in LNG Plant area

The last report noted that even simple contributions can have dramatic effects, such as the fish market and bridge connecting Lea Lea near the LNG Plant to the main road. During this visit, the IESC visited another such contribution – the reconstructed walkway that provides Papa residents with vastly easier and safer access wood, hunting, and fishing.

The larger programs for LNG communities support improvements to fishing and introduction of small farming. Livelihoods in the four villages in the LNG plant area have traditionally been fishing oriented and fish was the main food source. The Project introduced an agricultural program in the fall of 2012 to help improve nutrition and to provide an additional source of income. The program, involving 188 households across the four villages, has provided seedlings and plants, tools, and training in modern cultivation methods.

The Fisheries Program at Caution Bay, Omati, and Kikori is intended to offset the temporary loss of access to fishing and forest products caused by construction and to enhance the livelihoods of community members. The programs are largely completed, except for surveys and feasibility studies. Aspects of the program (such as strengthening partnerships with the National Fisheries Agency, mangrove planting, and training in seafood handling, business skills and net mending) will be incorporated into the CDS plan.

Key findings of the latest survey are a notable change in fishing locations and differences between catch rates of different groups. The reason for the change in locations needs to be further explored through focus group discussions. Differences between individual catch rates and income were not noted and should also be considered during the focus group discussions. No evidence of longer term impact to fishing livelihoods was found.

5.11.3 Recommendations

1. Get input from the IESC on program level outcome indicators before they are finalized. Program level indicators are intended to reveal during and at the end of implementation whether or not the CDS program is meeting its goal to improve community self-reliance.
2. Going forward into construction, the project should consider ways it can facilitate school governance improvements, rather than other kinds of contribution (such as structures and equipment) which are not a meaningful investment for project community funding.
3. As recommended in the last IESC report, CDS should keep individual "projects" to a relatively small number that focus on achieving longer term goals.
4. Conduct focus group discussions to explore reasons for changes in fishing locations and differences in fish catch rates.
5. Consider giving priority for livelihood programs to areas with concentrations of demobilized workers and large numbers of vulnerable women.

5.12 STAKEHOLDER ENGAGEMENT AND CONSULTATION

5.12.1 Project Strategy

Project commitments with respect to stakeholder engagement are contained in the Company Stakeholder Engagement Plan and the Community Engagement Management Plan. The Project's stakeholder engagement goals as expressed in that plan are as follows:

- Achieving the Project objectives while respecting the needs and issues of stakeholders as they relate to potential project impacts;
- Developing and maintaining constructive relationship with stakeholders, striving for mutual understanding, respect and collaboration; and
- Establishing and maintaining coordinated, internal processes for stakeholder engagement and issues management.

The stakeholder engagement goals above are based on a guided by the following principles:

- Providing clear, factual and accurate information in an open and transparent manner on an ongoing basis to stakeholders through free, prior and informed consultation;
- Providing sufficient opportunity to stakeholders to raise issues, to make suggestions and to voice their concerns and expectations with regard to the Project;
- Providing stakeholders with feedback on how their contributions were considered;
- Building capacity amongst stakeholders so as to enhance their ability to interpret the information provided to them;

- Treating all stakeholders with respect, and ensuring that all company personnel and contractors that have contact with stakeholders do the same;
- Responding to grievances and requests for permission in a timely manner; and
- Building constructive relationships with identified key and influential stakeholders through personal contact.

5.12.2 Observations

The Project continues to engage with communities on a regular basis. In 2013 to date, 1,410 engagements with 143 communities and 48,907 attendees across the project area have occurred. Special community engagement on demobilization has occurred separately (see Section 6.1.3.2).

The main issues by area addressed during consultations are given below:

- *Upstream north*: employment opportunities, heath/safety, project updates;
- *Komo Airfield area*: Antonov information, deprivation payments, Clan Agency Agreement signing and payment, support to schools, employment, Komo market, drilling awareness, traffic and pedestrian safety, KAIC, demobilization, outside the fence safety messaging, future of Komo Community Centre, and land issues;
- *Upstream south*: pipeline purging with Nitrogen, barging route waterway MOU 24 Committee meeting, household survey and livelihood output monitoring, pipeline right of way safety and maintenance, gas commissioning, Community Development Support to schools, warden committee meeting; and
- *LNG Plant*: school awareness (hygiene, malaria), Science Ambassadors Program, Bright Future Drama, demobilization, pneumatic test awareness, flare awareness, Community Development support to schools and to communities, Plant site tours by community.

5.12.3 Recommendations

None arising from the present review.

5.13 GRIEVANCE MANAGEMENT

5.13.1 Project Strategy

The Project's third-party grievance procedure is described in Section 10 of the Stakeholder Engagement Plan. Grievance numbers form part of the KPIs for the following management plans:

- Community Impacts Management Plan;
- Community Infrastructure Management Plan; and
- Camp Management Plan.

Lender performance standards for grievance management are defined in IFC PS1, paras. 23 and 26: IFC PS4, para. 13; IFC PS5, para. 10: and IFC PS7, para. 9.

5.13.2 Observations

5.13.2.1 Community Issues and Grievances

The grievance management system continues to function well, with an annualized closure rate for all grievances of 75% and closure rates for July and August of 94% and 95% respectively. Employment (at 46%) was the largest category of *issues* from the beginning of July to the end of September. Formal *grievances* in recent months have regarded compensation and other issues in the pipeline ROW. Thirty resettlement grievances, most related to compensation, were filed from April to September, with 29 closed and one under investigation.

High closure rates are again attributed to continuous training of staff in issues and grievance management, frequent stakeholder engagement to address issues before they become grievances, a results oriented process for managing issues and grievances, thorough analysis and discrete actions in the field, and field leads ability development of improved relationships with land owners. The grievance resolution process emphasizes closure of grievances in less than 30 days, root cause analysis for any grievances unresolved after 30 days, and continuous reinforcement of dealing with grievances in the field.

The use of village committees, community/village liaison officers, and warden committees along the pipeline route has also been instrumental in closing grievances in the field. Village and community liaison officers will continue to be employed through LANCOS and village committees will be available to assist when issues arise.

5.13.2.2 Workforce grievances

Of the 63 workforce related grievances received from the beginning of 2012 to the end of September 2013, 14 were related to demobilization. All 14 complaints are listed as closed, though eight have been "referred to other instance" and little information is provided in the observations column. The majority involved complaints that locals were being demobilized while work continued or that persons from outside clans were kept on while local clan members were demobilized. Though complaints were fairly small in number, the IESC would like in future visits to receive more information about the causes of complaints and the ultimate resolution for complaints that are referred to other instance.

5.13.3 Recommendations

1. Provide the IESC during its visits with information on causes of workforce complaints and ultimate resolutions for those referred to other instance, particularly for demobilization related complaints.

5.14 BENEFIT SHARING - UPDATE

Payment by Government of benefits to clans affected by the Project is required by the Oil and Gas Act. EHL developed a Benefits Distribution Project Execution Plan (BDPEP) that outlines the processes for vetting, amounts distribution, communications to recipients, dispute resolution, etc.. The Plan was reviewed and accepted by DPE, but subsequently some issues arose. A BDPEP Steering Team has been formed, led by DPE with EHL and OSL as members. EHL formed a team dedicated to working with DPE to ensure progress is made in a timely manner. Activities include the following:

- Formed 5 field teams, including 43 new hires and 21 DPE personnel;
- Developed Clan Vetting Process (CVP)- reviewed and accepted by DPE and is in progress for Hides area with involvement by EHL;
- Team 5 (LNG Plant) and 4 (southern pipeline) field work is complete and final documentation for Ministerial Determination is in progress;
- The other 3 teams are completing field work with plans to achieve Ministerial Determination by December;
- Weekly telecoms with field teams to steward progress;
- Phase 2 (sharing between clans in a PDL) deferred by DPE until 1H 2014; and
- Project developed draft plan for DPE and submitted end Sep 2013.

Forward plans include:

- Steward progress and maintain pressure on DPE to complete field work by Nov 2013 and issue Ministerial Determinations by Dec 2013;
- Support DPE to develop detailed plan for Phase 2 (clan splits) in Q4 2013 and help facilitate implementation of Phase 2 starting in Dec 2013 (developed strawman model for DPE's consideration and use);
- Support DPE and MRDC to begin development of clan payment process in Q4 2013;
- Complete all work before startup; and
- Develop communication plan for Ministerial Determinations and payment process to clans by 2Q14.

6 LABOR AND HUMAN RESOURCES

6.1 INTRODUCTION

6.1.1 Scope of Labor Review for this Site Visit

Labor and human resources procedures and processes have been previously by the IESC and non-conformances resolved. The construction phase is nearly over, thus the IESC focused during this visit on demobilization and improvements implemented for the workforce during the last quarter. Activities included:

- A presentation by Industrial Relations;
- Presentations and discussion at HGCP by the Contractor Compliance and Interface Lead, Community Affairs Manager, Site Human Resources Manager, and Internal affairs Manager, as well as separate discussions with three staff (female compliance officer and confidant, safety representative, and Human Resources representative; and
- Presentations and discussion at the LNG Plant with the EHL Contractor Compliance and Interface Leads, COO of LABA Holdings Limited, CJJV External Affairs Director, and the LNG Camp Manager.

6.1.2 Project Strategy

Project commitments are defined in the Labor and Worker Conditions Management Plan. Key objectives of the strategy are as follows:

- Maximize work opportunities of PNG citizens during construction of the Project;
- Recruit workers in accordance with the geographic priorities determined by the Project and in particular, give first priority for employment to PNG citizens originating from within the Project impact area;
- Enhance PNG citizens' skills base through training provided during employment;
- Implement an equitable and transparent recruitment process; and
- Provide fair terms and conditions of employment and comply with relevant laws.

In the Management Plan these objectives are described in detail in Table 1: Management and Monitoring and are clearly benchmarked in Attachment 1: Legal and other Requirements. The IESC therefore wants to make note of the fact that our observations are also based on the requirements of Attachment 1 and, specifically, PNG labor legislation and IFC PS2, which in turn is underpinned by the ILO Core Labor Standards.

The Project's provisions for gender-related topics are covered in the following management plans:

- The Labor and Workers Conditions Management Plan (Mitigations 23.026 and 23.034); and
- The Camp Management Plan (Mitigations 24.027 and 24.029).

Relevant mitigation measures are not specific to gender but are included as part of the overarching requirements for equal opportunity and non-discrimination. Gender would also be covered under PS2, Labor and Working Conditions.

6.1.3 Observations

6.1.3.1 Workforce Conditions

The IESC has reviewed labor procedures, processes, and conditions during past reviews. Based on the information provided during this visit, no new issues have arisen and previous recommendations have been addressed.

The industrial relations model, initiated in Q3 2011 appears to be working well. The Contractor Interface Coordinator (CIC) role is housed within L&CA with individuals embedded within EPCs. CICs have completed formal monitoring throughout 2012 and to Q3 2013 and informal monitoring continues via CIC and EPC monthly reporting. Eight core "enablers" were established as measures of performance for each of the EPCs. These include:

- *Engagement*: workers committee;

- *Communications*: briefing process, monthly, special;
- *Procedures*: disciplinary, grievance, demobilization;
- *Pay*: process for increases, wage surveys, pay parity, simple pay slips;
- *Lancos*: pay efficiency, HR\IR expertise, role in D&G procedures;
- *Supervision*: trained in procedures;
- *Culture*: awareness training, diversity management; and
- *Strikes*: protocols, recording, contingencies, and root cause analysis.

KPIs were developed for each of the eight enablers to measure the extent of enabler implementation. CIC worked with each EPC to complete a self analysis against the enablers and performance indicators. Overall results show that all enablers improved across all EPCs, contractors have addressed most of their IR Gaps, and there is now focus on demobilization and communication regarding demobilization (see Table 6.1).

IR Strategy Overall EPC Score	Sep-11	Feb-12	Aug-12	Mar-13	Comments
EPC	%	%	%	%	
EPC3	68	95	97	98	✓ Demobilization Execution plan is now in place includes the process for Remobilization ✓ National Workers Committee in place & meet every last Thurs of each month
C1	57	94	94	96	✓ All enablers have worked & most IR gaps addressed
EPC5A	47	73	89	97	✓ Demobilization process has been developed ✓ Demobilization forecasts in place
EPC4	36	60	87	99	✓ Camp Committee in place ✓ All enablers have improved & most IR gaps addressed ✓ Current focus is on demobilization process and communication effectiveness
EPC2	24	66	Na	Na	✓ EPC Demobilized (No Operation). Nil monitoring of IR Strategy
EPC5B	9	97	98	99	✓ Two committees in place 1. Camp matters . 2. Work sites ✓ Cultural awareness elements present in induction ✓ All enablers have improved & most IR gaps addressed

Table 6.1: Industrial Relations (IR) Strategy Implementation by EPCs

6.1.3.2 Demobilization

Demobilization is occurring somewhat later than originally estimated, with peaks expected to occur in December. HGCP, for example, has 1,400 national workers and had demobilized only 115 of them at the time of the visit. Figure 6.1 shows current and forecasted demobilization trends.

Demobilization plans have been developed by all EPCs, following guidance provided by EHL. These plans are well conceived and sufficiently detailed. One of the main strategies for minimizing impacts on local workers is staggering demobilization by area, starting with workers from longer distances. The LNG Plant is staggering demobilization across the four neighboring villages. Other support strategies include re-assignment on project or assistance to secure employment elsewhere and provision of transition training (interviewing techniques, preparation of CVs, etc.

Out of the 240 Nationals demobilized to date from the LNG Plant, 100 have been re-assigned on the project or elsewhere. LABA, the Lanco providing national/local workforce to the LNG Plant, notes that re-assignment of workers to other companies is easier in the Plant area because of its location in the lowlands and near POM where there are more employment opportunities. LABA receives worker inquiries from companies that recognize project workers are trained in particular skills, safety practices, and work culture. Other work fronts are also making their workforce databases available to other companies.

Communication on demobilization with both national/local workers and local communities appears to be well implemented. Demobilization communication for the workforce is done through pay slips, tool box meetings, spot verification at some tool box meetings to ensure information is understood, and notice boards and bulletins. The female compliance officer/confidant at HGCP indicated that she addresses demobilization as part of the current women's awareness program, and that there have been neither complaints nor requests for additional information.

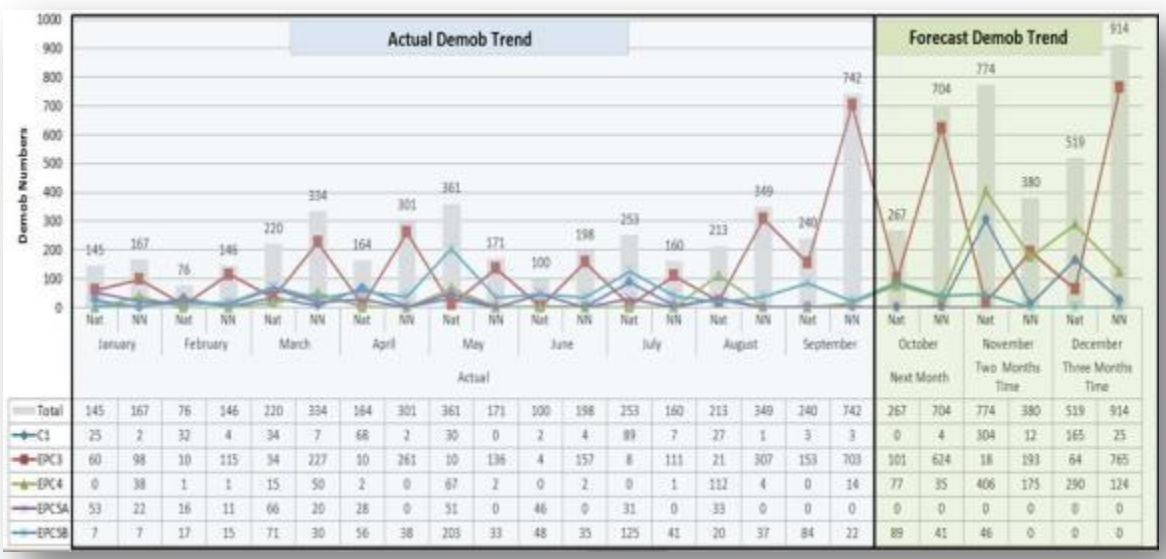

Figure 6.1: 2013 Demobilization and Trend Analysis

In the last two months at the LNG Plant, a reduced period of advance notice of projected demobilisation numbers has been implemented to improve the accuracy of this process and reduce the potential for confusion if demobilization dates change. The new process involves first communication of projections at four weeks prior to demobilization, second communication at three weeks, and final formal notice of demobilisation to workers at two weeks prior to their demobilization.

The Project is undertaking frequent engagement on demobilization with communities, using a variety of methods, include dramas and visual tools. Village committees, community/village liaison officers, and warden committees along the pipeline route are also addressing demobilization issues with communities.

6.1.3.3 Gender in the Workforce

The use of female "women's champions/confidants" and the health/hygiene/nutrition training continues to make a positive contribution to the working and living conditions of female employees. The IESC recommends that these measures, as well as psychological counseling services, be provided to female employees during the Production phase.

6.1.4 Recommendation

1. Continue women's champions and health/hygiene/nutrition training for female employees into the Production phase.

6.2 CAMP MANAGEMENT

6.2.1 Project Strategy

The Project's commitments for camp management are contained in the Camp Management Plan, the Labor and Workers Conditions Management Plan, the Minimum Health Requirements for Project Execution, and the Health Inspection Guidelines. The primary objectives of the Camp Management Plan are:

– To avoid or reduce negative impacts on the community and maintain constructive relationships between local communities and workers' camps; and

– Establish standards on worker welfare and living conditions at the camps that provide a healthy, safe and comfortable environment.

The Labor and Working Conditions Management Plan also contains some mitigation measures on living conditions (e.g., Mitigations 23.020 and 23.021). The two health-related documents contain some specific requirements for food sanitation, sanitation of living areas and laundry practices and procedures in addition to Project-wide requirements for public health and occupational health and safety at large.

IESC observations are based on presentations and discussions with the LNG Plant Camp Manager and HGCP HR Manager. See also Section 6.1.

6.2.2 Observations

Improvements in camp accommodation continue to be made, even though construction is nearly complete. Worker Committees are functioning well by providing management with early notification of issues, as well as the wishes of camp dwellers. Examples of improvements made at the LNG Plant camp include full site tours, more frequent entertainment events, and meal offerings that include Thai, Philippine, and Indonesian food. These and earlier improvements in camp conditions have led to continuous decline in absentee rates, currently down from about 25% to 4%.

6.2.3 Recommendations

None arising from the present review.

7 HEALTH AND SAFETY

The PNG LNG Project has a well-developed program to manage both occupational health and safety of workers, as well as a community health and safety program. The Health Group focuses on both worker and community health issues, whereas the Safety Group focuses primarily on occupational safety of workers. Community safety is primarily undertaken through controls set up at Project construction sites to protect the community from workplace hazards, as well as controls set up through the Logistics group to minimize traffic accidents and community awareness programs implemented through the L&CA organization. No significant community safety incidents have taken place since the last IESC field visit and the discussion of safety is presented in the context of the Project's occupational H&S program.

7.1 COMMUNITY AND WORKER HEALTH

7.1.1 Project Strategy

Project community health commitments are defined in the Community Health and Safety Management Plan (implemented via Contractor Implementation Plans) and the EHL Community Health, Safety and Security Management Plan and the Community Impact Management Plan (implemented via Contractor Implementation Plans). Health planning specifically for worker health is defined in the Project Health Plan. The overriding objective is to avoid or reduce risks to and impacts on community health during the project life cycle from both routine and non-routine circumstances. Worker health is defined within the context of the Project's occupational H&S program as specified in a Project Health Plan.

7.1.2 Observations

7.1.2.1 Community Health

The Community Health Program (CHP) is functioning effectively by the Project Health Team and their partners PNG Institute of Medical Research (PNG IMR) and Population Services International (PSI). The Health Team has demonstrated excellent engagement and support of CHP partners as well as internal/external stakeholders that has led to successful implementation of CHP objectives. PNG IMR continues to implement the integrated Health Demographic Surveillance System (iHDSS) to accurately characterize and track social-economic indicators or health status. In addition, IMR is conducting health studies to reliably diagnose and track disease occurrence in communities of interest. IMR recently published their Bi-Annual Scientific Progress Report for Jan-June 2013. PSI has continued to implement their community based mitigation efforts including the Water Sanitation and Wash, as well as the Health Meri/Healthy Program.

One aspect of the community health program worthy of note is that there is a close coordination of the community health programs with those for the workers, in recognition that worker health can affect communities and vice versa. Accordingly, the Health Group maintains KPIs for key Project health areas for both inside-the-fence and outside-the-fence indicators:

- Health Services Infrastructure,
- Respiratory disease,
- STI's/HIV,
- Vector borne disease;
- Hazardous material exposure;
- Vaccine preventable disease;
- Food and nutrition;
- Non-communicable disease; and
- Social determinants of health.

All of these indicators are satisfactory and being delivered on schedule.

Immediate plans to carry into Production include continuing to work with the PNG IMR to achieve accreditation of a Partnership in Health Laboratory in Port Moresby, continue iHDSS surveillance, as well disease surveillance, in particular TB. A plan is in place to evaluate PSI's program in Q1 2014.

7.1.2.2 Worker Health

Occupational health continues to be a "best" practice program. One of the contributors to the success of this program is the manner in which the Health Team has established health program criteria and then assessed effectiveness of program implementation through the collection of key performance indicators (i.e., in areas of clinical operations, disease prevention/control, food and potable water safety, camp hygiene and sanitation and industrial hygiene). These key (health) performance indicators are routinely reported to site and senior level management. The IESC believes this has provided Project Management the ability to efficiently assess health program implementation and enabled quick and focused attention as needed. Since the introduction of health program indicators in 2011, the Project has demonstrated significant improvements in all health categories, with consistently strong performance in 2012 and 2013.

Focus areas for the worker health programs continue to be tuberculosis, malaria, and dengue. Camp health is also a major focus in terms of food supply, water, and camp hygiene and sanitation resulting in zero food, waterborne or sanitation illness outbreaks since Q3 2011. Infectious disease outbreaks have occurred (in particular chicken pox), but they have been contained. Drills are now conducted as part of an Infectious Disease Outbreak Management process undertaken at the LNG Plant and HGCP. The current worker health programs are to continue health program surveillance and assessments and to plan for demobilization and the transition to Production.

7.1.3 Recommendations

None arising from the present review.

7.2 WORKER SAFETY

7.2.1 Project Strategy

Safety is embedded in all aspects of EHL's operations with worker safety requirements defined in the Project Safety Plan. This Plan describes appropriate work procedures with the following main objectives:

- Defines safety objectives, desired behaviors, and desired performance targets;
- Defines strategic approach for managing the safety discipline according to the established Project Execution Plans and Contracting Strategies;
- Describes key safety processes and safety improvement initiatives to be implemented by the Project Teams (e.g. safety leadership, site safety categorization, leading indicators, safety governance model, incident management);
- Describes safety staffing plans for the Project Teams; and
- Defines macro safety roles and responsibilities for members of Project Teams, and describes macro interfaces between the Project Teams, EHL, EMDC Functions, and Contractors.

The overall worker safety requirements and safeguards are comprehensive and consistent with a Project of the scope of PNG LNG.

7.2.2 Observations

Worker Safety is also a "best" practice program and worker safety continues to be a primary focus of EHL and the EPC Contractors. Safety statistics presented by EHL show a continuing decrease in the Total Recordable Incident Rate (TRIR). In March 2012 this rate was 0.46 for the entire Project; in October 2012 this rate was further reduced to 0.39; in June 2013 it was 0.33; and it is currently (September) at 0.3. The Lost Time Incident Rate (LTIR) has also continued to decrease and is currently 0.02. The Project completed more than 16 million hours Lost Time Incident free since July 2013; EPC3 currently has more than 58 million hours Lost Time Incident free since the last Lost Time Incident in March 2012. There have been no fatalities since the October 2012 site visit. The low LTI rates are exceptional. Despite these good achievements, on July 9, 2013, shortly after the last IESC visit, there was an accident whereby a pipe fitter working for a subcontractor received a blunt force trauma when he was caught between a trench box and the pipeline when a pipe clamp released. He died from cardiac arrest after he had been transported to a hospital and was stabilized. It is not known if the worker had a pre-existing condition that would have been associated with the heart attack. EHL has undertaken a comprehensive review of the root cause of the accident and an Incident Reporting Notice was delivered to the Loan Facility Lenders and the IESC shortly after the incident as required under the CTA.

7.2.3 Recommendations

None arising from the present review.

8 CULTURAL HERITAGE

8.1 PROJECT STRATEGY

Cultural heritage refers to tangible forms of cultural heritage, such as tangible property and sites having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values, as well as unique natural environmental features that embody cultural values, such as sacred groves. Intangible forms of culture, such as cultural knowledge, innovations and practices of communities embodying traditional lifestyles, are also included. The PNG LNG Project has a well-developed program to manage cultural heritage as defined in the CHMP that includes both Chance Finds and Salvage protocols.

The CHMP contains the following objectives:

- Avoid known cultural heritage sites (including both archaeological sites and oral tradition sites) where necessary and practicable; and
- Where avoidance is not possible, manage cultural heritage sites in consultation with PNG Government and landowners.

The CHMP requires pre-clearance surveys to identify cultural heritage (archaeological and oral tradition) sites and includes a requirement for community consultation regarding the management of cultural heritage sites and preparation of any protocols required for ongoing consultation with community representatives. The CHMP also requires the monitoring of performance of cultural heritage activities and maintaining records that pre-clearance surveys were undertaken and site-specific cultural heritage plans were developed; participation in the cultural awareness workshop and training program; consultation with relevant stakeholders; grievances; site inspections to restricted areas; engagement of appropriate cultural heritage professionals; and documentation of actions taken to manage chance finds. The Chance Finds Protocol portion of the CHMP defines procedures to be followed when unexpected cultural features are encountered during construction activities and also provides a Salvage Plan designed to provide guidance for reporting and excavating finds.

8.2 OBSERVATIONS

Cultural heritage is particularly important in PNG, as it is one of the most culturally rich and diverse countries in the world, wherein about 90 percent of the approximate six million people speak over 800 distinct languages, and live in their respective social structures in their cultural communities and generally rely on their environment to ensure their livelihood. The Project continues to demonstrate respect for this heritage.

Preconstruction surveys (PCSs) with identification of cultural finds have been undertaken since the last IESC field visit only in association with the pipeline and these studies are now complete. Avoidance is still the preferred solution when cultural sites are identified and this is solution that is generally followed. Out of 23 cultural heritage sites encountered from July through September along the pipeline RoW, 11 were avoided and 12 otherwise mitigated. Occasional chance finds are still being made at various locations, but most of the effort towards cultural heritage has been the study and reporting of previous work. Monash University has submitted a series of reports summarizing the results of their investigations. This is a major accomplishment. EHL has also undertaken community engagement by means of developing fact sheets and fliers for communication and preparing a community awareness poster. Cultural heritage fact sheets/significant stories feature are also available in articles published by EHL: LNG Toktok; Environmental and Social Quarterly Reports.

8.3 RECOMMENDATIONS

None arising from the present review.

APPENDIX A

IESC 9TH MONITORING VISIT – TRIP SUMMARY

TRIP SUMMARY

***October 22**:*

IESC environmental and social team members W. Johnson, L. Johnson and K. Connor arrive in Port Moresby.

***October 23**:*

IESC Environmental and Social Team - Port Moresby:

IESC Environmental: update via presentations on biodiversity

IESC Social: update via presentations and meetings on:

- Resettlement & Livelihood Restoration (including Monitoring);
- Top-up payments
- Water accessibility
- Project-Induced In-Migration (PIIM)
- Community Benefits Distribution; and
- Labor and Working Conditions update.

***October 24**:*

IESC Environmental and Social Team - Port Moresby:

Opening sessions and presentations in POM for entire team:

- Construction status
- Drilling
- MOC update
- Demobilization
- Security
- E&S resources (in afternoon)

IESC Environmental:

- WWTPs
- Weed Management
- Cultural Management
- Incidents

ESC Social:

- Review of RAP and CRP documents;

***October 25**:*

IESC Environmental and Social Team - Port Moresby:

- Update on Lake Kutubu (Mark Pedersen via teleconference)
- Update on fisheries and livelihood restoration (Mark Pedersen via teleconference)
- Meeting with Project Director regarding Kikori Bridge

IESC Environmental

- Access control
- Waste
- Oil Spill Response;

IESC Social

- Health
- Grievances
- Additional review of RAP and CRP documents

***October 26**:*

IESC Environmental and Social Team: fly to Komo (fixed wing)

- Komo airfield E&S briefing;

IESC Environmental Team:

- Tour of Komo airfield focusing on reinstatement
- Drive to Juni and spend night there

IESC Social:

- Visit to displaced families along heavy Haul Road
- Drive to Juni Camp
- Discussion of preliminary outcome evaluation results
- Spend night at Juni

***October 27**:*

IESC Environmental Team:

- Travel from Juni to HQ3;
- Drilling induction and HQ3 Site Inspection;
- Hides Ridge Inspection and visit to Well Pads D, and G
- HGCP tour
- EPC5A Hides Spineline construction update
- Transit back to Juni and overnight.

IESC Social:

- Working session on outcome evaluation
- Meeting with HGCP workers
- Visit affected people around HGCP
- Drive to Juni
- Discussions regarding affected people
- Meeting with Monitoring Social Environmental Law, Ltd;
- Overnight in Juni.

***October 28**:*

IESC Environmental and Social Team:

- Travel from Juni to HGDC Lanco;
- Visit ANZ Bank and Para School;

IESC Environmental:

- Travel from HGDC to Angore Wellpad B via Angore Road;
- Tour Angore Wellpad B
- Tour RoW in Angore – Benaria area
- Chopper Camp 7 to Nogoli and drive to Juni

IESC Social Team:

- Visit affected people around Angore (ROW, wellpads, road);
- Visit affected people around Hides;
- Transit back to Juni and overnight.

***October 29**:*

IESC Environmental:

- Drive Juni to Nogoli;
- Chopper flight of entire onshore ROW from Hides Spineline to Omati Delta;
- Kopi Scraper Station – old Camp 1 tour;
- Return to Nogoli via chopper;
- Drive to Komo;
- Fly Komo to Port Moresby in fixed wing
- Overnight in Port Moresby.

IESC Social:

- IESC presentation and closeout discussion on outcome evaluation
- Q&A open period
- Drive to Komo;
- Fly Komo to Port Moresby in fixed wing
- Overnight in Port Moresby.

***October 30**:*

IESC Environmental:

- Transit to LNG Plant Site;
- Plant Site Induction and Inspection;
- Travel to PFC and tour;
- Overnight in Port Moresby.

IESC Social:

- Drive to LNG Plant Site Induction;
- Meetings with EPC3 staff – overview, demobilization, camp management, LABA, IR
- Meetings Papa;
- Drive to PFC and meetings with management;
- Transfer to Port Moresby;
- Overnight in Port Moresby.

***October 31**:*

IESC Environmental and Social Team: preparation for closeout.

- Meeting with Project Director;

***November 1**:*

- IESC Environmental and Social Team
- Close out presentation;
- Additional meetings in EHL offices
- Overnight in Port Moresby.

November 2:

- Closeout meeting in morning;
- IESC team departure.

APPENDIX B
RESETTLEMENT OUTCOME EVALUATION GUIDANCE

Resettlement Outcome Evaluation Guidance

Kerry M. Connor, PhD

Section 1: Resettlement Goals & Purpose of Outcome Evaluation

The **goals of a resettlement program** are to:

- Improve the living conditions (standard of living) of physically displaced households; and
- Restore, or preferably, improve the livelihoods (economic conditions) of economically displaced households. "Livelihood" in this case refers to the ways people earn income and/or provide a household with a means of subsistence (survival).

The **purpose of the outcome evaluation** is to determine whether affected households' conditions have been improved, been maintained, or have declined following the mitigation and support measures the Project provides.

> ***Standard of Living (SoL)*** will be analyzed for households that have been physically displaced.
> ***Livelihood restoration (LR)*** will be analyzed for households that have been economically displaced. In this case, all the physically displaced households have lost economic assets, but livelihood restoration and standard of living should be recorded and analyzed separately.

Section 2: Timing of Evaluations

Standard of Living: the evaluation of standard of living will be done for 100% of physically displaced households. This evaluation is typically done about 6 months after physically displaced households have relocated. In the Project case, this evaluation will be done as soon as possible since households have been relocated for some time. The evaluation will show whether any households are living in conditions that are worse than their pre-displacement conditions (declined conditions). If there are no households in declined conditions, no further evaluation will be needed. If there are households with declined conditions, you will do a more intense interview to identify the cause of the decline and whether the fault lies with the Project or the household (See Section 5). In the event the Project is at fault, remedial measures will be agreed with the household and provided by the Project. A time limit for implementation measures will be set by the Project and the household. Once these remedial measures have been implemented, no additional evaluation is required, except in special circumstances.

Livelihood restoration: evaluation of livelihood status will be done for a statistically representative stratified sample of economically displaced households. LR outcome evaluation will be an iterative process that is done approximately every six months typically beginning toward the end of the LR program and for about 1 year after the end of the program. In the Project case, the first LR evaluation *data gathering* should begin as soon as the standard of living data have been collected.

Section 3: Selecting the sample for Livelihood Restoration Evaluation

You will select a sample of economically displaced households that is *representative of each of the sub-groups* existing in the larger population of economically displaced households (determined first by area). The same households must be used for each outcome evaluation exercise. Ensuring that the sample is representative is critical to enable extrapolation of results from the sample to the larger population of economically displaced households. In other words, if the results from the sample in a particular area or across the whole sample indicate that many households are experiencing declined livelihood conditions, you can assume that there is a problem in either the livelihood support activities themselves or their implementation methods or that there is a non-project related problem with households or communities. You will then need to investigate to determine whether the problem is project or non-project related. If project related, corrective measures will be taken. If non-project related, in some cases, such as with vulnerable households, an assessment may be needed to determine whether the project can assist in resolving the problem.

Determining Sample

Sample size: the number of households in a sample depends on the total number of economically displaced households in each area. As a general rule, the larger the number of households in an area, the smaller the *percentage* of households evaluated. For example, if there are 500 economically displaced households in an area, a 20% sample could be adequate, as long as the sample is properly stratified, while an area with only 40 households would require a larger percentage of households in the sample.

Sample stratification: once sample *size* is determined, characteristics of households that make them different from other households in the larger population in each area are used to create strata (sub-groups). *Examples* of such characteristics are (you would select characteristics most relevant to "your" population):

- Source of livelihood (for example, separate groups for households with small productive land holdings versus households with large productive land holdings or households with several working adults versus households with no working adults);
- Household location; and
- Household head gender and/or age (proportionate age sampling such as 18-25, 26 – 40, 41 – 55, 56 – 65, 65+.

The number of households in each sub-group will be an acceptable percentage of the total number in each group. The sample households in each sub-group would then be selected randomly.

Section 4: Analysis of Data Analysis and Follow Up Steps

4.1 Standard of Living

Enter indicator measurement data for each of affected household into data analysis table

FN's Name Type 1	RAP Area	Tenure (rented, owned, etc)		Structure of Housing (Size, housing materials, roofing, etc.)		Accessibility (Water source, health clinics, Schools, water sources etc.)		Accessibility to Roads (minutes to walk >30min/<30min)		Category (improved, maintained, declined)	Rationale (main reason category selected (particularly for declined conditions)
		Pre-displacement	Post-displacement	Pre-displacement	Post displacement	Pre-displacement	Post-displacement	Pre-displacement	Post-displacement		

Data Analysis for SoL: use the indicator measurement results to analyze the data for each household to determine whether a household's living conditions have improved, been maintained, or declined. Analysis will also consider relevant background information from sources such as baseline surveys, photographs of pre-displacement housing conditions compared to post-displacement conditions, or grievances/complaints regarding post-displacement conditions (e.g., water accessibility). The decision is made based on whether the indicators show - on balance – that a household has the same living conditions as pre-displacement, has living conditions that are clearly better than pre-displacement, or has living conditions that are clearly worse than pre-displacement. The assessment is best done by a group consisting of the main analyst(s) and field staff who are familiar with the households for the group being assessed.

Categorize Households: Re-organize the households into a master table showing each household's standard of living category: improved, maintained, declined

RAP Area	FN Name	Improved	Maintained	Declined	Cause (if declined)
HGCP	XXXXX		X		
	xxxxx			X	
Angore	XXXX	x			
	xxxxx			x	

4.2 Livelihood Restoration

Enter indicator measurement data for each affected household into data analysis table

FN Name	RAP Area	Kina spent on food – past 6 months	HH cash income – last 6 months	No. people in household employed	Investment in income generation (seeds, tools, animals, etc.)	Money spent on: wantok, funerals, brideprice	Money spent clothing from shops on school fees	Money spent on school fees	Assessment (improved, maintained, declined)

Data analysis: use the indicator measurement to analyze the data to determine each household's livelihood status (improved, maintained, declined), supplemented by other sources of information (for example, baseline data on number of adults in household to determine if incomes have declined as a result of adults leaving a household).

Categorize Households.

Re-organize the households into a master table showing each household's livelihood category: improved, maintained, declined.

RAP Area	FN Name	Improved	Maintained	Declined	Evidence (if declined)
HGCP	XXXXX		X		
	xxxxx			X	
Angore	XXXX	x			
	xxxxx			x	

Section 5: Follow Up Analysis & Response

Conduct further analysis with households showing declined conditions. Much of this analysis will involve consultation with households in declined conditions, and sometimes consultation with key informants, to gain a better understanding of the actual cause of declining conditions and the relationship to displacement. Affected households should also be consulted about the corrective action to address declining conditions related to the Project. This kind of consultation is best done using indirect methods, including casual discussions about the household's activities and plans, rather than direct questions such as "what do you need to improve your condition". In cases where several households are experiencing declined conditions for similar reasons, focus group discussions can help to generate discussion and identify group corrective actions which are easier to implement than are individual household actions.

For standard of living:

- Verify the factors related to declined conditions;
- Identify the probable cause of declined condition – is the cause associated with displacement or with factors unrelated to displacement outside the project's control; and
- If decline *is* related to displacement, make recommendations for time bound corrective action(s), identify the implementation entity, and set implementation deadline.

Once any corrective actions are implemented, the Project's responsibility for standard of living should be completed, with the exception of any separate future Project impact.

For livelihood restoration:

- Further assess the factors related to declined conditions;
- Identify the probable cause of declined condition – is the cause related to the nature or method of delivery of livelihood restoration activities or is the cause related to personal factors outside the Project's control; and
- If decline is related to the livelihood program, make recommendations for time bound correction action(s), identify implementation entity, and set implementation deadline.

The LR evaluation will be done at about 6 monthly intervals. The first evaluation is typically meant to demonstrate whether LR activities have restored livelihoods and, if not, produce timely corrective actions taken during LR program implementation. The further evaluations will show whether livelihoods have been restored for the longer term.

The LR programs for some households have been completed, thus for this group of households the first evaluation may constitute the main evaluation, indicating whether the program restored livelihoods and may require additional livelihood assistance for any households shown to be in declined conditions. A second evaluation for this group would be done about 6 months after additional livelihood assistance has been completed.