



Pipeline Stretching Near Great Delta



Komo Airfield



Musi River Bridge Nearing Completion

FINAL REPORT OF THE:

INDEPENDENT ENVIRONMENTAL & SOCIAL CONSULTANT

ENVIRONMENTAL & SOCIAL COMPLIANCE MONITORING

PAPUA NEW GUINEA LNG PROJECT

Site Visit: March 2011

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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Prepared by: D'Appolonia S.p.A.
Via San Nazaro, 19
16145 Genova, Italia
www.dappolonia.it

Audit Team Members:

Giovanni De Franchi – Team Lead - Environmental Specialist
William J. Johnson – Earth Scientist/Cultural Heritage Specialist
Lori Anna Conzo – Biodiversity and Natural Resource Management Specialist
Robert Barclay – Social Development Specialist
Mark Pedersen – Marine and Freshwater Ecological Management Specialist

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ACRONYMS

Borealis	The Project's Information Management Platform
BSA	Benefits Sharing Agreement
CBI	Chicago Bridge and Iron
CBIC	Chicago Bridge and Iron & Clough JV (EPC4)
CJJV	Chiyoda JGC JV (EPC3)
CCJV	Clough Curtain Brothers JV (C1)
CEA	Cumulative Effects Analysis
CHMP	Cultural Heritage Management Plan
CSS	Community Support Strategy
CIP	Contractor Implementation Plan
CSSAP	Community Support Strategy Action Plan
CTA	Common Terms Agreement
CTF	Construction Training Facility
DEC	Department of Environment and Conservation
DLPP	Department of Land and Physical Planning
DPE	Department of Petroleum and Energy
EHL	Esso Highlands Limited
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
ELC	Environmental Law Centre
EPC	Engineering – Procurement - Construction
ESIA	Environmental and Social Impact Assessment
ESMP	Environment and Social Management Plan
ESMS	Environmental and Social Management System
GFE	Gobe Field Engineering
HGCP	Hides Gas Conditioning Plant
HH	Highlands Highway
HWMA	Hides Waste Management Area
iHDSS	Integrated Health and Demographic Surveillance System
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
ILG	Incorporated Land Groups
IMR	Papua New Guinea Institute of Medical Research
IWSF	Interim Waste Storage Facility
KPI	Key Performance Indicator
L&CA	Land and Community Affairs
LBSA	License Area Benefits Sharing Agreement
MCJV	McConnell Dowell CC Group JV (EPC5B)
MCH	Maternal and Child Health
MOC	Management of Change
MOF	Marine Offloading Facility
MOH	Medical & 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
NCD	National Capital District
NCDC	National Capital District Commission
NGO	Non-Governmental Organization
OCN	Other Country National

OSL	Oil Search Limited
NLB	Northern Logistics Base
Para.	Paragraph
PNG LNG	Papua New Guinea Liquefied Natural Gas Project
PS	Performance Standard
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
SSH&E	Safety, Security, Health and Environmental
TOR	Terms of Reference
TSHD	Trailing Suction Hopper Dredger
UBSA	Umbrella Benefits Sharing Agreement
VG	Valuer General
WAA	Waste Accumulation Area
WMA	Wildlife Management Area
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY AND CONCLUSIONS

This report represents the third 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 between March 2 – 18 in Papua New Guinea (PNG) complemented by one day of environmental briefings held between part of the IESC team and ExxonMobil staff in Brisbane, Australia.

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 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 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 6.6 million tons per annum) loaded onto ocean going tankers and shipped to gas markets overseas. At the time of this visit, the main EPC contractors were all working in the field, with the exception of the EPC2 contractor Saipem responsible for the offshore pipeline.

Overall construction activities at the LNG Plant site are being undertaken close to projected schedules. Pipeline construction is also proceeding normally, but construction activities associated with the HGCP and the Komo air field are behind schedule. EHL is currently working with the EPC contractors to prepare a revised target schedule (the exercise is referred to as the Rebaseline Schedule) to define more realistic construction milestones. It is emphasized that the current construction delays are not projected by EHL to impact the overall Project completion schedule for delivering LNG. The IESC's primary concern is that the need to accelerate construction performance could compromise environmental and social management. Two situations highlight our concern. On November 13, 2010, a mudslide occurred at the HGCP site with environmental and social consequences. The failure took place in spoil from the EPC4 top camp placed by CCJV apparently without distributing the engineering drawing to all responsible parties or without undertaking a thorough assessment of engineering and environmental/social risk. A second example is reflected by MCJV bringing in crushing equipment to process aggregate from Quarry TB1 before the affected community had been fully informed and consulted.

Notwithstanding the above concern, IESC recognizes that EHL's program for environmental and social management is comprehensive. The IESC continues to positively observe the experience and dedication of environmental and social staff in the field, including the staff of the main EPC Contractors. This positive observation needs to be considered as the backdrop to all of our sector-specific findings.

Organization and Staffing

The Environmental and Social (E&S) organizations within EHL are fully established and have expanded since the last IESC visit in October. The EHL environmental team has been expanded from the top down, with field organizations dedicated to different regions encompassed by the Project. This organization is improved, but our impression is that it is still stretched to manage environmental issues, even recognizing that the EPC contractors (excepting EPC2 and EPC4) have environmental teams that are also mobilized in

the field. Nevertheless, we expect that the situation will stabilize in that future increases to the construction workforce will to a large degree be concentrated in fixed footprints at the HGCP and the LNG Plant sites.

Improvements have been made to the social organization. In this area the IESC had previously pointed out that the stakeholder engagement program was not uniformly applied across all of the work fronts and was somewhat isolated from the rest of the SELCA (now renamed Land and Community Affairs – L&CA) organization. This gap has been closed with the full integration of the stakeholder engagement team into the L&CA. The L&CA team now works as a fully integrated group and have been able to demonstrate their commitment and expertise to manage social issues. The IESC also commends the L&CA team for adding professional national fisheries staff to their unit, but also notes the loss of the experienced senior technical specialist.

Improvements still need to be made. The L&CA team could benefit from better geographic coverage, in particular to keep up with pipeline construction and there are gaps in the organization that need to be filled, especially with respect to the resettlement teams. An overriding concern is that the L&CA team be able to continue to work as a team and not leave the Project as a result of unsuccessful contract negotiations or being recruited by other companies, in particular mining companies in PNG that also have a severe need for the skill sets represented by the L&CA team.

Environmental and Social Management System

As noted in the IESC trip report for the October 2010 visit, the Environment and Social Management System (ESMS) for the Project was complete except that final versions of some of the plans associated with the ESMP were not publicly disclosed. Only two associated documents, the Community Support Strategy Action Plan and the Community Development Support Plan have not been disclosed, but these documents have required comprehensive review by the IESC such that their lack of disclosure is not considered a serious deficiency on the part of EHL. It is recognized that the activities that are required by these plans are being actively engaged in the field and the Level 2 non-conformance has been reduced.

Another requirement of the LESR is for the extension of EHL environmental and social stewardship to third-party facilities and activities where the Project is responsible for construction on a third-party site or the sharing of facilities with a third-party. Such cases are identified within the LESR as Associated Facilities and the implementation of ESMP protocols established on the basis of a risk assessment. EHL has finalized a robust and comprehensive process to identify the additional third-party facilities and activities where the ESMP should be directly enforced or where there at least needs to be Project stewardship on the basis of a risk assessment. The process of third party stewardship is not being widely implemented in the field, although many sites and facilities have been targeted. A particular issue is with respect to the use of third-party quarries. One third party quarry used as an aggregate source by CCJV (Quarry QA2 in the Hides area operated by HGDC under contract with CCJV) was left in an unstable condition from the standpoint of community safety after aggregate from this source was no longer wanted. This type of situation is considered a non-conformance with the ESMP.

As a tool to implement the ESMS for the Project, EHL has initiated a Social and Environmental Information Management System (IMS) to manage the processes and datasets required to mitigate and manage the social and environmental impacts of the Project. This computer- and web-based system is being installed by Boreal – Information Strategies (Borealis) and provides a tracking framework for the large amounts of data associated with social and environmental management. This IMS is still being developed and implemented. IESC recommendations are that all the environmental testing data are consolidated in a single database such that trends in performance can be tracked and also that identification and tracking of social non-conformances also need to be a routine part of the overall social management program for the Project, as they already are for the environmental group.

An observation made by the IESC is that improvements need to be made with respect to the siting of critical project facilities. During this site visit the IESC received a presentation for the siting of a temporary construction camp needed by Spiecapag in the Moro area (Lake Kutubu). The siting study identified a location north of Lake Kutubu referred to as the proposed Daware Camp/Laydown and this location was visited. Although this site was identified on the basis of a process whereby several potential locations for the camp/laydown area were considered, our basic observation is that the site selection process needs to be much more rigorous, with greater consideration given to both environmental considerations and social setting. This location is an environmentally sensitive greenfields site (a “focal habitat” of the Biodiversity Strategy and the Ecological Management Plan) and from the social side will

require the development of a RAP in recognition of the need for economic displacement. One aspect of the process to identifying the Daware site that was not clear to the IESC was if any consideration was given to working in a smaller area (camp and laydown footprint to occupy approximately 17 hectares) or if the laydown and camp areas could be in separate footprints or otherwise fragmented such that smaller land parcels could be considered. The IESC recommends that EHL consider if the siting of major facilities could benefit from an approval process that includes senior management from both the environmental and social groups.

Environmental Management – Waste and Wastewater

According to what was observed during the site visit, the IESC acknowledges that the Project has experienced considerable improvements in the overall waste management practice since the October visit. Most of the Project sites are now fully independent in terms of waste management processes, procedures and facilities and reliance on OSL third-party facilities has been reduced to the point that is now mainly limited to a back-up solution when Project's equipment is down. The use of the municipal WWTP at Lae for the disposal of effluent produced at the 11 Mile base has been discontinued and the level I non-conformance rescinded. A number of interim solutions to fulfill the commitments included in the ESMP have been implemented to overcome the delays in the development of the long-term waste management facilities. Since the last site visit in October, the engineering design of the three Project landfills has progressed and is now completed for the Hides and the LNG Plant site landfills where early construction works were ongoing at the time of the trip. According to the information provided, first cells should be available by Q4 2011. The IESC recommends considering the construction of these waste disposal facilities as a priority to ensure the Project will be able to manage the large quantities of waste that will be generated with the onset of the main construction phase.

In Q3/Q4 2010 the Project underwent a full Project-wide waste management review by two independent professional companies to assess the overall waste management approach being applied throughout the Project. Key challenges in terms of waste generation, storage and final disposal were identified and a list of Project-wide and site-specific recommendations for further improvement was provided. In terms of recycling/reuse opportunities, after the initial PNG-wide screening completed in Q2 2010, the effort of the Project towards the identification of reliable waste service providers continued with the support of the PNG Enterprise Centre and the L&CA team. A number of potential local waste service providers were identified, although agreements have been established only with scrap metals and waste oil recyclers, the only judged suitable for the Project.

One positive outcome from the visit is the introduction of innovative waste treatment solutions observed at some Project locations. The IESC encourages extending the use of these new treatment solutions to other sections of the Project.

Environmental Management – Hazardous Materials

As the demand for fuels and lubricants to supply the construction equipment is constantly increasing, a key requirement for the Project is to monitor that the procedures and management plans developed by each Contractor are consistent with the Hazardous Materials Management plan and the Journey & Traffic Management procedure developed by EHL and that site-specific recommendations are developed. A Project wide risk assessment was performed in November 2010 for the upstream portion of the Project and further assessments are foreseen for the LNG Plant construction areas and for operations during 2011.

In terms of ability to respond to spill events, all EPC Contractors have spill response equipments in place, although resources and equipment are currently limited to responding only to Tier I scenarios. The identification of Tier II contractors in PNG is a challenge due to the lack of local resources and should be considered a priority for the Project. East Asia Response Limited (EARL) is retained by ExxonMobil as oil spill response provider for the Asia-Pacific region for Tier III spills with a capacity to mobilize response equipments in country within 17 hours from their base in Singapore.

Overall, from what observed in the field, hazardous materials continue to be well managed. At Kobalu, following the observations made from the previous site visits, the conditions of the helicopter refueling area has been improved and the level I non-conformance assigned during the October 2010 site visit is therefore rescinded.

Ecological Management and Biodiversity

EHL has made notable progress over the past year on the development of its Biodiversity Strategy, which is in line with current best practices in biodiversity management. Rev. 3 of the Strategy is under preparation and will include a commitment to provide a technical rationale for the selection of biodiversity offset projects. Stakeholder engagement with various international and national conservation organizations on the Biodiversity Strategy is on-going, and EHL is now nearing completion of a partnership with an internationally-recognized conservation organization. The Company has also been actively seeking the appropriate resources to implement its Biodiversity Strategy and will soon engage with a scientific and technical team via their partnering conservation organization to help them design their Offsets Program. This effort responds to a major observation on staffing in the IESC's October 2010 report.

In this report we make numerous observations on the Project's limited development of a site selection process. The Project does have in place the pre-construction survey which provides a useful means of identifying specific environmental and social features of any given project-disturbed area, but it is not designed to provide for a broader analysis of alternatives within the landscape. We mainly make this observation with respect to the Project's alternative analysis of the selection of access roads, although it is relevant to the principle of footprint minimization in general. Regarding induced access management, a positive observation is that construction management staff appears to be involved and committed, and the access road register has been significantly improved. Invasive species and weeds management continue to be very well executed, and the Project has also made good progress on the implementation of its Quarantine Management Program.

During this site visit, the IESC was accompanied by a specialist in freshwater and marine ecological management; and, therefore additional emphasis is placed in this report on the Project's follow through of related commitments. Regarding freshwater ecology, the Project has significantly improved its approach to monitoring freshwater ecology in the Upstream Project Area by increasing the number of sample sites, providing a justification for sample site selection and adding a number of habitat metrics. Studies of the Omati River with respect to the upcoming dredging activity are well underway. The two studies currently available indicate that changes to the riverbed of the lower Omati are expected to be limited, with possible larger effects at pointed locations. Regarding marine ecology, the IESC was pleased to receive the plans for the proposed marine jetty and the construction methods, which were far superior to the original Marine Offloading Facility (MOF)/jetty design provided in the Environmental Impact Statement (EIS). Marine modeling in Caution Bay could be made more efficient given a change in methodology that now relies on a point intercept method using a remote operated vehicle rather than SCUBA divers. Regarding the establishment of a fisheries baseline for both the Omati River and Caution Bay, the Project has made a good start, and further work is progressing to establish an adequate baseline.

Land Access

The systemic problem raised in the May 2010 review of insufficient attention being directed to assessing social impacts (including physical/economic displacement) in site selection studies and in pre-construction surveys was found to persist. Clear accountability for this role in the L&CA team needs to be established. A level II non-conformance was re-opened. A number of shortcomings were also identified in the way contractor land access requests were being processed. Contractors are presently seeking land for quarries, borrows, laydown areas and the like. The IESC has recommended that EHL's senior social and environmental specialists should be more involved in the screening of alternative sites, in ensuring that footprints have been minimized and in agreeing social and environmental constraints to be applied at preferred sites. This implies a partnering or cooperative approach between EHL and its contractors, rather than the current approach of EHL being handed a near *fait accompli* site selection at the end of the process. It was further recommended that EHL should always lead the processes of notifying, informing, consulting and negotiating with customary landowners and occupants for temporarily or permanently acquired lands. In the case of the Timalia River borrow site, attempts to negotiate with the customary occupants by the contractor appeared to have led to confusion and delays rather than an accelerated process. The contractor's haste to occupy the site could also easily have led to a situation where the occupants were construed to be under duress or where insufficient time was allowed for free, prior, informed consultation.

Resettlement

Physical resettlement was about 50 percent complete at the time of the March 2011 review (IESC estimate). Solid progress has been made in closing out some persistent non-conformances, but forward planning and coordination with construction schedules remain weak. The resettlement team had in place IESC-approved

RAPs or Communal Resource Plans (CRPs - used for economic displacement) covering all active Project work areas except for the Komo airstrip access road and LNG plant jetty (see Section 5.4.2.3). EHL has also given an unequivocal undertaking that it will pay full replacement value for trees and crops to apply retrospectively and to all payments going forward, although any top-up payments will be effected in about 6-months' time to avoid practical difficulties in retrospectively adjusting compensation rates halfway through the acquisition process (see Section 5.4.2.4). A risk assessment had been completed for Well Pad A indicating that more than 100 families would need to be relocated to create a safety buffer around this pad, should development proceed. This resettlement was not anticipated in the RPF (see Section 5.4.2.6). Access to water was an issue raised with the IESC at several resettlement locations. Where feasible, more attention needs to be paid to anticipating water supply issues ahead of physical resettlement rather than after the event (see Section 5.4.2.5 and Section 5.5.2.2). The resettlement team is still challenged in terms of internal monitoring and reporting. Development of a 2-3 page global project 'dashboard' report that highlights land acquisition and resettlement performance, compliance status and delivery challenges and that goes to the Project management team on a monthly basis is recommended (see Section 5.4.2.8).

Livelihood Restoration

EHL has assembled a highly experienced livelihood restoration team. The team, guided by Dr. Mike Bourke, has developed a conservative and appropriate livelihood restoration strategy for Highland on technologies that have proven successful in the PNG Highlands over the last 20 years. The program initially focuses on re-establishing sweet potato gardens at replacement sites for basic food sufficiency. Through nurseries and demonstration farms established at Komo and Mabuli, the livelihood restoration team will develop and distribute propagules for Pathogen Tested Sweet Potato, and other improved varieties of maize, Irish potato, cassava, peanuts, winged bean, common bean, pumpkin cucumber, pineapple and guava. These types will not only be higher yielding, but they also have the potential to extend the availability of carbohydrate (e.g. maize) within the Huli cropping cycle, thus improving food security. Other programs that are progressively being rolled out include food processing, *marita* oil extraction, livestock programs (broiler chicken production, ducks, improved pig raising), honey, carp and *didistoa* (agricultural supply store) establishment. International experience indicates that the two years presently budgeted for the agricultural livelihoods program is too short to have sustainable benefits. EHL needs to explore ways to extend the program either through additional EHL funding or through leveraging project funding to develop partnerships with the PNG Department of Agriculture, bilateral/multilateral development agencies or agricultural NGOs.

The present livelihood strategy covers only the Highlands. Equivalent livelihood strategies need to be developed and rolled out to address livelihood impacts for the mid and lower altitude areas of the Project.

Community Impacts Management

Some significant improvements were observed with respect to community safety. CCJV spotters were observed to effectively control the movement of pedestrians around heavy equipment being operated at along the road from the HGCP site to the CCJV quarries, which represents an improvement over what was observed in October 2010. A temporary fence around the HGCP worksite was under construction, which will provide a safety barrier between the public and construction activities as works progress. Fencing around the Komo air field was being completed at the time of our visit and fencing around the LNG construction area was complete. Traffic control was also observed to be effectively implemented by MCJV in the Komo area. Improvements still need to be made. Although pedestrian footpaths are being planned (such as from Lake Mabuli to Para School) the Project still has not provided communities with alternative access routes (i.e., footpaths or walkways) around worksites, which is reportedly one of the reasons why pedestrians continue to traverse these areas. Although fencing has been installed to restrict community access to the QA1 quarry being operated by MCJV, community members were still observed to be present in work areas. Traffic management will still need to be a focus of the community safety program.

Community Security

January and February 2011 were challenging months for the EHL Security team. There were two significant incidents, both of which received sensational international press coverage:

- On 15 February 2011, a non-Project related vehicle accident in which a drunk driver killed two local teachers in the vicinity of Nogoli resulted in the pay-back murder of a Mt Hagen man in Komo; and,
- On 21 January 2011, Well Pad A camp was briefly invaded by youths as an outcome of an incident involving the death of a young child.

The first incident was a sobering reminder of the potential consequences of a community fatality, although in this case the trigger was unrelated to the Project. The second incident was the culmination of a series of events (large gathering of people, a week of heightened expectations arising from a community blockade, a celebration with alcohol, and a trigger event, the death of a child under unclear circumstances) that ended with Well Pad A camp being briefly over-run by the youths. The camp was locked down. 25-30 Mobile Squad officers were deployed. Warning shots were fired and law and order was quickly restored. EHL, camp security and the Mobile Squad reacted with proportional force. Serious injury and loss of assets were avoided. At time of writing, the findings of a coroner's report on the death of the child were not publically known. An autopsy had been conducted in Mendi by a specialist from Port Moresby. Circumstances of the child's death were unclear, but a rumor had arisen locally that the child had ingested a white powder ('explosives') from a Project work site. This seems unlikely. Explosives are not normally left untended on worksites.

Going forward, the IESC has encouraged the Project to look at best practice models for reaching an accommodation with communities to create a secure operating environment. This must involve extensive engagement outside of the Project perimeter fence with a focus on dialogue and developing trust with the host communities, establishing good lines of communication and working together (company, communities, government) to assess risks, identify scenarios, determine the impacts on each party and plan options for responding. As many of the current grievances are between the Government and the communities, continuing Government engagement is critical.

Procurement and Supply

Much of their commitment to improve local business is reflected in the use of lancos that supply labor and services to the different EPC Contractors. The success of approach is reflected in the national workforce currently working on the Project. EHL reported that earlier projections for national spend and projected employment were understated, and are likely to be significantly exceeded. As of March 2011, PNG workers made up 77 percent of the total Project workforce. The national workforce in Q1 2011 was about double EHL's original (pre-construction) projection. With respect to training and workforce development CJJV operates the now fully-constructed training facilities at Port Moresby (POM Tech) and has graduated 446 civil laborers, of which 24% are women. The Juni training facility is now constructed, but its use for training has been delayed.

Community Support Strategy

The Community Development Support team has developed and is starting to implement a well-conceived community investment program. This has been developed around the three pillars of 'strengthening social resilience', 'community capacity building and partnerships' and fostering 'local economic development'. The IESC has suggested there may also be business-based strategic criteria that might inform where and how community investments are focused. These include spreading Project benefits to blur the boundaries between winners (compensation and royalty recipients) and those that miss out; relationship building with villagers/communities that are strategic for accessing or accommodating key Project facilities or that have a history of blockading or impeding project activities and, ensuring there are viable agricultural livelihood alternatives for demobilized workers upon construction completion.

Labor and Worker Conditions

EHL had made solid progress in developing systems and templates for EHL monitoring and reporting on labor and working conditions. One monitoring/reporting cycle had been completed. EHL's first monitoring review revealed non-conformances in contractor delivery of worker inductions, worker grievance management and policies/procedures covering harassment, discrimination and disciplinary measures. Remedial actions had been specified. The EPC Interface and Contractor Compliance team was still not fully resourced. A key gap was the lack of an Interface and Compliance Lead in the Business Development area which includes the 'lancos' through which landowners provide services and labor to the Project. A labor and employment specialist will form part of the IESC team for the July 2011 IESC visit and will undertake a more detailed review of project performance against IFC PS 2, national legislation and EHL's Labor and Workers Conditions Management Plan.

Camp Management

Camp management is an important component of the PNG LNG Project. EHL projects that approximately 23 camps containing about 18,000 beds will need to be constructed and demobilized over the duration of the Project with peak expected by the beginning of 2012. Since the IESC site visit in October, EHL has made

good progress to resolve issues identified by the IESC during the October 2010 site visit on the basis of a pan-project review and 12 internal audits. Better definition has been achieved in terms of camp classifications and under what conditions the requirements of the Camp Management Plan need to be enforced (permanent construction camps vs. the “camps to build camps” that includes all other camp types), but we believe the concept of what constitutes a “permanent” camp needs to be revisited. Some of these “camps to build camps” have been in operation so long that they effectively serve as permanent construction camps, so it is our interpretation that the Camp Management Plan with its standard for 4.6 m³ per person should be respected. Even in the case of permanent construction camps, it is understood that this personal space requirement has been lowered for the EPC3 camps at the LNG site, a situation representing approximately half of all of the workers on the PNG LNG Project. IESC still considers this situation to be a Level II non-conformance, both from the standpoint of camp management and also because it is considered to be a change to a standard that should have been associated with a Class I MOC. This non-conformance can be rescinded if the details of the conditions whereby the criteria and duration are clearly defined for allowable reduced personal space or the Project accepts that the situation is a non-conformance until normal working conditions have resumed. In any case, this is a situation the IESC expects to review in much greater detail during the next site visit.

Stakeholder Engagement and Consultation

Following a change of leadership, the stakeholder engagement strategy had been revised to have a greater emphasis on proactively servicing contractor activities. This had resulted in a significant improvement in community preparation ahead of key contractor works. For example, programs delivered in the previous five months included road traffic awareness, community blast awareness, pipeline survey preparation and dredging awareness. Programs were directed towards communicating key safety messages, creating understanding of no-go zones, alleviating community fears and explaining features of each activity to manage community expectations. The emphasis has been on non-written modes of communication. In areas around the LNG plant, a drama group has been developed for providing project information in an accessible and entertaining way. Church groups, schools and women groups have been targeted as a means to leverage information dissemination to a wider audience.

Grievance Management

The Community Affairs Manager had been made accountable for the grievance management system. A Grievance Coordinator and three Regional Grievance Leads had been or were in the process of taking up positions. Solid progress had been made in the development of the project-wide grievance management system. The IESC reviewed the grievance log covering complaints from one of the LNG plant-side villages and found procedural and recording issues typical for grievance management at this stage of the project. The Contractor Compliance and Interface team had recorded a number of non-conformances with respect to contractor camp and worker grievance systems. A concerted effort was underway to improve contractor grievance management systems and reporting. Some contractors were still reportedly defensive about recording complaints and held a perception that grievances implied fault. EHL management needs to be proactive in reassuring contractors that grievance management systems are an essential management system directed at business improvement and risk reduction. Spiecapag maintains the best grievance management and reporting system on the Project, a practical model that should be emulated by all.

Gender

PNG presents a very challenging environment for managing gender relations. As a very high profile project, PNG LNG can contribute by providing a good practice workplace model. Some improvements were noted in the availability of women's beds and the addition of women's facilities at some camps where they had previously been missing. The Project is still working to achieve a reasonable balance between ensuring equivalent amenity to male accommodation and providing physical security against violent assault or extreme events such as the incursion at Well Pad A camp. Views of women on features of camp design that contributed to their safety appeared to diverge in some areas from those of the expert panel responsible for security planning. EHL has given an undertaking that as part of the implementation of secure accommodation, a panel of experts consisting of both men, women, PNG National Staff and expatriates will be used to assist with the roll out of the security program.

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: In terms of worker health, the program has full-time medical staff from International SOS in place and there is a comprehensive malaria mitigation program implemented by Mosquito Zone. At the beginning of construction, one of the most challenging aspects of occupational health was foot problems when PNG workers began to wear protective footwear and severe problems of foot fungus, infections and blisters began to appear. Primarily through worker health awareness programs and tool box sessions, local workers have been educated in proper foot care and boots appropriately sized boots are now available, such that this health issue has nearly disappeared. Outbreaks of gastroenteritis appeared in upstream camps in Q4 2010, but after an aggressive campaign of kitchen inspections there have been no outbreaks since about January 2011. IESC conducted formal inspections of the kitchens at Gobe and the Spiecapag Main Camp 1 (Scraper Station) and found that hygienic practices were being followed. One of the most significant worker health issues is tuberculosis (TB) and additional X-ray equipment has been recently procured to improve diagnosis. EHL is also working to set up a new WHO endorsed method which will allow for more accurate evaluations to determine if a patient has active infectious TB without the need for X-ray equipment.

Worker Safety: continues to be a primary focus of EHL and the EPC contractors. Safety statistics presented by EHL, in particular the occurrence of still only one Lost Time Incident (LTI) after more than eight million man-hours and a low Total Recordable Incident Rate (TRIR) of 0.67 demonstrate the overall concern for safety and represent continual improvement since the last IESC trip in October 2010.

Community Health: the community health program has evolved into an Integrated Health and Demographic Surveillance System (iHDSS) that covers the topics of health delivery services, communicable diseases, STIs and HIV/AIDS, and non-communicable diseases implemented through NGOs. This community health program is one of the most comprehensive ever undertaken for a private sector development project and is one of the aspects of the Project that has the potential to leave behind a positive legacy. EHL should take care to assure that community health is maintained as a fully integrated program, involving both monitoring and community services.

Community Safety: Community Safety outreach programs in the Hides - Komo area are managed primarily through the L&CA organization and the individual EPC contractors utilize field staff, including traffic control personnel and spotters to protect the local community. EHL and the EPC Contractor implement work protocols designed to minimize potential community impacts, including the use of controlled convoys for heavy traffic along the Highlands Highway. Fencing activities are to a large degree complete. CCJV spotters were observed to effectively control the movement of pedestrians around heavy equipment being operated at along the road from the HGCP site to the CCJV quarries, which represents a big improvement over what was observed in October 2010. Traffic control was also observed to be effectively implemented by MCJV in the Komo area.

Cultural Heritage Management

Cultural heritage continues to be well managed and as of the end of 2010 a total of 1,648 cultural heritage sites have been identified. Ongoing archaeological activities at the time of the site visit continue to be related mainly to pre-construction surveys and the management of chance finds. The preconstruction surveys are currently focused at the following locations:

- the Hides well pads and well pad access roads surveys on Hides Ridge;
- pipeline ROW primarily focused on sections of the route between the Lake Kutubu region and Hides; and
- other early works infrastructure and access sites as may be required to support construction.

The preconstruction surveys for the Hides well pads and access roads are expected to be complete by December 2011. Preconstruction surveys for the ROW are expected to be complete by mid-2011. Although the in-field component of both the HGCP site and LNG Facilities site salvage programs has been completed, the analysis of salvaged materials and the assessment of data from these programs are ongoing. Reports of these programs are due for completion in the last quarter of 2011 and the first quarter of 2012 respectively.

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, Nippon Oil Exploration Limited and PNG State and landowners as represented by Mineral Resources Development Company (MRDC) and Eda Oil. 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 III 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 and "early works" contractors 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. Government representatives were not interviewed during this trip.

¹ IESC Team members: Giovanni Battista De Franchi (Team Leader – Environmental Specialist), Robert Barclay (Social Development Specialist), Lori Anna Conzo (Biodiversity and Natural Resource Management Specialist) and William J. Johnson (Earth Scientist/Cultural Heritage Specialist), Mark Pedersen (Aquatic/Marine Specialist).

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 2456 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 to be 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 284 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 still at an early stage and is broken down into infrastructure and early works contractors and the startup of the main EPC contractors. 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 Kopi Shore Base has been turned over to Spiecapag.

The Southern Supply Route consists of road upgrades and the construction of 39 km of road and three bridges associated with 2.3 million m³ of earthwork. The Kikori bridge near Kaiaua is in place, and construction is nearly complete. The Mubi River ferry is constructed and bridge construction is underway. The Kwill Creek bridge is also nearly complete. The Southern Supply Route was projected to be open by November 15, 2010, but is expected to be open by about June 2011. This delay is not projected to impact Spiecapag's ability to transport pipe as pipeline stringing has not yet reached the point that the bridges are essential.

The Northern Logistics Route (Highlands Highway) consists of road repair/maintenance and was projected to include the construction of 21 new bridges. Only two have been constructed and are not being used, because of landowner agreements related to their receiving Government compensation. The remaining bridges have been reinforced such that they can accept the truck loadings anticipated and are considered fit for purpose. This significant change in scope is currently the subject of an MOC not yet finalized.

Except for development of the C1 camp and EPC4 pads where water well drilling has commenced, earthworks at the HGCP site have not started. Unexpectedly poor soil conditions (the amount of cut has increased from an original estimate of 1.4 million m³ to 2.2 million m³ to remove unwanted volcanic mud) and a lack of good quality aggregate (0.8 million m³ of aggregate originally projected to current requirements of 1.4 million m³) have compromised the schedule for turning over the site to EPC4. The delay is significant. The original schedule was for the site preparation for the HGCP site to have been completed by December 2010. Camp construction and infrastructure development are not yet complete such that site preparation activities can start and the actual preparation activities are expected to require several months. A revised baseline schedule (termed Rebaseline Schedule) is being defined by EHL with CCJV to set meaningful construction milestones.

Road construction has taken place to the point where the Hides Wellpad Access Road will start and this construction has related primarily to gaining access to quarries. Actual progress towards the construction of well pads and access roads is currently minimal with construction efforts directed towards the HGCP site. EHL reports that construction will start early May.

Groundbreaking began on March 7, 2011 for the Hides Waste Management Area.

In the Hides area, the EPC4 Fly Camp is complete and the temporary camp pad has been turned over to EPC4. Construction of the C1 Main Camp has started and is expected to be completed by June 2011. CCJV camps at Well Pad A and Oyarip (Mendi) were previously completed;

- *Red Sea Housing*: Red Sea Housing provides support for the development of upstream infrastructure by means of the construction Kobalu, Gobe and Moro Parker Camps (completed) and the Juni Construction Training Facility (CTF), currently under construction close to the HGCP site and expected to be turned over to EHL before the end of March 2011. The Juni CTF was expected to be turned over to the EPC4 Contractor, but as EPC4 is just beginning to mobilize and not ready to start training, and there is a shortage of bed space for EHL activities, so it is expected that EHL will use the facility as a camp until ~August – September 2011. The next major project for Red Sea Housing is to construct the main construction camp for the LNG Plant (EPC3);
- *C2 – LNG Plant Early Works (Parsons and Curtain Brothers)*: The 5.4 km bypass road around LNG Site and the inside-the-fence activities have been completed and turned over to EPC3 – remaining activities relate only to finalizing 12.6 km of road construction to replace deteriorated public roads (completion expected ~May 2011, but in any case prior to the need to transport heavy equipment in August 2011);
- *EPC 1 – Telecommunications (TransTel Engineering)*: occupation primarily of sites already used by Oil Search for communications towers. This construction effort started Q1 2010 and is approximately at the 70% completion level.
- *EPC 2 – Offshore Pipeline (Saipem)*: The construction will encompass the shore approach excavation and backfilling at the LNG Plant and the trenching and natural backfilling of a 75-kilometer section of the pipeline beginning at the Omati River landfall, 25 km of which is inside the Omati River. The current execution plan forecasts the pre-trenching and natural backfilling of the pipeline to KP52 and post-trench from KP 52 to 75 (KP 52 to 75 is considered Gulf of Papua) to ensure the stability of the pipeline in this shallow water section and to provide protection to the pipeline in the vicinity of the Kumul terminal. This plan accounts for the use of the deep-draught Castoro 10, a larger pipe-lay vessel than anticipated in the EIS. Additional dredging is required to create a floatation channel for the Castoro 10 in the Omati River as part of the execution plan. The total distance of the dredging operations is approximately 14 km and is estimated to take three to four months beginning in Q3 2011. The Jan De Nul Group has been contracted to execute this dredging and proposes to mobilize their trailing suction hopper dredgers (TSHDs) “Sebastiano Caboto” and “Galilei,” both equipped with a side boom that will dispose the dredged material to the side of the trench. The backhoe dredger (BHD) “Jerommeke” is proposed to be used to dredge harder sections and remove obstacles as required. Engineering for the offshore pipeline is reported to be at the 70% Design Review stage. Linepipe manufacturing and coating is underway. Site activity at landfalls is expected to commence mid-2011 with pipelay expected to start Q4 2011. A Management of Change whereby the scope of EPC2 would be expanded to install fiber optic cables in the offshore area parallel to the offshore pipeline has been presented to the IESC for review and Certification;
- *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 6.6 million tons per annum (MTPA) LNG plant, with two 3.3 million trains, including facilities for inlet processing, treating, liquefaction, storage, and the marine terminal. All major subcontractors have been awarded (site preparation works; camps; marine jetty; LNG Tanks; buildings, etc.). Engineering is completed at the 60% model review for utilities stage. Main pipe rack and foundation drawings for construction have been issued. Purchase orders for all main equipment and about half of the bulk supplies have been placed. Site preparation (undertaken by Leighton) is complete for temporary construction facilities and fill works in permanent facility areas have commenced. Camp buildings are under construction and a concrete batch plant has been erected;

- *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 HGCP, the HGCP Industrial Park, HGCP Rotator Housing Community, the construction camp and the Hides well pads. As noted above, C1 handover to EPC 4 is behind schedule and EHL and CBI Clough JV are working together to define a revised baseline schedule for construction of the HGCP. From an engineering standpoint the design is at the 60% model review stage and all critical mechanical equipment and buildings have been ordered. The fly camp is complete and the pioneer camp is currently under construction. CBI Clough JV has also completed another small camp (Tokaju Camp) for its subcontractor KENTZ where beds for 44 workers are there for support in the EPC4 Main Camp construction. This camp was starting to be occupied at the time of the field visit;
- *EPC5A – Onshore Pipelines and Infrastructure (Spiecapag)*: Spie Capag SA of Colombes, France will develop onshore pipelines and infrastructure for the project. This effort includes the construction of a 32 – 34-inch gas pipeline for a distance of 285 km, 109 km of 8-inch condensate pipeline, and the Hides Spine and gas field flowlines 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. Pipeline stringing activities have started along the ROW from KP ___ to ___ and approximately 100 km of pipe has been delivered to the Kopi shore base. Pre-construction surveys from the Omati landfall to Kutubu are now complete and clearing has been completed from KP ___ to ___. The 70% design review is complete and a full strain test has been undertaken successfully, and mainline valves factory acceptance testing is underway;
- *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) will construct the Komo airfield, which will be 10 kilometers southeast of the HGCP. This airfield will be 3,200 meters long and 45 meters wide, suitable for an Antonov 124 heavy cargo airplane capable of flying in 70 ton loads of equipment and supplies. An area approximately 5 km long and 1 km wide will be fenced. This project is associated with two separate routes to be utilized for transportation into the Komo airport. A heavy haul road from the Komo airport to the HGCP site involves 21 km of new road and two new bridges (44 m and 116 m spans). A second access is for construction logistics and requires the upgrading of 20 km of existing road and the upgrading of three bridges. The two routes join together at Tagari Junction, located approximately 10 km northwest of the end of the new runway. The fencing is now completely installed and the main camp with 84 beds was being commissioned at the time of our site visit. Airfield construction was initiated in February 2010, but is significantly behind schedule (about 15% complete when original projections would have placed total completion at close to 50% by this time). The problems faced by MCJV are similar to those faced by CCJV at the HGCP: poor geotechnical conditions associated with volcanic soils. EHL and MCJV are in the process of preparing a revised baseline schedule to define realistic construction milestones. Heavy haul road construction has not started, but the bridge components have been procured and are being mobilized. An important aspect to construction of the airfield is identifying suitable quarry material. MCJV has fully taken over Quarry QA1 and it is expected that this quarry will supply sufficient sub-base material, but rock quality is not sufficient for concrete, nor for preparing final base surfaces. A possible borrow pit source containing volcanic boulders suitable for extracting high quality aggregate has been identified.

EHL was directly responsible for construction of the POM Tech CTF in Port Moresby. This facility is now operational and is housing and training ~1,000 construction graduates per year. The Juni Training Facility being constructed by Red Sea Housing is nearly complete and as noted above will be used temporarily as a camp for EHL personnel (estimated to continue to August – September, 2011) and the schedule for its conversion to a training facility is uncertain. When it starts to function, it is estimated that it will produce ~250 graduates per year.

Upstream construction is currently behind the target schedule set at the beginning of the project for the construction of the Komo air field and also the Hides Gas Conditioning Plant. In both cases construction activities have been hampered by the requirement to work with unexpectedly poor volcanic soil that has

increased the need to remove this soil to a greater degree than anticipated and to replace it with good quality fill. Bringing in this fill has proved problematic as the locally quarried limestone has proved to be a poor quality aggregate. EHL is currently working with the EPC contractors to revise this target schedule (the exercise is referred to as the Rebaseline Schedule). It is emphasized that the current construction delays are not projected by EHL to impact the overall Project completion schedule for delivering LNG.

In terms of current workforce, EHL reports that approximately 5,000 PNG nationals are currently employed on the Project, representing about 77% of the total workforce now numbering approximately 6,500. This total of PNG nationals is much above the original construction target of employing approximately 3,500 PNG nationals out of a total workforce of about 12,000 at peak (~30 percent). These workforce numbers do not include actual EHL employment, which as of December 2010 was 682, represented by 45% expatriates and 55% PNG nationals. Females represent 35% of the PNG national workforce within EHL. During production the goal is for PNG nationals to represent 80 percent of the total workforce (950 of 1,200 at steady state).

1.2 SOURCES OF INFORMATION

The main sources of information used to prepare this second 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 D'Appolonia 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 – Health and Safety;

Section 7.0 – 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							
² M1.1	May '10		Certain items are past their due delivery date based on the timeframe established in the E&S Milestones Schedule. Several others are projected to miss their schedule commitments.	I	E&S Milestones Schedule	Open	Disclosure consistent with LESR requirements has now been made, except for the Community Support Strategy Action Plan and the Community Development Support Plan. These have not been disclosed. They are both documents where the Project has had a long-term relationship with the IESC to develop documentation to cover the work that is actually going on in the field. At this stage the IESC does not consider that the situation is a serious non-conformance, because of the progress being made and the activities that are actually taking place in the field that fulfill the content of these documents.
M1.3	May '10		Key documents have not been publicly disclosed.	I	LESR	Open	Same as above.
M3.1	March '11		Environmental/social incidents and situations have occurred since the last IESC visit. Where root causes can be identified, these situations developed because ESMP procedures were not appropriately implemented	IESC Observation	ESMP in general	Open	The overall impression of the IESC is that incidents and situations have developed because the Project has circumvented correct procedures in the interest of schedule. Examples are the HGCP mudslide into the Akara Creek caused by construction activities taking place before proper engineering and environmental reviews and the occupancy of proposed quarry site TB-1 before the affected community had been fully informed and consulted. The basic observation is that the Project will need to make sure that schedule does not dominate decisions.
M3.2	March '11		Environmental monitoring test data are not yet incorporated into the Borealis IMS such that it is easy to track and correct potential adverse environmental impacts.	IESC Observation	Environmental Standards; Waste Management	Open	Corrective actions in the management of wastewater treatment facilities require that water quality information be known in close to a real-time basis. The extensive use of field test kits can help identify problems before they become severe. It is

² In order to better track project progress and accomplishments, the issues identified during each site visit will be 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
					Plan		recommended that the results of this testing be fully incorporated within a single database such that trends in performance can be tracked.
M3.3	March '11		Preliminary social indicators are being defined, but the tracking of social non-conformances is not yet incorporated within the Borealis IMS	IESC Observation	ESMP – Sections 6 and 7	Open	Track social non-conformances as part of the Borealis system and work out follow-ups such that mitigations are defined and implemented. The identification and tracking of social non-conformances need to be a routine part of the overall social management program for the Project, as they already are for the environmental group.
M3.4	March '11		Procedures for identifying third-party facilities and activities have been defined such that the Project can initiate stewardship. Stewardship has not yet started and needs to be initiated.	I	Various parts of the ESMP to comply with IFC Performance Standard 1, Paragraph 5	Open	The lack of stewardship is starting to show adverse consequences. For example, Quarry QA2 in the Hides area is no longer being used as a source of aggregate by CCJV, so the only requirement for stewardship (considering that reinstatement is not required, because the quarry may continue to be operated by the owner) is that the quarry be left in a safe condition. Some effort has been made to stabilize the toe of the slope, but the work is not adequate to assure stability and slope failures have the potential to affect local farms.
M3.5	March '11		Incidents of a serious nature are being inconsistently reported to the Lenders under the procedures defined in the LESR.	IESC Observation	LESR	Open	The LESR should be revised to define what constitutes a serious social incident. Furthermore, it is recommended that the Project be more responsive to providing information to the Lenders before all of the facts are in. For example, the Lenders could simply be informed that an incident has occurred and that the Project is evaluating if the incident has any relationship to the Project or was not Project related with the promise to provide more detailed information as it becomes available.
M3.6	March '11		The physical siting of Project infrastructure does not appear to fully account for the significance of environmental and social impacts – example: the proposed Daware Camp/Laydown Area	IESC Observation	ESMP	Open	EHL should consider if the siting of major facilities could benefit from an approval process that includes senior EHL management from both the environmental and social groups. In the Daware case, the concern was if a proper camp design to limit the footprint and even work as fragmented parcels was considered,

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
							rather than cover a greenfields area? The IESC noted that the site selection process was weak and recommends that the overall process be reviewed with greater consideration given to both environmental considerations and social setting, and also that the process is documented in a more robust fashion.
M3.7	March '11		There is no evidence that EHL (and Contractor) are monitoring actions specified in the 'Management and Monitoring' tables of 'outside of the fence' SMPs are being undertaken.	II	Community Impacts Mgt Plan; Company Community Health Safety and Security Mgt Plan; Community Engagement Mgt Plan; Community Infrastructure Mgt Plan		See Section 5.2.2.3.
Environmental Issues – Waste and Wastewater Management							
M2.1	Oct. '10	Mar. '11	The use of the municipal WWTP at Lae should be discontinued for the disposal of effluent produced at the 11 Mile base.	I	Waste Management Plan	Closed	See Section 4.1.2 – Some sewage from the Agility 11 Mile laydown yard at Lae is not sent to the on-site treatment plant, but is hauled to the Lae municipal WWTP, not audited by either Agility or EHL, contrary to ESMP requirements.
Environmental Issues – Hazardous Materials Management and Pollution Prevention							
M1.5	May '10	Mar. '11	The engineered pollution prevention systems at some areas within the Kobalu site are not consistent with the HMMP. The basic recommendation is to develop specific properly designed areas (paved, bunded and roofed and provided with traps to collect potential spills), in particular at all sites where long-term storage of flammable materials is expected.	I	Haz-Mat Management Plan	Closed	See Section 4.2.2 – It is expected the Project is well aware of deficiencies that exist with some pollution prevention systems and is in the process of rectifying these situations.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Environmental Issues – Air Quality							
M2.2	Oct '10		The air emission monitoring strategy and the new mitigation measures proposed by EHL in the Air Emissions Management Plan need to be fully reflected in the Contractors' plans and operating procedures.	IESC Observation	Air Emissions Management Plan	Open	See Section 4.3.2 – The fundamental concern is that the monitoring strategy proposed by the Project be reflected in the routine maintenance and monitoring performed in the field. IESC recommends that EHL work closely with the Contractors to ensure that their incinerators are properly operated and fulfill the monitoring requirements included in the Project Air Emissions Management Plan.
M3.8	Mar. '11		The location of the incinerator at the Kobalu camp at a lower level with respect to the accommodation units, under certain wind blowing conditions could pose a health hazard for both camp residents and nearby villagers.	IESC Observation	Air Emissions Management Plan	Open	See Section 4.3.2 – Site-specific emissions modeling to assess against health-based criteria for those incinerators whose stack emissions could affect workers living accommodation and local communities should be performed and relocation of the plant considered where results indicate significant hazard. Review the layout of future camps in advance to construction to avoid situations similar to those observed at Juni and Komo.
Environmental Issues – Erosion and Sediment Control							
M3.9	March '11		Inadequate culvert sizing have resulted in an incident whereby runoff affected immediate surrounding mudflats of the Vaihua Ecosystem Complex.	I	Erosion and Sediment Control Management Plan	Open	Refer to Section 4.6.2. Mitigation M234 and A75.
Environmental Issues – Biodiversity and Ecological Management							
M1.7	May '10	March '11	Bolster EHL's internal capacity to manage biodiversity issues in a more integrated manner. Experienced full-time senior level technical biodiversity staff should be procured and supported by other staff members dedicated to this topic. This is especially relevant to the development of the Offsets Delivery Plan.	IESC Observation	E&S Milestones Schedule / Performance Standard 6	Closed	This Observation is being closed as the Project assured the IESC that their two-person team to develop the Offset Delivery Plan will soon be onboard. The Project is also engaging more actively with other technical specialists. See Section 4.7.2.1.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M2.3	Oct. '10	March '11	The Project should spell out its commitment in the Biodiversity Strategy to eventually develop a technical rationale for the selection of offset projects based on an assessment of residual impacts on biodiversity values.	IESC Observation	Performance Standard 6/ E&S Milestones Schedule	Closed	Rev. 2 of the Biodiversity Strategy contains this commitment. See Section 4.7.2.1.
M2.4	Oct. '10		Senior EHL environmental staff should be in the position to critically review contractors' proposals for access roads, and a baseline of access roads should be established from which additional contractor requests are subject to evaluation. .	IESC Observation	Performance Standard 6	Open	This Observation is still relevant although its description has been modified since October '10. While contractor management appears to be involved in induced access management, the Project's approach still requires strengthening. See Section 4.7.2.2.
M2.5	Oct. '10	March '11	Priority 1 weeds are now taking hold in some areas (e.g., Gobe to Mubi River Road and Kopi Shore Base). As EHL and contractors have done a notable job in identifying weeds on site, now is the time to encourage contractors, for example Spiecapag and CCJV, to begin actively removing weeds from areas before they become fully established. EHL should also ensure that Spiecapag and CCJV, as well as other contractors, are developing specific management plans for Priority 1 weeds and that integrated approaches to weed control are being spelled out in Management Plans as it is not clear if this is being done.	IESC Observation	Weeds Management Plan	Closed	Contractors appear to be actively removing weeds in areas where they are becoming established. See Section 4.7.2.3.
M3.10	March '11		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	Open	Section 4.7.2.2.
M3.11	March '11		An adequate fisheries baseline for both the Omati River and for Caution Bay still has not been established. Surveying should be carried out on a monthly basis, or, at a minimum, a quarterly basis by qualified experts. .	II	Performance Standards 1 and 6	Open	The comprehensive baseline studies should have been started much earlier. See Section 4.7.2.4. and 4.7.2.5. The final written reports from the initial surveys have not been provided.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Social Issues – Land Access							
M3.12	March '11		Social and physical/economic displacement impacts are not being addressed in site selection studies and pre-construction surveys. Social impacts, health and safety risks are thus not being identified and requirement contained in SMPs (RPF, Community Impacts Management Plan; Company Community Health Safety and Security Management Plan; Community Engagement Management Plan; Community Infrastructure Management Plan) are not being met.	II	Performance Standards 1, 4 and 5	Open	Systemic issue originally raised with respect to the Kopeanda land fill site selection in May 2010. The issue has not been addressed.
Social Issues – Resettlement							
M1.10	May '10	March '11	Land access and resettlement agreements are being entered into prior to RAPs being approved by the Lenders and before they have been locally disclosed. Contractor access and right of way clearing has commenced for the LNG pipeline. RAPs to cover this work have not been prepared.	II	Performance Standard 5, Resettlement Policy Framework	Closed	See Section 5.4.4.3.
M1.12	May '10/ Oct '10	March '11	EHL compensation rates paid to date have not been based on the 'full replacement value' rates indicated by the Komo Airstrip Valuation Study. L&CA compensation is using Valuer General's rates and not 'full replacement value'.	II	Performance Standard 5, Resettlement Policy Framework, Komo Airstrip RAP	Closed	See Section 5.4.4.4.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M1.13	May '10/ Oct '10	March '11	PS 5 requires that loss of access to assets (including community assets) be addressed and mitigated. The Komo Airstrip RAP does not satisfactorily address replacement of community infrastructure such as churches, or the issue of displaced households whose access to community infrastructure such as churches, schools and medical facilities is impaired by the Project. A similar issue is likely to arise for HGCP resettlers.	I	Performance Standard 5, Resettlement Policy Framework, Community Impacts MP, Company Community Health Safety and Security MP	Closed	Komo airstrip: joint funding (government & EHL) of a road to access households to the east of Komo airstrip has been agreed, but timing for delivery is unclear. Community planning for other replacement infrastructure for Komo resettlers has been initiated. HGCP: a proposed access road alignment, & site for a replacement school were presented. Timing, budgets, roles and responsibilities for procurement & delivery are unclear. Later RAPs list affected community infrastructure & commit to its replacement, but there is no detail about replacement sites, timing, budgets, or responsibilities for delivery.
M1.15	May '10		EHL entered into compensation and resettlement agreements with 15 families who spontaneously settled on the Komo access road without a covering RAP.	II	Performance Standard 5	Open	IESC has reviewed and commented on a draft RAP. IESC is awaiting a revised RAP for approval.
M3.13	March '11		EHL commenced work on the LNG plant jetty prior to having prepared and disclosed the LNG Site/Downstream Fisheries RAP (RFP, Table 7, Item 13).	II	RPF	Open	RAP preparation has not been synchronized with the construction schedule and activities. This is a repeated and systemic problem verging on Level III.
M1.16	May '10		Provision of resettlement agreements in English is inconsistent with the objective that displaced people be fully informed prior to signing and with the requirement that "...the client will tailor its consultation process to the language preferences of the affected communities..." (PS 1, para 21).	II	Performance Standards 1, 5 and 7	Open	Huli translation of agreements had reportedly been completed, but Huli documents have not been used to date. Non-conformance has stood for three consecutive reviews so has been escalated to Level II.
M3.14	March '11		IFC PS 1 and PS 5 require that particular attention be paid to vulnerable people at each stage of the resettlement process. While vulnerable households are noted during RAP preparation, there is no evidence of systematic monitoring or follow-up of their circumstances post-relocation.	IESC Observation	Performance Standards 1 and 5	Open	Systematically follow-up and monitor the performance of vulnerable households as part of agricultural livelihood /garden establishment monitoring. Where cases of hardship are encountered, determine additional support requirements on a case by case basis.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Social Issues – Community Impacts Management							
M1.17	May '10	March '11	<p>Communities were still observed to be exposed to un-mitigated hazards at several construction sites visited by the IESC. These included:</p> <ul style="list-style-type: none"> Children playing in and adults passing through a construction area with active earthworks– HGCP site. Children and adults passing through a construction area with active earthworks and heavy vehicle movements underway – access road to Hides spinline. Severed village access with villagers, forced to traverse a steep and slippery clay slope to pass around a project perimeter fence in order to reach their dwellings – Well Pad A accommodation camp. 	I	Community Impacts MP	Closed	<p>Although it is recognized that there have been significant improvements in preventing community interaction with Project work sites, because of the construction of fencing, this issue is not fully closed. This non-conformance was opened in the May '10 site visit and repeated observations were made on this same topic in other areas during the Oct '10 site visit. The opening date will remain May '10, although the description has changed.</p> <p>See Section 5.7.2. It is recommended that the contractor develop alternative access routes (footpaths, walkways) around worksites as existing methods are of limited effectiveness. See Mitigations 22.004 and 22.006 of the Community Impacts MP.</p>
M2.6	Oct '10	Mar '11	Fencing should be erected at the HGCP site as soon as possible as community members, including children, are exposed to a significant hazard over a very large area.	IESC Observation	Community Impacts MP	Closed	A temporary fence around the HGCP worksite was constructed in Q4 2010, which will provide a safety barrier between the public and construction activities as works progress.
Social Issues – Labor and Worker Conditions							
M2.8	Oct '10		EHL, contractors and subcontractors should spell out the legal maximum number of working hours in workers' employment contracts.	IESC Observation	Performance Standard 2	Open	See Section 5.13.2.
Social Issues – Camp Management							
M2.9	Oct '10	Mar'11	There is currently no auditing approach for camps in the Upstream Project Area and social and health requirements as they apply to the various classes of camp are not clear.	IESC Observation	ESMP	Closed	EHL has arrived at a simplified camp classification system that allows for audits to take place and EHL has initiated numerous audits.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
M2.10	Oct '10		The Project's decision to reduce the minimum space per person to two different types of camp is a change of a Project standard, which should have triggered a Class I MOC. At the same time, reducing allowable personal space in camps where workers have to endure this condition for extended periods of time beyond what was anticipated is not consistent with Project intentions and standard construction camp conditions should apply to these workers.	II	LESR	Open	See Section 5.14.2. IESC recognizes that there are different types of camps and that the Camp Standard was intended to be applied to the permanent construction camps and not the "camps to build camps." Where we see the discrepancy is that some of these "camps to build camps" have been in operation so long that they effectively serve as permanent construction camps. This non-conformance can be rescinded if the details of the conditions whereby the criteria and duration are clearly defined for allowable reduced personal space or the Project accepts that the situation is a non-conformance until normal working conditions have resumed. In any case, this is a situation the IESC expects to review in much greater detail during the next site visit.
M2.11	Oct '10	Mar'11	The following observations were made with respect to camp construction: <ul style="list-style-type: none">At Well Pad A camp, covered walkways are not planned to be installed to ablution facilities and bed spacing is not 1.2 m apart in some sleepers.Across the Project, physical controls for mosquito intrusion prevention were not observed at any of the camps (e.g., screen doors, self-closing devices, and mosquito bed nets).	I	Camp Management Plan / Health Inspection Guidelines	Closed	The deficiency identified with respect to covered walkways and bed spaces at Well Pad A Camp has been resolved. EHL provided a satisfactory explanation regarding the policy for the use of physical controls for mosquito intrusion prevention at camps.
M2.12	Oct '10		A Camp Grievance/Complaint Mechanism is not in place at all camps.	I	Camp Management Plan	Open	A grievance mechanism has been established, but more than a third of the camps have not started implementing this process.
M2.13	Oct '10		On-site workers' training/induction is not in place at all camps.	I	Camp Management Plan	Open	Training/induction programs are generally in place, but not yet at all camps.

N°	Site Visit	Closing Date	Description	Non-Conformance	Reference	Status	Comments / Report Reference
Social Issues – Gender							
M2.14	Oct '10	March '11	Camp accommodations differ based on gender: <ul style="list-style-type: none"> Well Pad A camp is not fitted with sleeper accommodations for women. Komo camp does not contain a public bathroom for women. 	I	Camp Management Plan / Performance Standard 2	Closed	See Section 5.16.2.
M3.15	March '11		Bed availability remains a problem for women in the Upstream Project Area.	I	Performance Standard 2	Open	Despite repeated IESC recommendations to address this issue, the problem remains. See Section 5.16.2.
M3.16	March '11		The enclosures around women-only units do not provide the same level of light (and possibly air) with respect to non-enclosed sleeping quarters.	II	Camp Management Plan / Performance Standard 2	Open	Mitigation Measure 24.027 of the Camp Management Plan. Despite repeated IESC recommendations to address this issue, the problem remains. See Section 5.16.2.
Social Issues – Security							
M3.17	March '11		No attempt has been made to “...encourage the relevant public authorities to disclose the security arrangements for the client’s facilities to the public...” as provided for in.	I	Performance Standard 4, para. 14	Open	See Section 5.8.2.2
M3.18	March '11		SMPs do not anticipate the risk of potential ‘pay back killings following community fatalities caused or perceived to have been caused by Project activities.	IESC Observation	Performance Standard 4		This is not a straightforward issue to address. The 15 February 2011 incident shows there is a risk of potential ‘pay back’ killings directed at Project personnel in the event of community fatalities perceived to have been caused by the Project or its contractors. This latter risk does not appear to be explicitly addressed in existing Project ESMPs. It is recommended that EHL, with the RPNGC and government review proactive and reactive management measures to address this risk.

3 ENVIRONMENTAL AND SOCIAL MANAGEMENT

Environmental and social management for 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 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN

3.1.1 Project Strategy

The base document comprising the Environmental and Social Management System (ESMS) framework for the PNG LNG Project is the ESMP. The ESMP was derived primarily from the findings of the Project EIS and its supporting studies as a means to mitigate environmental and social risks associated with its construction and outlines environmental and social management and mitigation actions and monitoring requirements. The ESMP is the umbrella document to define general performance procedures for social and environmental issues including legal requirements; Lender standards and other general requirements; verification, monitoring, assessment and audit requirements; reporting and notifications; non-conformity definitions and corrective actions; organization, roles and responsibilities; and training, awareness and competency. The ESMP also provides specific contractor and subcontractor social management and mitigation performance requirements, which are defined in appendices as a series of Management Plans that serve to define EHL's requirements for individual contractors to prepare their Implementation Plans as applicable to each contract scope of work subject to EHL approval. These include:

- Ecological Management Plan;
- Air Emissions Management Plan;
- Noise and Vibration Management Plan;
- Waste Management Plan;
- Water Management Plan;
- Spill Prevention and Response Plan;
- Hazardous Materials Management Plan;
- Weed, Plant Pathogen and Pest Management Plan;
- Erosion and Sediment Control Plan;
- Raw Materials Management Plan;
- Reinstatement Plan;
- Induced Access Management Plan;
- Cultural Heritage Management Plan;
- Hydrotest Management Plan;
- Acid Sulphate Soils Management Plan;
- Dredge Management Plan;
- Community Health & Safety Plan;
- Community Impacts Management Plan;
- Labour and Worker Conditions Management Plan;
- Camp Management Plan;
- Procurement & Supply Management Plan;
- Community Engagement Management Plan;

- Community Infrastructure Management Plan;
- Community Health, Safety & Security Management Plan (Company);
- Community Support Strategy (Company);
- Resettlement Policy Framework (Company);
- Stakeholder Engagement Plan (Company);
- Environmental Monitoring and Reporting Plan; and
- Environmental Performance Indicators and Statutory Reporting and Notification Requirements.

The ESMP is currently applicable only to Phase I of the Project associated with construction and drilling. EHL plans to revise the ESMP at least three months prior to each subsequent development phase and consistent with the requirements of the Environmental Permit with the PNG Government. A separate Operations ESMP will be prepared at least six months prior to the commencement of production.

The ESMP is not a stand-alone document for defining the requirements of EHL's ESMS. Safety, health, regulatory compliance and security aspects pertaining to the Project are not addressed in the ESMP and are discussed elsewhere in the Project documentation, including the Project Safety Management Plan, the Project Health Management Plan, the Project Regulatory Compliance Plan, and the Project Security Management Plan. The ESMP also is supported by other documentation and procedures as defined in the LESR discussed in Section 3.2 of this report.

3.1.2 Observations

3.1.2.1 Status of ESMP

The ESMP is a functional, publicly-disclosed document that received an interim approval on September 22, 2010 by the PNG Department of Environmental Conservation (DEC). DEC final approval is pending an Independent Peer Review. The version of the ESMP that is publicly available is a second revision that incorporates IESC comments to the first revision to the document. The single exception to the completion of the full ESMP is the finalization of the Community Support Strategy Action Plan and the Community Development Support Plan. These have not been finalized. They are both documents where the Project has had a long-term relationship with the IESC such that they represent the work that is actually going on in the field. The IESC does not consider that the situation is a serious non-conformance, because significant progress is being made and the activities that are actually taking place in the field that fulfill the content of these documents.

As a general comment, the IESC expects that at this stage the implementation of the ESMP will be based primarily on working procedures that capture the requirements of the Management Plans, but that there will be no additional modifications to the plans themselves. Should any changes be proposed to the basic plans, whether from receiving final DEC approval or from improvements deemed necessary on the basis of field experience, it is expected that EHL will review the changes with the IESC and invoke an MOC process as appropriate before publicly posting the changes as document revisions.

3.1.2.2 Development of Contractor Implementation Plans

The ESMP sets the minimum performance requirements of Contractor Implementation Plans (CIPs) that are sometimes referred to as Environmental Control Plans (ECPs) or sometimes with the same or similar titles to the Management Plans that are part of the ESMP. These CIPs may also be grouped in terms of Environmental Management Plans (EMPs) or Social Management Plans (SMPs), together constituting ESMPs. All EPC ESMPs Rev 0 are in place, with the following exceptions:

- the EPC1 Contractor for construction of the telecommunications towers (TransTel Engineering) has developed an ESMP that currently is at the Revision E level and the Revision 0 is pending EHL approval;
- the EPC2 Contractor, Saipem, still not mobilized in the field, is well advanced in ESMP development with six supporting plans to be developed in 2011;
- the EPC4 Contractor, (CBI Clough JV) who have not started construction of the HGCP and have just started mobilization in the field, is pending completion of their Environmental Monitoring Plan and ten Environmental Control Procedures are at various stages of development,

- the EPC5A Contractor for the Pipeline Construction (Spiecapag) still needs to finalize their ESMP, but at its current level of review is sufficient for their ongoing activities. Plans still to be developed to complete the ESMP relate to pipeline reinstatement and other post-trenching support plans.
- a Drilling EMP still needs to be developed prior to expected mobilization in November 2011.

The remaining Contractor ESMP completions relate to the environmental components of field activities. Except for drilling, the social components are complete. The Contractor ESMPs are developed to the point of covering the activities that are currently ongoing in the field. From the point of view of EHL, the main issue is that the EPC Contractors implement the commitments they have made with their ESMPs in their current condition.

3.1.2.3 Monitoring and Evaluation Programs

Environmental and social monitoring and evaluation programs have been developed between EHL and the contractors. The mechanics of monitoring and evaluation are in the process of being significantly improved through a computerized Information Management System (IMS) being developed by Boreal-Information Strategies (Borealis). In essence, the Borealis IMS is a computer and web-based tool to track, monitor, manage and report on social and environmental compliance with respect to Project commitments, stakeholder engagement, grievances management, compensation and resettlement, community support, employment, and environmental monitoring. The system is integrated with the Project Geographic Information System such that observations in the field can be tracked as to the exact locations where findings are made. The L&CA organization has fully integrated this new technology for their monitoring and evaluation programs and since the October IESC site visit, this system has also been integrated by the environmental teams.

One aspect of monitoring that still requires improvement is with respect to the monitoring of effluent discharge parameters at the various Project locations with different EPC Contractors. Formal laboratory testing is very time consuming in PNG and the delay times in receiving results prevent using the data to improve the performance of treatment plants. Field test kits have been used to varying degrees to track the quality of effluent, but the test parameters and frequency of testing vary among EHL and the different EPC Contractors. The effluent test data are not yet captured within the Borealis system.

From the social side, preliminary social indicators are being defined, but the tracking of social non-conformances is not yet incorporated within the Borealis IMS.

The tracking of EPC Contractor environmental performance appears to be reasonably well developed on the basis of EHL monitoring and the requirement for the preparation of Monthly Reports. Similar monitoring and reporting from the social side have started, but is more of a work in progress. Social monitoring reports started in November 2010.

3.1.2.4 Organization and Staffing

The Environmental and Social (E&S) organizations within EHL are fully established and have expanded since the last IESC visit in October. The EHL environmental team has been expanded from the top down, with field organizations dedicated to different regions encompassed by the Project and different branches dedicated to regulatory affairs, field environmental monitoring and control, and a team of other advisors related mainly to coordination and management of the EPC Contractors. Specific improvements are the addition of a new Environmental and Regulatory Manager, while still retaining the previous manager in an advisory role with specific responsibilities for interaction with the PNG Government. Additional field environmental advisors have been added for on-the-ground presence at the different project sites. This organization has close to sufficient capacity to manage upcoming environmental issues, especially when it is recognized that the EPC contractors (excepting EPC2 and EPC4) have environmental teams that are also fully mobilized in the field. Another factor helping the organization is that some of the early works contracts are being finished, in particular the Southern Logistics Route, which will allow the environmental staff to focus more on main construction issues. Nevertheless, we do see the organization as being working at the limit of its capacity with the situation not likely to improve in the near future.

The newly renamed Land and Community Affairs – L&CA organization has a more complex structure than the environmental organization. A L&CA General Manager is supported by managers for Community

Affairs, Resettlement and Social Impacts, Land and Compensation, and Compliance and Planning. These separate organizations have important responsibilities:

- *Community Affairs*: Community Affairs; Field Liaison; Stakeholder Engagement; Grievances; and Field Training;
- *Resettlement and Social Impacts*: Census & Survey; Resettlement Action Plans; Livelihood Restoration; Mitigation Plans (Fisheries, In-Migration, MOUs, CDS) – No SCI
- *Land and Compensation*: Land Agreements; Cash Management – Planning, Accounting and Stewardship; Annual Deprivation Payments Program; and Field Compensation & Cash Distribution.
- *Compliance and Planning*: Budget and Planning; Lender Interface; Business Controls (Accountable to L&CA Manager); Internal and External L&CA / Socioeconomic Reporting; and Contractor Compliance Coordination.

A significant difference between the current L&CA organization from the previous SELCA organization is with respect to stakeholder engagement. IESC has previously pointed out that the stakeholder engagement program was not uniformly applied across all of the work fronts and was somewhat isolated from the rest of the SELCA organization. This gap has been closed with the full integration of the stakeholder engagement team into the Community Affairs group of the L&CA. The L&CA team now works as a fully integrated group and have been able to demonstrate their commitment and expertise to manage social issues.

Improvements still need to be made. There still are gaps in the management structure. Although geographic compartmentalization of the teams has helped EHL manage activities at the various construction fronts, the L&CA team could benefit from better geographic coverage, in particular to keep up with pipeline construction (EPC 5A). Positions to work with EPC4 and the drilling contractor are also pending.

Our impression is that environmental staffing can generally meet current requirements and is close to meeting what is expected in the future, but the organization could benefit from the addition of some additional staff. As most of the upcoming increases in the labor force will take place within footprints that have already been defined (HGCP and LNG Plant), a slightly increased environmental staff as organized should also be able to fulfill their scopes without major changes through the construction phase. At this stage, the main concern is the potential for turnover. The situation with respect to staffing of the social group is what is currently the most critical.

Resettlement is the main activity that directly relates to construction schedule, so it is apparent that resettlement teams need to be in more locations than it is practical for them to do so, considering the level of effort and time associated with the development and implementation of a RAP. Field management of individual EPC Contractors requires the addition of field managers for EPC4, EPC5A and the Drilling Contractor and it is understood that EHL is planning on filling these positions. An overriding concern is turnover, especially considering that several of the current staff was involved with contracting negotiations at the time of the site visit.

3.1.2.5 Compliance with PNG Government Regulations

The three main institutional entities responsible for regulating environmental and socio-economic aspects of the Project are the DEC, the Department of Petroleum and Energy (DPE) and the Department of Land and Physical Planning (DLPP). As previously reported, to be able to track compliance with local regulations EHL has developed a Regulatory Framework Database, “RegFrame”. Although we did not interview Government representative for confirmation, EHL reports that the Project is currently compliant with local regulatory requirements. Evidence for this positive interaction with local regulatory bodies was provided by the Government correspondence associated with environmental and social incidents that occurred since the last IESC site visit.

3.1.2.6 Implementation of the ESMP – Siting of Project Facilities

One aspect of implementing the ESMP that represents the integration of both environmental and social components of the ESMP is in the physical siting of Project infrastructure. The IESC has previously

criticized this process with respect to locating the site for the Hides Landfill (see IESC report from May 2010 site visit). During this site visit the IESC received a presentation for the siting of a temporary construction camp needed by Spiecapag in the Moro area (Lake Kutubu). The siting study identified a location north of Lake Kutubu referred to as the proposed Daware Camp/Laydown and this location was visited. Although this site was identified on the basis of a process whereby several potential locations for the camp/laydown area were considered, our basic observation is that the site selection process needs to be much more rigorous, with greater consideration given to both environmental considerations and social setting.

The reason the Daware site was identified was because the land expected to be available for use by Spiecapag, referred to as the Kaimari Site located near Moro, was discovered to be located within the Lake Kutubu Wildlife Management Area (WMA). The proposed Daware Camp/Laydown location is outside of the WMA and its watershed, but it is a greenfields location that intersects a Pandanus swamp forest, which is a “focal habitat” of the Biodiversity Strategy and the Ecological Management Plan where avoidance should be the priority. If it is developed, it will be necessary to carefully maintain drainage to minimize impact to the swamp (Ecology Management Plan, Mitigation 115, “Reduce impacts on Pandanus swamp forest by designing...facility sites...to allow adequate surface flows”). Note 12 of the Ecology Management Plan also indicates requirements for restoration: “Impeding or altering (surface) flows will eliminate the habitat. Company will inspect works for adequate restoration of drainage.” This will be difficult, because before the site can be occupied, it will be necessary to stabilize the soils with aggregate, such that the site represents a temporary facility, but will be a permanent footprint.

From the social side, the site was presented as one where a community agreement had been reached in principle, but our observation is that land acquisition will be more complex than appears to be expected. We met with the “landowner” who likely represents one of several clans with claims to the property. This individual indicated that his requirement was that the facility not be reinstated and the fence be maintained so that he could use the area for protected farming. It was not clear if this person fully understood that the ground surface would be compacted aggregate. In any case, there could be potential for significant social impact to the development of this property as a camp/laydown area. In addition to reaching an agreement with all of the clans who might have claim to the land, the actual development of the property will require consideration of the direct impact to the numerous families living along the access road following the northern part of Lake Kutubu, as there will be heavy truck traffic from both the development and operation of the facility. The development will require a RAP.

One aspect of the process to identifying the Daware site that was not clear to the IESC was if any consideration was given to working in a smaller area (camp and laydown footprint to occupy approximately 17 hectares) or if the laydown and camp areas could be in separate footprints or otherwise fragmented such that smaller land parcels could be considered.

3.1.3 Recommendations

- 1) Corrective actions in the management of wastewater treatment facilities require that water quality information be known in close to a real-time basis. The extensive use of field test kits can help identify problems before they become severe. It is recommended that the results of this testing be fully incorporated within the Borealis IMS such that trends in performance can be tracked.
- 2) Track social non-conformances as part of the Borealis system and work out follow-ups such that mitigations are defined and implemented. The identification and tracking of social non-conformances need to be a routine part of the overall social management program for the Project, as they already are for the environmental group.
- 3) EHL should consider if the siting of major facilities could benefit from an approval process that includes senior management from both the environmental and social groups. In the Daware case, has the possibility been considered that the camp could cover less area and even work as fragmented parcels, rather than cover a huge greenfields area? The IESC recommends that the overall process be reviewed, in particular to reconsider the use of brownfields in the Moro area, possibly considering constructing camp facilities at different, but nearby locations.

3.2 LENDERS ENVIRONMENTAL AND SOCIAL REQUIREMENTS DOCUMENT

3.2.1 Project Strategy

The LESR document was prepared to supplement the ESMP to demonstrate compliance with Lender Group requirements. Documents prepared by EHL that do not form part of the ESMP, but which are nonetheless required to fully demonstrate conformance with Lender Group requirements are as follows:

- Biodiversity Strategy;
- Project Environmental and Social Standards;
- Project Safety Plan;
- Project Health Plan;
- Regulatory Compliance Plan;
- Journey and Traffic Management Procedure.

Information not included in the ESMP but also required by the Lenders includes:

- Table of Contents for IESC Construction Monitoring Reports;
- Table of Contents for Company Quarterly Construction Environmental and Social Report;
- Table of Contents for Company Semi-annual Environmental and Social Reports (Operations);
- Table of Contents for Company Annual Reports (Operations);
- Lender Group Management of Change;
- Process for evaluating Associated Facilities;
- Consolidated list of all documentation required to demonstrate conformance to Lender Group requirements.

The LESR document was prepared by EHL to supplement the ESMP for the above topics 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 conformance with Lender Group requirements.

3.2.2 Observations

Specific aspects of the LESR where in previous reports the IESC has flagged the need for improvement relate to Management of Change; Associated or Related Facilities and Activities; and Public Disclosure. An additional topic highlighted during this trip is the reporting of incidents to the Lenders. These topics are discussed in greater detail in the following sections.

3.2.2.1 Management of Change

The LESR has requirements for the Project to communicate changes to Lenders on the basis of significance. This process is now being implemented and the IESC appreciates that we are involved in reviewing MOCs at an earlier stage than before. A Class II (moderate – requiring Lender notification in a Quarterly Report) change related to urgent repairs and maintenance required on the Northern Logistics Route was reported in the Third Quarterly Report. The Fourth Quarterly report through 2010 has another Class II change associated with the decision to change the pipe lay vessel for installing the Project pipeline in the shallow water section of the Omati River and requiring some additional dredging works. During the first quarter of 2011 one Class II MOC is proposed, which is the reduction in bridge replacement scope for the C1 Contractor CCJV along the Highlands Highway due to L&CA issues and delays experienced at four bridge sites, as described in greater detail in Section 1.1. The process to assign significance levels has been done on a unilateral basis, with no involvement of the IESC in the assigning of the significance class.

One item flagged as a non-conformance from the October 2010 trip report was reducing the minimum space per person in work camps, a decision which the IESC believes should have triggered a Class I MOC. As further discussed in Section 5.13, we have observed that the “camps to build construction camps” are being used to a much greater extent than may have been anticipated and we consider that reducing personal space to be a non-conformance with Project commitments. The difference between a permanent construction camp and a “bush camp,” “fly camp,” or “pioneer camp” is well understood, but when it takes many months beyond what was anticipated to build a permanent construction camp, we consider that the temporary camps effectively reach the status of permanent construction camps. A solution to this situation

could be a Class I MOC whereby the Project defines the criteria and duration for allowable reduced personal space or the Project accepts that the situation is a non-conformance until normal working conditions have resumed. In any case, this is a situation the IESC expects to review in much greater detail during the next site visit.

The IESC was informed of an upcoming Class III MOC associated with the expansion of the EPC2 and EPC5A Contractor scope to install a fiber optic cable alongside the offshore portion of the pipeline. This additional effort will be subsidized on the basis of obtaining investment funds from 3rd Parties in exchange for granting them access to the PNG LNG Project's fiber optic telecommunication facilities. In addition to this being a Class III MOC, the Project facility will be shared by 3rd Parties, which triggers Clause 14.2(n) of the CTA, where the following condition is stated for the "Sharing Arrangement" to be permitted:

- "The Independent Environmental and Social Consultant has provided to the Intercreditor Agent a certificate that any such Sharing Arrangements are not expected to prevent the Project from complying in all material respects with all applicable Environmental and Social Laws, the Environmental and Social Management Plan and Applicable Lender Environmental and Social Standards".

The IESC received a briefing on the proposed action and requested that before we provide a Certificate consistent with the CTA, it will be necessary for the Project to prepare a document whereby the baseline conditions, potential impacts, and mitigations are defined. The main difference between the work conducted to install the offshore pipeline (for which there is already an approved EIS) and the fiber optic cable is the need for the fiber optic cable to be buried into the sea floor for the entire length.

3.2.2.2 Associated or Related Facilities and Activities

Another requirement of the LESR is for the extension of EHL environmental and social stewardship to third-party facilities and activities where the Project is responsible for construction on a third-party site or the sharing of facilities with a third-party. Such cases are identified within the LESR as Associated Facilities and the implementation of ESMP protocols established on the basis of a risk assessment. EHL has finalized a robust and comprehensive process to identify the additional third-party facilities and activities where the ESMP should be directly enforced or where there at least needs to be Project stewardship on the basis of a risk assessment. The process of third party stewardship is not being widely implemented in the field, although many sites and facilities have been targeted. A particular issue is with respect to the use of third-party quarries. One quarry used as an aggregate source by CCJV (Quarry QA2 in the Hides area operated by HGDC under contract with CCJV) was left in an unstable condition from the standpoint of community safety after aggregate from this source was no longer wanted. This type of situation is considered a non-conformance with the ESMP.

3.2.2.3 Public Disclosure

One of the requirements of the LESR is for public disclosure of key Project documents. In addition to the EIS, which was disclosed on the PNG LNG web page prior to the IESC site visit in May 2010, and the National Content Plan that was also disclosed, several other documents have requirements for public disclosure:

- ESMP;
- Milestones Schedule;
- Biodiversity Strategy;
- Community Support Strategy with supporting documents: the Community Support Strategy Action Plan and the Community Development Support Plan;
- Resettlement Policy Framework;
- Komo Airfield Resettlement Action Plan.

The ESMP is publicly disclosed on the PNG LNG web but there are two additional documents still pending disclosure, the Community Support Strategy Action Plan and the Community Development Support Plan that have not yet been finalized. These documents have required comprehensive review by the IESC such that their lack of disclosure is not considered a serious deficiency on the part of EHL. It is recognized that the activities that are required by these plans are being actively engaged in the field and the Level 2 non-conformance has been reduced.

3.2.2.4 Incident Notification

One of the requirements of the LESR is for the Lenders to be notified of serious incidents:

- “Notice of any serious accident or incident (as defined in the Environmental and Social Management Plan) as a result of Project development, construction or operations that have a material adverse effect on the environment or worker health and safety or Project-affected community (CTA Section 12.2(b)(vi)(E)).”

The notification requirement is that the Intercreditor Agent be informed within three business days. Our observation is that the process is not working very well. This is apparent when there are inflammatory newspapers accounts of incidents where the Projects is at least accused of involvement and the Lenders do not receive any information regarding what actually took place. We understand that the Intercreditor Agent was not notified of the mudslide whereby there was a fish kill and downstream communities were impacted. IESC considers that this should have been categorized as a serious incident. It is well understood that the Project does not want to release a statement until all of the facts are in and the situation is fully understood, but this process will not fit in with the requirement for notification within three working days. A second problem is that the LESR does not define what constitutes a social incident. The requirements for reporting a serious social issue, such as the community attack at Well Pad A, are not clear.

3.2.3 Recommendation

- 1) Some of the differences of opinion regarding the significance of MOC classes could be reduced with more dialogue between the IESC and EHL regarding the significance of changes. We think that these difficulties have been resolved, but would like to take this opportunity to flag that we do consider the issue to be important.
- 2) The LESR should be revised to define what constitutes a serious social incident. Furthermore, it is recommended that the Project be more responsive to providing information to the Lenders before all of the facts are in. For example, the Lenders could simply be informed that an incident has occurred and that the Project is evaluating if the incident has any relationship to the Project or was not Project related with the promise to provide more detailed information as it becomes available.

3.3 MILESTONES SCHEDULE

3.3.1 Project Strategy

As previously described, the Milestones Schedule was prepared as Appendix H3 to the CTA to reflect twenty additional time-bound commitments for Lender environmental and social management compliance that were not practical for EHL to fulfill at the time of Financial Close in February 2010. A synthesis of these requirements is as follows:

- 1) Finalize the ESMP to Revision 1 by the end of Q2 2010;
- 2) Finalize the LESR by Financial Close (February 2010);
- 3) Provide a Project Standards document to the IESC by the end of Q2 2010;
- 4) Finalize an Environmental Monitoring and Reporting Plan by the end of the Q2 2010;
- 5) Finalize a Social Monitoring Plan by the end of the Q2 2010;
- 6) Prepare an Operations ESMP at least six months prior to the production of process hydrocarbons;
- 7) Prepare an Operations Oil Spill Response Plan at least six months prior to the production of process hydrocarbons;
- 8) Provide a Noise/Vibration Management document to the IESC by the end of Q2 2010, or contain the requirements in the Project Standards document;
- 9) Finalize a process for conducting periodic noise monitoring during construction by the end of Q2 2010;
- 10) Provide a final Journey Traffic Management Plan to the IESC prior to Financial Close (February 2010);

- 11) Complete a Komo Airfield Resettlement Action Plan with an independent compensation rates study by the end of December 2009;
- 12) Conduct a comprehensive nearshore baseline marine survey (including endemic fish species) within the area of potential impact, including the exclusion zone, of the LNG Plant site prior to the start of construction;
- 13) A revised Biodiversity Strategy document by the end of the first Quarter 2010;
- 14) Develop a Biodiversity Monitoring Program (initial draft due Q2 2010);
- 15) Develop an Offsets Delivery Plan (initial draft by the end of Q1 2011; finalize by the end of Q3 2013);³
- 16) Integrate conservation programs in the Kutubu Wildlife Management Area into an offset delivery plan the end of Q4 2010⁴;
- 17) Develop a Project-wide Induced Access Management Plan whereby there is an access road register that specifies level of closure/reinstatement for each road and is linked to the Project GIS prior to the approval of the first access road;
- 18) Develop a quarantine program to manage invasive species by the end of Q2 2010;
- 19) Develop a Community Support Strategy Action Plan (Indigenous Peoples Development Framework equivalent) by the middle of June 2010; the strategy of this Plan to be defined prior to Financial Close; and
- 20) Revise the Cultural Heritage Management Plan (CHMP) to commit to interpretation and documentation and reporting of cultural heritage results; continue to engage with the National Museum of Papua New Guinea regarding their capacity for curation (preservation and storage/display) of materials found during the course of construction and revise the CHMP as appropriate (revisions to be complete by the end of Q2 2010).

3.3.2 Observations

EHL has made a major progress in terms of fulfilling the Milestones Schedule with the disclosure of the ESMP and associated Management Plans, including the Environmental Monitoring Plan. As noted in Section 3.2.2.3, there are some commitments that have not yet been achieved, in particular the Community Support Strategy Action Plan and the Community Development Support Plan. These documents have required comprehensive review by the IESC such that their lack of disclosure is not considered a serious deficiency on the part of EHL. It is recognized that the activities that are required by these plans are being actively engaged in the field and the Level 2 non-conformance has been reduced. Additional commitments under Items 15 and 16 associated with the Offset Delivery Plan and the Kutubu Wildlife Management Area will not be ready by the end of Q1 2011, but as further discussed in Section 4.7, the IESC is prepared to accept a revised schedule for these actions as a Class I MOC.

³ In subsequent discussions between the Project and the IESC, it was mutually agreed that it is premature to have this document as an initial draft by this due date. EHL has agreed to prepare a Class I MOC to document this change to extend the date for delivery of the initial draft to the end of Q4 2011.

⁴ In subsequent discussions between the Project and the IESC, it was mutually recognized that the date indicated in the Milestones Schedule for this delivery was not practical given that the delivery for the draft Offset Delivery Plan is set at the end of Q1 2011 and that this element (conservation programs in the Kutubu Wildlife Management Area) was to be included as part of the Offset Delivery Plan. EHL has agreed to prepare a Class I MOC to document this change.

4 ENVIRONMENT

4.1 WASTE AND WASTEWATER 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. These documents are also intended as a general outline to guide the Contractors in developing their site-specific Contractor Implementation Plans for the management and final disposal of waste and wastewater.

The Waste Management Plan is supplemented by a Waste Management Template, a detailed report that specifies the requirements of Contractor's waste management plans and identifies methods for proper identification, classification, temporary storage, transport, and final disposal options, as well as defines how to implement an effective waste and wastewater management strategy.

As outlined in these documents, the main objectives of the Project are as follows:

- contain, transport, handle and dispose of solid and liquid wastes arising from project construction activities in such a manner as to minimize impacts to human health and the environment;
- be self-sufficient regarding waste management processes, procedures and facilities and dispose of wastes only at facilities approved by Company, for which disposal (with or without prior treatment) is the only practicable option;
- follow a systematic program that applies the waste management hierarchy to reasonably minimize wastes requiring disposal. This program shall include monitoring equipment performance and having regularly scheduled maintenance programs to provide optimum performance and minimize waste generation;
- establish facilities and procedures appropriate to prudently manage wastes requiring disposal on-site in accordance with applicable standards;
- manage waste on-site: no disposal is planned to facilities not owned by Company (such disposal is to be handled on an exception basis and approved by Company) and off-site re-use and recycling (to facilities not owned by Company) is accomplished in a controlled manner that benefits the applicable community. For the cases where the disposition of Project wastes to non Project dedicated facilities will be required, the Company shall follow its internal waste management facilities review requirements before allowing the use of the site;
- establish a network of properly designated, drainage-controlled Waste Accumulation Areas (WAAs), designated by Contractor for storage/treatment/disposal;
- interim waste management procedures and facilities (burn pit/landfill or incinerators for combustibles and food wastes at the early works camps, containerized storage of restricted wastes, sanitary wastewater treatment capability, etc.) should be utilized as necessary, pending development of construction-phase facilities and/or permanent facilities;
- reduce the impact on water quality (and associated beneficial values⁵) from construction activities;
- reduce the impact on existing surface water flow regimes and groundwater aquifers (and associated beneficial values) arising from construction activities.

The Project strategy is designed to reduce impacts associated with waste generation through the development of comprehensive and rigorous waste management practices. The determination of waste types, amounts of waste and waste ownership (i.e., those individuals or entities responsible for managing the waste), recycling options, and other aspects are endorsed in the EHL management plans as requirements to be reflected in the Contractor's site-specific waste management plans. Overall, after the preliminary phases of construction, the Project intends to be fully self-sufficient regarding waste management processes, procedures and facilities as far as suitable third parties facilities became available.

⁵ Beneficial values' includes use as drinking water and aquatic ecosystem protection.

4.1.2 Observations

Following the recommendations and observations from the previous visits, IESC acknowledges that the Project has understood the challenges associated with managing waste and wastewater, especially at remote Project locations, and is fully aware of the implications of delays to implement the long-term waste management strategy and has developed a number of interim solutions to fulfill the commitments included in the ESMP.

From what observed in the field, reliance on third parties facilities has been nearly discontinued, except for some sites where agreements with OSL are still in place for the disposal of specific waste streams or as a back-up solution. Most of the Project and EPC Contractor locations are provided with appropriate waste management areas, on-site incinerators and Waste Water Treatment Plant (WWTPs) consistent with the standards set for the construction phase by the ESMP and are self sufficient for the treatment and disposal of non-restricted waste and wastewater.

One of the main positive outcomes of this visit is that in Q3/Q4 2010 the Project undertook a full Project-wide waste management review by two independent professional companies to assess the overall waste management approach being applied throughout the Project. Key challenges in terms of waste generation, storage and final disposal were identified and a list of Project-wide and site-specific recommendations for further improvement was provided. The review exercise included a desktop revision of existing management plans and associated documentation, as well as an assessment of the waste management processes established by the Project and its Contractors to fulfill the waste management expectations included in the ESMP. The findings of the two independent consultants have been therefore integrated in an overall 'health-check' assessment on the Project's current and future preparedness to manage its wastes.

After the initial PNG-wide screening of potential recyclers completed in Q2 2010, the effort of the Project towards the identification of reliable waste service providers continued with the support of the PNG Enterprise Centre and the L&CA team. A number of potential local waste service providers were identified, although agreements have been established for scrap metals and waste oil with those, which are the only identified as suitable for the Project.

During the mission, the following Project facilities were visited:

- *Moro B camp*: the camp, owned by EHL, has an on-site incinerator and a WWTP. At the time of the visit the incinerator was down and wastes were disposed at the OSL incinerator;
- *Nogoli Camp*: the overall situation of the site has not changed since the last site visit. The camp, owned by OSL and used to accommodate a limited number of Project personnel, has an on-site incinerator audited by EHL in Q1 2010 and an on-site WWTP;
- *Juni Training Facility*: construction is essentially complete with most of the remaining work associated with landscaping. Non-restricted wastes have been disposed in an on-site incinerator since early December together with oil-contaminated material and medical waste. Overall, waste segregation should be improved to assure only waste allowed by the WMP is incinerated. A WWTP operated by Red Sea has been in operation since mid December. Effluent is being tested, but results are yet to be received from the laboratory;
- *CCJV camp at Well Pad A*: since the last visit, the camp has been completed and it currently houses about 330 workers employed for the HGCP main camp construction works. An incinerator has been installed, but was not operating at the time of the IESC site visit, pending some spare parts to be procured. As an interim solution, oil contaminated materials, medical waste, and other combustible wastes are temporarily stored on site until the incinerator is operational. Restricted wastes are stored on-site in a new, adequate, waste management area. A waste register is maintained with waste amounts, types and final disposal solution. Wastewater is treated in the new on-site WWTP package that was under construction at the time of the last visit. The old plant is being decommissioned and sewage by-passed to the new unit. Effluents are routinely monitored through an Australian laboratory and also by means of field test kits to allow a timely monitoring of the plant performance;
- *C1 main camp*: the camp was under construction with about 30/40 people currently being housed. The camp is expected to have a total capacity of about 600 beds at peak occupancy. This camp is currently relying on Well Pad A camp for waste and wastewater disposal. Two MBR100 units have been commissioned with a third to be installed at a later stage;

- *Tokaju camp*: a small camp at a late stage of construction that will be used by CBI Clough JV's contractors for the construction of their main camp. Current plans are to have a maximum capacity of 50 beds by the end of March although further expansion could be required. The limited amount of waste produced at this stage is segregated and stored in containers waiting for a drum incinerator yet to be mobilized. A WWTP has been commissioned and is operational;
- *Kobalu*: an existing site from BP/Chevron operations used as a construction camp and helicopter refueling base. The camp is in operation with about 100 people housed. The facility is independent from a waste management point of view with an on-site incinerator and an operational WWTP. Proper waste segregation continues to be implemented with PVC-related waste and metals removed and stored separately from the waste to be incinerated. The site where wastes used to be segregated was reportedly cleaned and waste removed;
- *Pioneer Camp at the Komo Airstrip*: the second block that was under development at the time of the last site visit has been completed and the camp is now in operation with about 120 people housed. Conditions at waste storage area have significantly improved since the last visit and the site now appears well managed with waste properly segregated. Non-restricted wastes and medical waste are now incinerated in the on-site incinerator and the practice to ship wastes to the OSL facility at Nogoli has been discontinued. At the time of the visit oily rags were still burned in an open burning drum, but imminent plans are to start treating all these wastes in the incinerator in different batches so that ashes can be tracked and stored separately. Non-combustible waste is stored on-site until the landfill at Hides is available. Metal and waste oil are stored on site and periodically shipped to Lae for recycling. Wastewater is treated in an on-site WWTP that also receives the sewage from the Lancos' camps involved in the construction;
- *MCJV main camp at the Komo Airstrip*: the camp is at an early stage of construction with about 80 people currently housed. The camp is being planned for a peak population of 600. The camp is self-sufficient except for the waste that is sent to the Pioneer camp until the on-site incinerator is installed. A WWTP was being commissioned at the time of the visit with sewage temporarily hauled to the Pioneer camp;
- *CCJV camp at Kantobo*: the camp houses about 120 people and should be demobilized by end of March. Non-restricted wastes are treated in an on-site incinerator while restricted wastes are stored on-site until the landfill at Hides is available. Metals and waste oil are stored on-site. Wastewater is treated in an on-site WWTP. Levels of E-Coli above the reference limit were detected in the river upstream the facility. Complaints regarding water quality were also received from the nearby villages and a pit was installed to catch water from filter washout and recycled to the plant. Results of routine monitoring of effluents were reported to comply with the relevant standards;
- *CCJV Oiyarip Camp at Mendi*: the camp, not visited this trip, was reported to be mostly mothballed as of end of February and handed over to EHL. At the time of the visit, about 30 people were reported to live at the camp. Different options for possible re-use of the camp for other sections of the Project are under evaluation;
- *CCJV Camp at Gobe*: the camp still houses about 250 people, but is expected to be demobilized by the end of April. The use of the Gobe OSL Ridge camp incinerator for non-restricted waste has been discontinued since the on-site incinerator was installed. Oily rags are reported to no longer be burned in this unit as they created technical problems to the incinerator and are now stored on-site. Following observations from the last visit, the waste disposal area used during the first stage of camp construction has been cleaned up. Wastewater is treated in an on-site WWTP;
- *Spiecapag Camp at the Kopi area*: the camp is now used also to house EHL personnel. Non-restricted wastes are no longer sent to the OSL incinerator since the on-site containerized incinerator, located within the Spiecapag main waste storage area, has been installed. Non-combustible waste is stored on-site in a dedicated area until the Gobe landfill is available for their final disposal. Wastewater is treated in a permanent on-site RBC unit;

- *Spiecapag main camp 1*: the camp has been in operation since mid-February and currently houses about 600 people. The waste management strategy for this facility and for the next camp to be developed for EPC5A appears to be effective and anticipates having non-restricted waste treated at the camp incinerators and restricted waste sent to the Kopi main storage area until the Gobe landfill is operational (expected for early 2012). At this camp, two incinerators are working to treat all non-restricted waste including oily rags and medical waste. Segregation was observed to be extensive within a dedicated, properly designed area. Wastewater is treated in four RBC units of 50 m³ capacity each. To overcome logistical problems typically associated with pipeline construction, Spiecapag is implementing a new waste management approach with two Mobile Waste Management Areas (MWMA), each equipped with a variety of waste segregation, treatment, storage and disposal equipment, designed to be transportable to collect the waste from the numerous work fronts as pipeline construction progresses;
- *C2 LNG Plant Site*: the LNG plant pioneer camp is now fully operational and currently houses about 250 people and will at full capacity house up to 800. Non-restricted waste is segregated and incinerated at the on-site incinerator. The Interim Waste Storage Facility (IWSF) was completed in mid August 2010 and accommodates all restricted wastes produced during construction. Medical waste is currently containerized and temporarily stored at the IWSF until a new incinerator is installed at one of the main camps under construction. The design of the engineered sanitary landfill is complete and soil scraping was ongoing at the time of the site visit. Wastewater is treated in an on-site WWTP. The Leighton camp, expected to be demobilized by end of July, was also visited. Wastes from that location are segregated and sent to the pioneer camp while wastewater is treated at an on-site WWTP;
- *Northern Logistics Route*: at the integrated (Agility & NLG) 11 Mile laydown yard at Lae, not visited during this mission, wastes continue to be stored on-site in containers within the Agility yard until the on-site incinerator is installed. The practice to haul sewage from the old area to the Lae municipal WWTP has been discontinued and the level I non-conformance assigned during the October 2010 site visit is therefore rescinded. Wastewater is now treated in an on-site WWTP whose functionality was reported to be hampered by the limited volume of wastewater received. According to the information provided, a plumber's organization has been engaged to evaluate solutions including relocating the plant and tying-in wastewater from nearby facilities. An effluent monitoring plan implemented by an external contractor is expected to start by end of March.

According to the documentation provided and what was observed during the site visit, the IESC acknowledges that the Project has significantly improved overall waste management practices since the October 2010 visit. Most of the Project sites are now fully independent in terms of waste management processes, procedures and facilities and reliance on OSL third-party facilities has been reduced such that their use is restricted mainly as a backup solution when Project's equipment is down.

Procedures for appropriate waste collection, segregation, storage, treatment and disposal were observed to be in place at most of the facilities visited where waste management areas were established. Waste-related information and trucking registers are maintained at all the Contractors to record types of waste stream, amounts, treatment, and disposal methods with information provided to the Project on a monthly basis. What is now required is to systematically organize all data collected at a Project-wide level and centralize them in a single database such that all wastes produced throughout the Project locations can be tracked. This will help the Project monitor the Contractors' performances on waste management, identify any gap or lack of implementation of proper procedures and establish accurate and realistic waste forecasts to be used to ensure that the current Project waste management strategy allows for adequate landfill capacity.

Now that most of the construction sites have been provided with WWTPs and routine monitoring has started, one issue is receiving analytical results in a timely fashion (e.g. delays of up to 5/6 weeks between sampling and results were reported). To overcome this problem, the Project is considering implementing alternative solutions through the use of field kits to analyze effluent samples (already in use at some locations) such that problems can be identified before they become severe. Although these kits are limited to a relatively small range of parameters⁶, the IESC encourages the use of these kits to allow for real-time performance indicators to be developed to improve the management of WWTPs.

⁶ Typically, field kits allow monitoring pH, T, Total Suspended Solids(TSS), **Biochemical Oxygen Demand (BOD)**, Chemical Oxygen Demand (COD), Total Bacterial Coliforms

Since our last site visit in October, the engineering design of the three Project landfills has progressed and is now completed for the Hides and the LNG Plant site landfills where clearing and grading activities were ongoing at the time of the visit. Both facilities, initially expected to open in May, have been re-scheduled to Q4 2011. As an interim solution, an option to use the Hides landfill location for temporary storage is being considered. As mentioned in our previous reports (May and October 2010 visits), although the Project has demonstrated considerable improvements in waste management practices, further delays beyond the current schedule in the development of the permanent waste treatment facilities may seriously impact the overall waste management strategy and directly affect all Contractors' programs.

In terms of disposal capacity, both of the planned landfills appear to have sufficient capacity to manage all the waste generated during both construction and operations, but this assumption will require further validation as the Project develops, in particular as operational requirements are better defined. This validation will require the review/update of waste forecasts associated with the demobilization of construction camps and temporary facilities, as well as an evaluation of the effectiveness of incinerators and recycling in reducing waste generated by Lanco camp operations.

The implementation of the waste management hierarchy as stated in the ESMP is still an ongoing process with a list of potential local recyclers compiled and agreements established with scrap metals and waste oil recyclers at Lae and Port Moresby. However, the identification of suitable recycling opportunities is still a challenge due to the lack of viable options in PNG. Nevertheless, efforts to identify proper recyclers continue with the support of the PNG Enterprise Centre and the L&CA team with the goal to enhance waste management capacity in PNG by supporting existing and new local companies. From the information acquired during the visit, the IESC understands that the Project is considering the opportunity to hire an independent party to perform due diligences of the recyclers to ensure they fulfill Project/good practice requirements. Specific effort should be placed in identifying practical solutions for those waste streams whose production is expected to be significant in the near-term, such as tires, plastic, end pipe cups, and batteries.

As previously noted, most of the Project camps and main construction sites have been now provided with temporary incinerators that at most of the sites are also used to treat restricted wastes such as medical waste and oily debris (oil filters, oily rags etc). To this regard, the Project has developed specific operational procedures as well as an appropriate monitoring approach that requires temporary incinerators to be of dual combustion chamber design with at least a one second retention time at a minimum temperature of 850°C in the secondary chamber. In addition, when health care waste is incinerated in the temporary incinerators, it needs to be processed separately from other wastes and ashes from these burn cycles need to be treated as a restricted waste, unless otherwise demonstrated through testing. Nevertheless, from what observed in the field, some training and stewardship of incinerator operators is needed at some locations (Juni, Gobe) to ensure the units are operated properly according to the Waste Management Plan. Furthermore, for wastes sent to OSL incinerators, the Project should track ash disposal to avoid final disposal into OSL landfills that do not comply with ESMP standards. Project waste should be incinerated separately from other wastes so that ashes can be collected and disposed in Project authorized facilities.

One positive outcome from the visit is the use of innovative waste treatment solutions that were introduced by the Project and observed at some Project locations. Examples include the Biolux© bio-treater whose installation is planned for the LNG Plant site to mechanically compost WWTP sludge, paper, and food waste; the Geotube dewatering containers for sewage sludge treatment; the Rotomill technology to treat drill cuttings and associated wastes via thermal desorption and facilitate reuse/recycling/final disposal.

Overall, although we recognize that the Project has demonstrated full awareness of the challenges associated with waste management and has implemented interim solutions to fulfill ESMP commitments, the continuous delays to key long-term disposal infrastructure could represent a challenge for the Project and the different Contractors whose waste management strategy relies on these facilities.

4.1.3 Recommendations

- 1) Although self sufficiency has improved throughout the Project, the Project should continue to consider it a key objective of the waste strategy until full independence is achieved. The use of third party facilities (OSL) should be avoided even as back-up solution in case the Project incinerators have down time and solutions for waste temporary storage should be identified.
- 2) The overall process to establish Waste Management Areas at each camp or main construction location is well in progress, these areas should be evaluated as to whether or not they have the

required storage capacity for the projected waste volumes. The potential installation of the temporary storage area at the Hides landfill location as interim solution until the first cell is available should be put on a fast-track.

- 3) Now that the early construction works have kicked-off, try to maintain or improve on the Hides and LNG site landfill construction schedules.
- 4) Continue the process of identification of new recycling/reuse options, especially for those specific waste categories whose production is expected to be significant as construction progresses (tires, pipeline plastic envelopes, end pipe cups, batteries, etc.). Assist and steward the Contractors so that they take advantage of EHL's efforts to identify suitable recyclers.
- 5) Now that Contractors' waste registers are maintained, data has to be organized and centralized in a single database such that all wastes produced throughout the Project locations can be tracked.
- 6) Continue/complete the due diligence process and risk assessments for all third-parties facilities receiving Project wastes and provide stewardship/support to improve their performance, when needed.
- 7) At the construction sites where incinerators are installed, verify that the units are operated properly and following the directions included in the Waste Management Plan in terms of waste segregation and operational procedures. Provide ad-hoc training if required. When waste is burned into OSL incinerators, the Project environmental advisors should verify that ashes are tracked to avoid disposal into OSL landfills.
- 8) Emphasize the use of field test kits to monitor WWTP effluent and improve their management, such that operators are not dependent on late-arriving laboratory analyses.
- 9) Extend the use of innovative waste and WWTP sludge treatment solutions already adopted by some of the Contractors to other sections of the Project.
- 10) At Juni, improve the segregation practice for wastes to be incinerated and steward the unit operator, as the conditions observed at the site are contrary to ESMP requirements.

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 potential impacts associated with the handling and transport of hazardous materials and include the minimum requirements to be reflected in the CIPs in terms of mitigation and management measures as well as responsibilities, reporting and notification. The overall objective is to prevent uncontrolled releases of any hazardous material during transportation, handling, storage and use through:

- hazardous materials handling risk assessments to identify mitigation and management measures to be included in site-specific Hazardous Materials Management Plans developed by the Contractors; a spill classification 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;
- installation of properly designed fuel and chemical storage systems, provided with secondary containment (e.g. double-walled tanks/lined containment bunds) to enable containment of complete volume stored. Provide secondary containment, drip trays, or other overflow or containment measures for hazardous material containers at connection points or other possible overflow points;
- training an appropriate number of staff in handling, transportation and storage of hazardous materials as well as in the management of emergency response and release scenarios;
- proper labeling of vessels with name or description of material, date of last filling, name and address of supplier and hazardous materials characteristics;
- adequate awareness campaigns to potentially affected communities following the results of the risk assessments, the prevention and control measures established, and instructions on actions to be undertaken in the event of releases or spills.

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 indications and 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

Based on the information provided and field observations, the demand for fuels and lubricants to supply construction equipment is constantly increasing at all Project locations. Given that the fuel supply is managed by each Contractor independently, a primary requirement is that the procedures and management plans developed by each Contractor are consistent with the Hazardous Materials Management plan and the Journey & Traffic Management procedure developed by EHL and site-specific recommendations are included in the plans.

Spill prevention performance is measured both as number of spills and also as number of spills in relation to man-hours worked (spill rate). Most of the spills recorded are associated with releases of hydraulic oil and fuel caused mainly by failure to adhere to work procedures and poor equipment maintenance and routine inspection. During the period October 2010 – January 2011, a total of 137 hydrocarbon/chemical spills were recorded with an average of 6.5 liters/spill, a number that has remained stable despite a rise in the number of man hours worked on sites. Nevertheless, most of the spills continue to be below 5 liters with none recorded above 120 liters. Although the environmental significance of these small spills has to be considered negligible from a statistical standpoint, these records indicate a good culture of spill awareness that will hopefully reduce the likelihood of a large spill.

The challenges associated with the movement of significant amounts of fuel are well understood by the Project. All Contractors active in the field have developed site-specific Spill Prevention and Response Plans approved by the Company and all but EPC2 that has yet to mobilize have reportedly completed individual spill risk assessments.

A Project wide risk assessment has been performed in November for the upstream portion of the Project where fifteen potential spill scenarios involving fuels, chemicals or other liquids were assessed and a number of mitigation actions identified. As a result of the assessment, spills from tank trucks into watercourses, from bulk fuel storage tanks and releases from a vessel due to grounding/collision were identified as the worst case scenarios for the Project. Further risk assessments are expected to be undertaken for the LNG Plant construction areas and for Operations and have been scheduled for Q2 and Q4 2011, respectively.

In terms of ability to respond to spill events, EPC Contractors have spill response equipment in place although resources and equipment are currently limited to Tier I scenarios. From the information provided, the availability of Tier II contractors in PNG is a challenge and, at the time of the visit, of those contractors that identified the risk of a Tier II spills, only EPC3 was ready to award a Tier II contract. Alternative solutions for Tier II responses are being evaluated including potential coverage through OSL spill response at some locations or through East Asia Response Limited (EARL), the ExxonMobil oil spill response provider for the Asia-Pacific region that has been retained to respond to Tier III spills scenarios. The option to locate oil pollution response trailer(s) throughout selected project locations is also under evaluation to provide rapid intervention in sensitive areas. Spill response drills have reportedly been successfully performed at Kopi Shore Base, involving both onshore contractors and Oil Search Limited.

The “Environmental Leadership Challenge - Spill Prevention and Awareness Program” was established in April 2010 to continue periodic training for crews, equipment operators, spotters, as well as field supervisors in hazard identification, storage depot inspections, spill prevention and handling, and spill reporting.

In terms of hazardous material management throughout the Project, the overall level appears to be satisfactory, especially at new locations.

At Kobalu, the conditions of the helicopter refueling area have been improved from what was observed during previous visits, although improvements are still being constructed. The level I non-conformance assigned during the October 2010 site visit is therefore rescinded.

Overall, at most of the locations visited, spill kits and fire extinguishers were observed to be available and properly located throughout the sites with the only exception observed at Juni where both fire extinguishers and spill kits were missing from the diesel storage area. Spill kit shelters were displaced at some Project locations including the Komo airfield and along the Hides Ridge Well Pad access road. One interesting solution for fuel storage was observed at the Spiecapag fuel depots at the Spiecapag main Camp 1 and Kopi area where diesel is stored into 200 m³ capacity plastic bladders located within a fenced area. The IESC considers this as an effective solution especially for the construction sites and encourages this practice to be extended throughout the Project.

Labeling of hazardous material drums and containers continues to be extensive throughout the sites visited with MSDS properly located and made visible at each hazardous materials storage location.

4.2.3 Recommendations

- 1) Ensure that all Contractors' spill response plans include site-specific recommendations.
- 2) Fast track the identification of contractors able to manage Tier II spills emergencies.
- 3) Ensure fuel delivery contractors have their own plans in place consistent with the ESMP requirements and with enough capacity to handle minor/medium spills.
- 4) Train EHL field supervisors to routinely check the location of fire extinguishers and spill kits and verify that shelters/areas where hazardous materials are stored are provided with appropriate ventilation.

4.3 AIR QUALITY

4.3.1 Project Strategy

The Project strategy for the air quality monitoring and the management of air emissions is defined in the Air Emissions Management Plan developed by EHL and included as an appendix to the ESMP. The document refers to the management and mitigation of both fugitive dust emissions and gaseous emissions and identifies the different sources of impact, mitigation and management measures, together with indications of monitoring requirements, and roles and responsibilities. The overall objective of the plan is to control atmospheric emissions during the different stages of Project development.

Given the current stage of construction where extensive earthmoving is ongoing, fugitive dust is recognized as the main potential impact on air quality. Although temporary and limited to the time of construction, dust emissions might affect those areas in close proximity to the sites where there is on-going work and along routes frequently used by project trucks. Dust is mainly associated with civil work activities including excavations, vegetation/soil clearance, trenching, material hauling, dumping, site grading, backfilling activities, as well as from increased vehicular traffic.

The general control measures to mitigate fugitive dust as outlined in the EIS and in the ESMP include the use of dust suppression techniques such as watering of the working areas and along those roads where project traffic is expected to be intense, use of cover sheets on topsoil and/or soil piles, reclamation and revegetation, use of covers on vehicles delivering site construction materials containing fine particles (e.g. sand, aggregates, etc.) to/from the, control speed limits and road maintenance. Dust masks are required as standard Personal Protection Equipment (PPE) for workers involved in operations that may entail potential dust inhalation.

Other sources of air emissions, including greenhouse gasses, are associated with gaseous emissions from the operation of diesel generators, vegetation clearance, and vehicular exhausts, although considered to be minor, localized and transient in nature at this stage of the construction. These emissions are commonly mitigated through proper operation and maintenance of equipment and through the location of fixed and mobile equipment as far as practical from local villages or worksite accommodations. Air emissions from waste incineration will be controlled by installing high temperature dual combustion burners commensurate

with proposed waste inventories, through proper maintenance and by considering ad hoc emissions monitoring plans to detail emissions composition and monitoring criteria.

By developing site-specific air emissions monitoring plans the Contractors are responsible for the implementation of all measures to limit/control air emissions and for proper maintenance of construction equipment and incinerators to ensure compliance with the applicable emissions criteria.

4.3.2 Observations

Given the current level of ongoing construction activities at the different Project locations, and considering that our site visits were during the wet season, air emissions are yet not considered to be a significant issue although the number of vehicles and equipment mobilized is now significant. Because of the locally wet conditions that keep the soil moist and naturally prevent dust formation, the need to implement dust control measures such as watering is limited. However, water sprinklers were observed at some site locations where significant earth moving was ongoing and control of speed limits is well controlled throughout the Project. Although a full implementation of dust suppression measures is still not in place, the Project is considering monitoring at a number of locations along the main roads between Nogoli and Komo and Nogoli and the HGCP. From the information provided, atmospheric air monitoring commenced at the LNG plant site in December at three designated locations with results reportedly well below Project criteria levels.

The use of protective masks at sites where dust is an issue continues to be adequate and from what observed during the visit, vehicles and equipment operating at the different Project locations are either new or in evidently good condition.

Although most of the Contractors have developed their own site-specific air emissions management plans, air quality and emissions monitoring is still limited. Where the Project continues to use OSL incinerators, their operation and performance is not monitored.

One aspect that has been stressed by the IESC since the first visit relates to the performance of the incinerators and their monitoring to ensure their consistency with the ESMP. As construction progresses, additional temporary incinerators have been installed and the need to control that these units are properly operated is now a key aspect in the management and control of air emissions. As stated in Section 4.1, the emissions monitoring program set by the Project since October for the operation of these facilities is considered acceptable by the IESC. Within the waste management awareness program developed by the Project, ad-hoc training packages to stewardship incinerator operators have been included to ensure incinerators are operated efficiently through proper waste segregation and differentiation between combustible and non-combustible wastes. Nevertheless, from what was observed at some locations, verification in the field should be more effective to improve routine operations of the incinerators. A particular incinerator where its operations require review is at Kobalu camp, where the low elevation of the unit allows for smoke to sometimes blow through the accommodation units and also to recently established local residents and may exceed ambient air limits.

Greenhouse gas emissions have increased since the last visit as a consequence of the increased fuel consumption associated with the operation of both stationary and mobile equipment involved in the construction activities at the different Project locations. According to the information provided, 16,836 metric tons of carbon dioxide-equivalent⁷ were estimated to have been emitted in Q4 2010. The emissions associated with vegetation clearance have not yet calculated and will be estimated once the final footprint will be available.

4.3.3 Recommendations

- 1) Perform site-specific ambient air quality monitoring for those incinerators whose stack emissions that could affect workers living accommodation and local communities and consider re-locating the incinerators where needed (emphasis Kobalu Camp). Review the layout of future camps (e.g., MCJV main camp at Komo) in advance of construction to avoid similar situations.

⁷ Estimated based on Contractor's diesel usage and calculated using the Australian Government's Department of Climate Change, National Greenhouse Accounts Factors, July 2010.

- 2) Stack emission monitoring (no black smoke or ash) should be performed at all incinerators used by the Project where restricted waste (with the exception of oily rags, oily debris and medical), will be treated, regardless if owned by a third company.
- 3) The Project should routinely perform inspections to ensure that the incinerators are properly maintained and operated within manufacturers' specifications to make sure emissions are minimized.
- 4) The Project should continue working closely with the Contractors to identify the locations where dust emissions generated by the construction works or heavy equipment movement have to be implemented to identify site-specific mitigation measures where needed.

4.4 NOISE AND VIBRATIONS

4.4.1 Project Strategy

The strategy undertaken for the management of noise and vibrations has been developed and incorporated in a Noise and Vibration Management Plan (NVMP) that is Appendix 3 to the ESMP. This document basically follows Australian and New Zealand Environment Council guidelines for minimizing vibration and overpressure associated with blasting activities and follows IFC requirements for noise.

4.4.2 Observations

Noise being generated by the Project continues to be mainly within camps associated with the diesel generators and with earthmoving equipment and truck traffic associated with the construction activity. Blasting associated with quarries and with road upgrades is expanding such that the potential for community effects is increasing. It is understood that environmental noise monitoring is ongoing, and during Q4 2010 was completed at residential receptors near a number of camp locations (Oiyarip, Juni Construction Training Facility, Komo Pioneer camp, and Wellpad A) and since December has also commenced at the LNG plant site. Noise levels were reportedly to be in accordance with the Project measurement criteria although only results from the measurements taken at Komo Pioneer camp were provided to the IESC and the Quarterly reports do not discuss any results of noise and vibration monitoring. Furthermore, this monitoring was undertaken before the start of nighttime construction works and is not representative of the real situation in the field.. Noise monitoring of nighttime construction works is scheduled for Q1 2011.

Given the number of locations where construction works are ongoing, the implementation of the noise monitoring program as depicted in the Project Noise and Vibration Management Plan should be speeded up, also taking into account that community complaints have been received at some locations. The Project should work with the contractors to identify those locations where noise monitoring could be an issue and start implementing an effective noise monitoring campaign. Overall, noise and vibration is a topic that will be reviewed in greater detail in upcoming field visits.

4.5 RAW MATERIALS MANAGEMENT

4.5.1 Project Strategy

EHL has developed a Raw Materials Management Plan (RMMP) as part of the ESMP, which covers all sources of aggregate other than material obtained beneficially during preparation of the pipeline trench or other Project facilities and roads/tracks. The RMMP requires social and environmental surveys and assessments for any new quarries or expansions of existing quarries. For existing abandoned quarries, or existing quarries operated by third parties, there is a requirement to establish a reinstatement strategy for approval by EHL. There is also a requirement to avoid quarry development on Hides Ridge. The RMMP establishes the policies of reducing the number of quarries developed by using previously worked (old) quarries and using limestone generated by construction activities for road base material. This plan also provides guidance for the management of timber that may need to be removed and defines that slopes that excavations should be made in a manner to maintain safe slopes and avoid areas of water accumulation.

A requirement of the LESR and also of the RMMP is for the extension of EHL environmental and social stewardship to quarries and borrow pits where the Project requirements leads to extraction at a third-party facility or shares the site with a third-party. As discussed in Section 3.2.2.2, EHL has finalized a process of

identifying the additional third-party aggregate or rock sources where the ESMP should be directly enforced or where there at least needs to be Project stewardship on the basis of a risk assessment.

4.5.2 Observations

Construction at the HGCP site and the Komo airfield requires more aggregate that was originally anticipated and both CCJV and MCJV have had difficulties in identifying sufficient quantities of good-quality aggregate. Two issues are appearing regarding quarry development: that some quarries are being started up without sufficient up-front planning; and that some of the third-party quarries do not have sufficient EHL stewardship.

Quarry QA2 (Tameya quarry serving CCJV for the C1 Contract), previously used as an aggregate source for the construction of HGCP facilities, has been discontinued. In the field it was evident that stewardship of this quarry has not been effective, based on observations of unstable slopes and inadequate benching of the slopes beneath the quarry. Should there be a significant slope failure, there is the potential that human life could be threatened. Local residents reported that a large boulder had already fallen from the quarry and entered a farmer's garden. This situation where a quarry used by the Project did not have sufficient stewardship to assure community safety was already flagged as a non-conformance in Section 3.2.2.2. CCJV is also developing quarries along the Well Pad Access Road. Quarries HQ1 and HQ3 were proving not to have good quality aggregate and Quarry HQ4 was starting with the hope that good quality aggregate would be found there. The quarries are associated with anomalously large footprints, because it has proved necessary to sidecast large amounts of unsuitable rock off of the quarry footprints. The quarry road itself is being widened at some locations to obtain aggregate, although the points of road widening are not designated as separate quarries. The observation that the quarries are not producing suitable quality aggregate and that there need to dispose of large quantities of unsuitable rock from the Well Pad Access Road quarries both are indicative that up-front planning could have been better.

Quarry QA1 (Nogoli quarry serving MCJV for the Komo airfield) was also visited and found to be fully operated by MCJV. This quarry requires substantial modification to be safely operated, but the situation was well understood by the MCJV quarry manager who expected to make appropriate changes once the land access process was completed by the social team, as development will require that the quarry be expanded beyond its current footprint.

The IESC also visited a quarry proposed by MCJV for high-quality aggregate near Hides, the Timalia River Quarry/Borrow Pit - designated TB1, where MCJV had already brought in crushing equipment. This equipment was brought in prematurely, as social procedures had not been implemented to the degree required in the ESMP. Although from a geological point of view the area appears to contain a large amount of material from which high-quality aggregate can be derived (river-deposited volcanic boulder gravel), the exploration of this area was limited to a few shallow test pits. The IESC has the impression that this proposed quarry is an example where shortcutting correct development procedures has actually increased the time required to acquire good aggregate from this location.

The third-party quarries currently serving the LNG Plant and the C2 road improvements were observed to be working outside of any stewardship by EHL. The operating procedures for these quarries were not reviewed.

4.5.3 Recommendations

- 1) There needs to be an improved process for the planning of quarries, to verify that aggregate will meet quality standards such that quarries are not developed with unnecessary environmental and social footprints. It appears that EHL needs more involvement with the EHL Contractors in the planning process.
- 2) Stewardship of third party quarries needs to be fully implemented in accordance with EHL's Associated Facilities process. In the case where the Project has been the sole user or close to being the sole user of a third-party quarry, there is no obligation to reclaim the quarry when it is no longer needed, but the quarry should be left in a safe condition. In the case of Quarry QA2, this should have involved slope stabilization, in particular stabilizing the lower benches for example with rip rap and improving surface drainage to prevent infiltration. For operating third-party quarries, efforts should be made to make sure that they are operated safely after the Project has reviewed their operations.

4.6 EROSION AND SEDIMENT CONTROL

4.6.1 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 ESCMP 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 ESCMP 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.

4.6.2 Observations

Erosion and sediment control are critical components of construction activities. The efforts to date have had mixed success. In general, significant effort is being placed on controlling erosion, but at the HGCP camp construction site a significant failure occurred on November 13, 2010 whereby a mudslide originating at the HGCP spoil dump site blocked water behind the Komo road. This water overtopped the mudflow on November 14 and this allowed the mud to flow to the Tagari River along the path of the Akara Creek, a distance of 4.65 km. Fish in the Akara Creek were killed in the turbid water and mud, necessitating that downstream villagers be provided fresh water by CCJV, an activity that started on November 15. The failure took place in spoil from the EPC4 top camp placed by CCJV apparently without distributing the engineering drawing to all responsible parties or without undertaking a thorough assessment of engineering and environmental/social risk.. EHL internally assigned a Level II environmental non-conformance for this event and it is therefore not necessary for the IESC to assign non-conformance. It is expected that the Akara Creek incident was an important lesson-learned for the Project.

Community complaints continue to be registered for surface runoff from the Komo airfield construction activities, but some good examples of erosion and sediment control were observed during this site visit. The Project was able to demonstrate significant effort to minimize sidecasting. In the area of the Well Pad Access Road, cut to spoil volumes have been reduced from 2.128 million m³ to 1.54 million m³, a reduction of 678,000 m³. This reduction in amount of spoil to be sidecast was achieved on the basis of reducing formation width to the minimum of 6.5 m, re-routing to capitalize on the terrain where possible, and establishing design rules that enable maximum gradients to be used (14 percent with 16 percent in limited places). Good practice in terms of minimizing the amount of sidecasting was encountered along the portion of the Southern Logistics Route following the Heartbreak Ridge area north of the Mubi River by breaking up limestone boulders and using cut trees to reduce downslope movement. Sidecasting is easier to control when the spoil is crushed limestone than when volcanic soils need to be excavated. At the Well Pad Access Road clayey spoil is disposed in dry sinkholes⁸, which at least prevents the occurrence of uncontrolled mudslides like took place down Akara Creek. The expectation is that as the Well Pad Access Road is developed along Hides Ridge, sidecasting will primarily be with limestone and more readily controlled.

Erosion and sediment control measures based on the extensive use of silt fencing were observed to be well-implemented along the pipeline right-of-way as implemented by Spiecapag. Silt fencing appears to be working well where the construction is near the Omati River. The EPC Contractors working in the Hides/Komo area have reported difficulties in implementing sediment control through the use of silt fencing due to theft.

At the LNG Facilities Site, a six-hour rain event in early February 2011 caused a failure of the earthen and rock sediment control measures along the perimeter fence of the Vaihua Ecosystem Complex, which is a locally important estuarine area for migratory birds. The inadequate culvert sizing resulted in erosion

⁸ Note that sinkholes with ecological value are avoided.

washing into the mudflat area. Sediment runoff likely occurred before the rain event as siltation was observed on one satellite image of the site that was acquired prior to this event. The Project is in the process of developing its five large, permanent sedimentation ponds, one of which is currently functional. The preconstruction survey of the LNG Facilities Site concluded that “...large amounts of sediment will remain within the channels of the Vaihua tributary, but the overall impact on sediment delivery to the mudflats/saltflats was not considered significant from a morphological perspective.” Once the permanent controls are on line the risk of sediment discharge into surrounding areas will be significantly decreased. In the meantime however, interim sediment control measures do not appear to have been adequate in preventing a large amount of sediment delivery into the surrounding mudflats.

4.6.3 Recommendation

- 1) Where soil disposal is undertaken in sinkholes, it is recommended that villagers be made aware that the newly filled sinkholes are suitable for agriculture, but are not ideal for the construction of housing, due to potential earthquake amplification in this uncompacted fill.
- 2) While the permanent sedimentation ponds and conveyance systems are still being developed, reinforce existing temporary facilities with more advanced measures. For conveyance systems, these could include triple settling ponds separated by notched weirs made of concrete or logs/rock, or (opposed to the existing soil and rock, which will quickly erode), lining the sides with natural erosion control fabric and/or coir logs or riprap. For the sedimentation ponds, use rock gabions, with straw bales or coir logs anchored into the downstream outflow to reduce turbidity.

4.7 BIODIVERSITY AND ECOLOGICAL MANAGEMENT

4.7.1 Project Strategy

The Project's strategy for biodiversity and ecological management is illustrated in several management plans that appear as appendices to the ESMP and in EHL's Project-wide Biodiversity Strategy document. Mitigation measures within the 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, the Reinstatement Management Plan and the Erosion and Sediment Control Management Plan, will be implemented by contractors during the construction phase, and, in some cases by EHL. Mitigation measures are often specific to each of the three project areas (Upstream Project Area, Marine Project Area and LNG and Marine Facilities Site), and are sometimes site-specific (e.g., the Ecological Management Plan contains a section on Hides Ridge). In addition, EHL has also 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 Ecological Management Plan and the Weeds Management Plan is the pre-construction survey, which covers a number of ecological attributes such as pinnacles that contain bat colonies, potential Bulmer's fruit bat (*Aproteles bulmerae*) colonies, bird-of-paradise and bowerbird display grounds and trees, areas of *Pandanus* swamp forest, sinkhole swamps less than 50-m deep, *Nothofagus* (beech) forest that requires special hygiene measures due to risk of dieback as caused by pathogens such as *Phytophthora cinnamomi*, etc. The pre-construction survey is carried out by EHL, except for EPC-5A (the ROW), where EHL's contractor, Spiecapag, is conducting the survey.

The Biodiversity Strategy has been developed to address long-term mitigation of biodiversity for both the construction and operation phase. The document contains the Project's approach to its Biodiversity Offset Program and Biodiversity Monitoring Program. The Strategy also provides an overview of EHL's overall approach to mitigating impacts on biodiversity in alignment with the mitigation hierarchy. Following the Biodiversity Strategy, EHL will develop the actual Offset Delivery Plan, which will be a detailed document on offset design and management. The Biodiversity Monitoring Program is comprised of five Programmed Monitoring Activities (PMA), which are as follows: PMA-1, 'Remote Sensing of Indirect Impacts', designed to monitor forest loss and degradation in the entire Upstream Project Area as caused by project-related indirect impacts; PMA 2, 'Aerial ROW Surveys' designed to monitor focal habitats and the potential spread of invasive species and disease along the ROW; PMA-3, 'Regeneration Surveys', which gathers in-field data on forest succession and faunal communities and the condition of forests adjacent to the ROW, roads and facilities using a biodiversity benchmarking system; PMA-4, 'Road Record Assessment', designed to monitor potential third-party use of Project roads during operations; and PMA-5,

'Efficacy of Offset Projects', which will be tailored to monitor the outcomes of each biodiversity offset project.

4.7.2 Observations

During this visit, the IESC was accompanied by a specialist in freshwater and marine ecological management. The focus of this site visit with respect to ecological/biodiversity therefore was on the Project's follow through of assessment, mitigation and monitoring commitments in freshwater and marine habitats. Findings from this special focus area are presented below in the sections 'Freshwater Ecology' and 'Marine Ecology'.

4.7.2.1 Biodiversity Strategy

EHL has made considerable headway over the past year on the development of its Biodiversity Strategy. Rev. 2 of Biodiversity Strategy was publicly disclosed on the PNG LNG website in December 2010⁹. Rev. 3 of the Biodiversity Strategy is under preparation and will include a technical rationale for the selection of biodiversity offset projects, which was one of the IESC's last remaining concerns regarding the adequacy of the document (Item M2.3). The IESC considers the Strategy to be in line with current best practices in biodiversity management.

Stakeholder engagement with various international and national conservation organizations on the Biodiversity Strategy has been formally underway since 4Q 2010. EHL is now nearing completion of a partnership with an internationally-recognized conservation organization, which was one of the IESC's primary recommendations as part of the initial Lenders' due diligence. In addition, the Project intends to engage a number of other local conservation organizations to help them implement various aspects of their Offsets Program. The Project's recent accomplishments in carrying out a robust stakeholder consultation and its willingness to partner with the conservation community are commendable. Further to this, the Project has now developed its internal Biodiversity Working Group, which consists of a multidisciplinary team comprised of EHL and ExxonMobil representatives and external specialty advisors. A draft Charter has been developed for the Working Group and will be finalized once the partnership with the conservation organization has been established.

In our last report developed for the October 2010 site visit, we emphasized the Project's urgent need of technical specialists in biodiversity offset design. We also stressed that EHL would require additional resources in general to implement its Biodiversity Strategy (Item M1.7). EHL has been actively seeking the appropriate resources and will soon engage with a scientific and technical team via their partnering conservation organization to help them design their Offsets Program. The Project will also engage a number of other specialists that have carried out successful demonstration conservation projects in PNG as advisors to their offset program. Regarding the Offset Delivery Plan, a management of change will soon be processed to postpone the date of delivery of the draft Plan to 4Q 2011 (Item #15 of the Biodiversity Strategy indicates 1Q 2011). We fully concur with the postponement of the delivery date for this important document. In recent months, EHL has been more actively engaging technical specialists for the development of their biodiversity monitoring program and management of invasive species, in effect boosting in-house resources and technical capability.

Regarding the Biodiversity Monitoring Program, PMA-1 (remote sensing), the consulting company Coffey has developed a detailed study to provide a proof of concept for monitoring of the Upstream Project Area using remote sensing. A combination of moderate resolution and high resolution optical imagery will be used, and data gathered will provide a biennial snapshot, as well as enable change analysis to monitor forest loss and gain over time. Satellite images (Landsat / SPOT) have already been acquired for the entire Upstream Project area. Regarding PMA-3 (in-field regeneration surveys), the niche consulting company Booyong Forest Science Pty Ltd has developed field guidelines for benchmarking for biodiversity.

Regarding #16 of the Milestone Schedule, to promote and enhance the conservation aims of the Lake Kutubu Wildlife Management Area (a legally protected area and Ramsar site), the Project is considering working through OLS's on-going efforts in the WMA. OSL has developed a draft Work Plan that follows the objectives of the Lake Kutubu Catchment Management Plan and works in partnership with the World Wide Fund for Nature (WWF) and with the WMA Steering Committee, which consists of WWF,

⁹ See <http://www.pnglng.com/commitment/biodiversity.html>

landowners, OSL representatives and representatives from local and national government. OSL's draft Work Plan is ambitious, and the implementation of the numerous tasks contained in the Work Plan is not clear. One aspect of the Work Plan is a fisheries study, which in some respect was to cover biodiversity monitoring in Lake Kutubu (although it is focused on one taxon [fish]). A multi-taxa biodiversity monitoring program in Lake Kutubu is not included in the Work Plan.

4.7.2.2 Ecological Management and Induced Access Management

As discussed in the last IESC report (October 2010), EHL was planning to alter their preconstruction survey methodology on Hides Ridge and in the Omati lowlands by eliminating the initial ground survey that was to take place well in advance of earth moving activities. This decision was based on a number of safety risks in these areas (e.g., hidden, moss-covered sinkholes). The approach as initially planned, which consisted of interviews with landowners knowledgeable in landscape features and remote sensing (LIDAR, followed by aerial surveys), had limited success in detecting caves, sinkholes and other pertinent landscape features. In order to obtain a fuller understanding of the landscape, pre-construction teams were dispatched to conduct ground-truthing of both areas. Ground-truthing of the Omati lowlands area has already been completed and surveys for Hides Ridge are on-going. Notable ecological features identified in the Omati included a number of natural sites of spiritual significance. On Hides Ridge, suitable caves for Bulmer's fruit bat (*Aproteles bulmerae*) were not yet located, but according to landowners there is potential for occurrences of Goodfellow's tree kangaroo (*Dendrolagus goodfellowi*) and the eastern long-beaked echidna (*Zaglossus bartoni*). In general, the pre-construction surveys for ecological management continue to be well-executed. The IESC was informed that fauna specialists, including a bat specialist, are included on the survey team as well as ecologists with competence in weed identification. On a related note, the amount of knowledge being obtained on species through the pre-construction surveys (and in the existing ESIA) is considerable and would be of high interest to scientific organizations.

A major finding of this site visit was the proposed location of Daware camp in a greenfields area that is also a focal habitat (*Pandanus* swamp) of the Biodiversity Strategy and the Ecological Management Plan. This topic is discussed in Section 3.1.2.6 of this report and is not repeated here.

Regarding induced access management, construction management staff appears to be involved and committed, which is a positive finding given the numerous observations on this topic as discussed in the IESC's last report (October 2010). The access roads register has been improved in terms of classifying access roads and detailing reinstatement commitments a priori. Induced access concerns are now also included in the preconstruction survey. The purpose of the preconstruction survey is to provide a detailed understanding of the environmental and social sensitivities of selected sites and enable the design of site specific mitigation. As the survey is implemented only after a site has been selected by EHL or its contractors, it is not designed to provide an analysis of alternatives within the landscape. The Project's approach to conducting alternative analyses before selection of project sites (e.g., camps, pipe laydown areas, access roads) is not well-defined.

In some cases, a detailed, quantitative approach is taken as was demonstrated by the selection of the stockpile locations for trenching and backfilling the ROW in Caution Bay, which exemplified a well-executed alternative analysis. In other cases, the approach is less rigorous as was observed for the proposed site selection of Daware Camp (see Section 3.1.2.6 of this report). With respect to access roads, it is not clear how alternative sites are systematically considered and reviewed. Alternative analyses are not only important for induced access management, but also for the Project to ensure footprint minimization.

A related topic is that although EHL is making efforts to avoid ecologically sensitive areas, this information is not being recorded through the Project's management system. Only information recorded on the micro scale as part of the pre-construction survey finds its way into the Project's IMS; however, wholesale avoidance measures, which are the first line of action in the mitigation hierarchy, are not systematically being captured. This represents a risk to the Project and a lost opportunity if not corrected.

Another concern relates to the Project's use of the term 'pre-existing' when describing the pre-construction status of certain 'access roads'. For example, EHL identified a 'pre-existing' 'access road' in the vicinity of the proposed location of Daware Camp. Although the area may have served as some sort of rudimentary passageway in the past, it was clearly a greenfield site in the present. We caution the Project in overstating the 'pre-existing' state of access roads as this might well influence the Project's commitment to reinstate the road after construction (and the degree to which it will be reinstated).

Lastly, reinstatement, erosion control and access control commitments on access roads are not clear during the entirety of the construction phase. While contractors are responsible for immediate reinstatement of access roads, there will be an 'interim period' in which some access roads will no longer be used for construction purposes, but the contractor will have moved on from that site. These roads will likely have undergone initial reinstatement by the contractor but may be left unattended until the commencement of the Operations Phase (where EHL will take full responsibility). If reinstatement measures are not maintained during this interim period, the Project runs the risk of potential use by third parties or habitat degradation if erosion sets in.

4.7.2.3 Invasive Species Management and Quarantine Management Program

Invasive species and weeds management continue to be very well executed by EHL's and the contractors' environmental staff. Contractors have begun to actively remove weeds from project sites, which was a recommendation made in the October 2010 IESC report (Item M2.5). Examples include post-reinstatement monitoring at Kopi Shore Base, areas within the ROW between the Omati landfall and Kopi Scraper Station, Quarry QA 32 and the Kantoboo helipad. A vehicle washdown station has been erected at the Mubi Quarry West site for vehicles traveling northwards into the area of previously undisturbed habitat between Gobe and Kantoboo. A second washdown station is being considered at the northern end of this section in Kantoboo for vehicles traveling southwards. At Hides, a washdown station is being established at KP 3.3 for heavy and light equipment moving into Hides Ridge. Although Hides Ridge was previously suspected to be weed-free, preconstruction surveys identified two Priority 1 weed species in this area. Given these new findings and the in-field experience gained to date, it is not clear if the initial approach outlined in the Project-wide Weeds Strategy developed at the beginning of construction is still consistent with on-going practices. For this and other reasons, the Project has informed us that an independent assessment is soon to be commenced on the effectiveness of the Weeds Management Plan (as well as the Ecology Management Plan, Reinstatement Plan and Erosion Control Plan).

Aerial surveys of Hides Ridge identified an area of dieback of *Nothofagus* (beech) forest, although it is not yet clear if this was caused by *Phytophthora*. As the spread of *Phytophthora* is potentially one of the most insidious indirect impacts in the Upstream Project Area, Spiecapag has tasked Coffey to develop a strategy for the survey, sampling, testing, and mapping of potential dieback areas within the Upstream Project Area (including access roads, quarries, laydown areas, camps). This strategy builds on investigations and existing reports prepared by EHL and includes the establishment of an in-field forest pathology laboratory at Moro B. Spiecapag's initiative to further the Project's existing robust approach to weeds management is notable.

Esso Highlands Limited has made good progress in the implementation of its Project-wide QMP. The QMP is focused on prevention before either freight or personnel arrive in PNG by placing emphasis on treatment at the point of origin. The responsibility for implementation of the QMP and associated procedure rests with the contractors and subcontractors. Esso Highlands Limited's role, through its Material Logistics Group (MLG) is one of oversight and assurance. The MLG has already made good efforts to coordinate efforts between EHL, the National Agriculture Quarantine and Inspection Authority (NAQIA) and Contractors in order to bring the players together on a monthly basis.

The Quarantine Procedure, which is the key component of the QMP, is being rolled out to contractors. One of the most notable examples is EPC-5A (Spiecapag) that arranged for NAQIA officers to inspect the loading facility at Batam Island, Indonesia prior to cargo load as a means to obtain quarantine clearance and discharge of pipe at sea. An inspection station and cleaning facility was established at the wharf during load out.

Other contractors have also demonstrated good follow through of quarantine commitments. The following provides some examples:

- EPC-2 is planning for a visit by NAQIA officers of pipe load outs at Kuantan, Malaysia;
- EPC-4 is planning for a visit by NAQIA officers to offshore manufacturers of camp units in Dubai, although there are consular delays. The contractor amended methods of flatpack camp unit manufacture to eliminate all timber components and included fumigation nozzles in the redesign of the units so that they could be fumigated without unpacking, if needed upon arrival in PNG;
- the drilling contractor's quarantine planning process is currently underway. An offer to NAQIA to inspect equipment prior to packaging and/or attend vessel load out in the USA is forthcoming.

As exemplified in NAQIA's "Report on the Preclearance of Pipes for the Liquefied Natural Gas Project" (August 2010), NAQIA, as well as the contractor, appears to be giving due attention to this issue; e.g., *"With regard to quarantine and biosecurity clearance, the pipes were physically inspected for freedom of arthropods and most notably dirt from the project site, boots of workers working on pipes and mud splashes...All pipes were covered with plastic tarpaulin to stop dirt, mud splash and exposure to vermin...The pipes were also capped on both ends to prevent dirt...and most importantly prevent the entry and refuge of vermin and other quarantine risk materials."* (page 2). NAQIA has also recently acquired 30 additional personnel to supplement their efforts. The IESC expressed some concern in the past on NAQIA's ability to adequately manage a significant increase of cargo movements into PNG and on the number of in-country treatment facilities (e.g., washdown area, incinerator, fumigation, etc.). The Project will soon be carrying out a residual risk assessment of the QMP, which should help determine the need to supplement physical and organizational in-country capacity.

EHL appears to be making good headway on various fronts. It is noted however that the Quarantine Procedure requires considerable planning on the part of the contractors and that failure to adequately carry out the Procedure could have significant impacts on the Project's schedule. During the next site visit, the IESC plans to dedicate more time to Quarantine Management by conducting a more detailed review of each contractor's implementation of the Quarantine Procedure.

4.7.2.4 Freshwater Ecology

Monitoring of Freshwater Ecology

While the Project has significantly improved its approach to monitoring freshwater ecology in the Upstream Project Area, there is still room for more improvement, as suggested in the June - July 2010 baseline survey report. In Papua New Guinea, understanding the ecology of freshwater systems is in its infancy and indices of feeding guilds cannot necessarily be assumed to apply. These results provide a tentative baseline, however, the performance of these indices cannot be properly assessed until they are calculated for samples from sites that are known to be impacted. This report presents a basic set of metrics for comparison with later samples once impact monitoring commences. These indices are untested for Papua New Guinea, will need to be considered alongside other methods of invertebrate community analysis, and cannot stand-alone as a measure of impact.

The Project's freshwater monitoring program currently does not include post-wet season sampling events given its location in a tropical environment. We acknowledge that there is some question on the necessity of considering seasonal patterns with respect to freshwater monitoring. On the one hand, strong seasonal patterns may not be characteristic of tropical ecosystems as these areas lack the extreme range of temperatures typical of temperate systems. Tropical hydrology therefore may not be strongly seasonal. On the other hand, the possibility of seasonal effects may be relevant in the Upstream Project Area, and it is worthwhile for the Project to explore this possibility by making some simple adjustments of their current monitoring program. A post-wet season sampling event would help improve the freshwater baseline and might help enable the Project identify if changes in freshwater ecology are project-related or due to natural variability.

The number of sampling sites has been increased from six to 19, most of which are paired to provide the minimum desired upstream/downstream comparative analysis necessary to detect potential project-related impacts. The results from this survey demonstrated that the rivers sampled as part of the monitoring of the upstream area fall into several different groups. The IESC endorses the report recommendation that the monitoring program will benefit from the addition three sites (e.g. on the Aiwo River) called out. There are some river crossings, however, that have been excluded from the sampling program (notably, four crossings as identified in the materials presented to the IESC during the site visit) and the reasons for this are not fully clear. The Project has provided a justification for the selection of the current sampling sites included in the design, which is based on accessibility, human population density, and habitat and river representativeness. In addition to the metrics for water quality and invertebrates, the Project has added several habitat metrics, including indices of streambed particle size and riparian cover and condition. These additions help broaden the scope of the monitoring and the potential to assess project-related impacts. The selected metrics, in combination with the multidimensional scaling (MDS) statistical technique, should, if the preceding recommendations are also followed, provide a reasonable basis for making comparisons of future conditions to the baseline.

Studies/Analyses of Omati River

The Project has conducted a number of important studies and analyses with respect to the upcoming dredging activity in the Omati River. Two of these studies were made available to the IESC during the site visit; these are as follows: (i) the Hydrology and Scouring Omati River Study and; (ii) the Omati River Sedimentation Baseline Study (Final Report). The Hydrology and Scouring Omati River Study, which references the Omati River Sedimentation Baseline report, provides a characterization of the lower portion of the Omati River through which dredging and pipe-laying activities will occur. This section of the river essentially functions as a tidal inlet with episodic events associated with extreme rainfall and storm events that contribute to only a small fraction the river's overall discharge. The regularity of the tidal flow indicates limited and likely reversible variations of river bed morphology. This suggests that river morphodynamics are not totally predictable, and instead there is random variability around an average stable condition. Based on these conditions, an assessment was conducted to determine the expected evolution of river morphology with respect to dredging activities. Changes to the riverbed of the lower Omati are expected to be limited, with possible larger effects at pointed locations only. These include the following:

- the Newberry confluence at the Omati landfall, where the extension and position of the hollow at the confluence of the two rivers has the potential to be affected. This is in part due to the variability of the sediment discharge associated with the Newberry River;
- the tidal ridge/channel complex between KP 19.5 and KP 25.5, which could result in a the lateral OR longitudinal shift greater than that predicted by the model;
- the sand bar at the mouth of the Omati, which may shift under the action of storm waves; and
- the potentially large morphological alterations identified at the bifurcation at Aumo passage.

The above assessments were used to make scouring predictions on the Omati section of the pipeline. It is acknowledged in the Hydrology and Scouring Study report that these predictions could potentially be exceeded as the calculation of river bed variations is subject to the assumptions inherent of any statistical model. The report concludes that scouring exceedances should not occur over 'significant' stretches of the river bed nor be for a 'significant' duration of time. The term 'significant' is not defined in either case. The pipeline in the Omati will be trenched to a minimum of 1.5 m until KP 24 and to 1.0 m after KP 24. The report suggests that scouring of the riverbed will not affect the pipe / bottom configuration.

Regarding the timing and location of dredging work, it is unclear if the Project plans to consider the spawning season of barramundi in the Dredging Management Plan. Barramundi is one of the key target species harvested by local fishers. The spawning season in the Omati estuary occurs between September and March, with two peaks from November to December and from February to March. Spawning occurs at night in slack water, and appears linked to the lunar cycle, with the greatest activity occurring on the nights following the full and new moons.

In general, the assessments conducted to date are in alignment with Item M186 of the Erosion and Sediment Control Management Plan, which defines the Project's requirement to conduct 'sedimentation and geomorphologic characterization studies of the Omati River'. The Project is finalizing a number of other reports (e.g., sediment plume modeling, river flow patterns, total suspended solids deposition patterns, and the Dredging Management Plan), which we will review when available.

Fisheries of the Omati River

A well-designed artisanal fishery survey was conducted during an 11-day period in December 2010. Interviews with only 13 fishers revealed that 285 kg of various species of fish and shellfish were landed. Although EHL is off to a good start, there is still a long way to go in establishing an adequate fisheries baseline for the Omati. During the site visit, however, the Project did not mention any specific plans to extend the fisheries baseline beyond the 11-day sampling event. The Resettlement Policy Framework (Appendix 26) Table 6 of the Environmental and Social Management Plan, the Fishing and Coastal Marine task describes the Project's commitments. RAP Number 12 in Table 8 indicates a January through July, 2011 timeframe for development the CRP. Monthly survey events, or, at a minimum, quarterly survey events, would be necessary over a year-long period to establish an adequate fisheries baseline in the Omati. Surveys would need to be conducted by experienced fish biologists, as currently represented in the L&CA team, with oversight by qualified experts with experience in design and analysis of fisheries baseline studies. This topic is further discussed in Section 5.4.2.9 of this report.

4.7.2.5 Marine Ecology

Jetty Specifications/Construction Methods

The IESC was pleased to receive the plans for the proposed marine jetty and the construction methods. Compared to the original Marine Offloading Facility (MOF)/jetty design proposed in the EIS, the chosen jetty design has a small-diameter (0.76 to 1.0m), coated steel tube piles; wide-spaced bents (24 m); and a 10+ m average width. This will result in minimal effect on longshore drift, shading, and permanent habitat loss that would have likely occurred if the proposed design in EIS were to be implemented. The 'cantilevered bridge' construction method eliminates the need for construction from vessels and their associated impacts. This meets IESC expectations for minimal impacts on habitat resulting from both the design and construction of the jetty.

LNG Site Trenching and Stockpiling

Five stockpile locations for spoils generated from the nearshore trenching of the ROW (before the pipeline makes landfall at the LNG site) were modeled for sediment dispersion onto coral reef and other nearshore habitats (three shallow sites and two deep sites). Modeling results indicated that the deep sites would result in significantly less impact on sensitive nearshore habitats. One of the two deep sites was selected although at worst case it could potentially result in up to two times the amount sediment dispersion onto the reef with respect to the other site. It is acknowledged however that the Project did take a conservative approach and almost doubled their estimate of sediments generated by this activity. As mentioned in Section 4.7.2.2 of this report, the technical rigor with which the alternatives analysis was undertaken is to be commended and should serve as a model with respect to alternative analyses of onshore project-disturbed areas.

Marine Monitoring in Caution Bay

In alignment with Item 12 of the E&S Milestones Schedule, the Project is in the process of establishing a baseline for the marine environment in Caution Bay. This baseline will then be used to carry out marine monitoring throughout construction. The coral/fish sampling methodology was changed from SCUBA transects used in the EIS to a remote operated vehicle point intercept method, which results in a loss of resolution in estimating biological parameters. The new method is unlikely to detect changes in reef fish species composition or abundance, but may be sufficient to estimate at least semi-quantitative changes in coral species composition and area. Overall, the monitoring approach could be more efficient as several marine sample stations for coral/fish, total suspended solids, and water quality appear unnecessary to monitor potential project-related impacts. Recommendations are presented below. We will be reviewing the final Caution Bay Marine Baseline report when it becomes available.

Fisheries in Caution Bay

Based on the account provided to the IESC by the Project during the site visit, it appears that the University of PNG's approach in acquiring the fisheries baseline in Caution Bay was not very cost effective but did have educational value for the student participants. The approach developed by the L&CA team, which now benefits from expertise from PNG's National Fisheries Team, appears to be more cost effective and better received by local communities. The comments provided above on the fisheries baseline in the Omati also apply here. Although the Project is also off to a good start in Caution Bay, they are far from establishing an adequate fisheries baseline, as anticipated in Appendix 26: Resettlement Policy Framework, Table 6, the Fishing and Coastal Marine task. Based on presentations made to the IESC during the site visit, the Project did not provide any specific plan to further its survey effort in 2011 to establish a fisheries baseline. Project commitments are stated in RAP Number 13 in Table 8 of Appendix 26 of the Environmental and Social Management Plan, which indicates a March through September 2011 timeframe. Monthly survey events, or, at a minimum, quarterly survey events, would be required over a year-long period to establish an adequate fisheries baseline in Caution Bay. Surveys would need to be conducted by experienced fish biologists, as currently represented in the L&CA team, with oversight by qualified experts with experience in design and analysis for fisheries baseline surveys. This topic is further discussed in Section 5.4.2.9 of this report.

4.7.3 Recommendations

- 1) Although EHL has good reason for joining forces with the OSL-led partnership designed to manage the aquatic resources of the Lake Kutubu WMA, EHL should focus their intentions on those actions likely to yield the most concrete results. In particular, we recommend that EHL assist OSL in designing a multi-taxa biodiversity monitoring program in Lake Kutubu as the current approach appears to focus only on fisheries.

- 2) An alternative analysis for site selection needs to be defined and there should be oversight by EHL's senior environmental (and social) teams¹⁰. Specifically, with respect to Induced Access Management, some of our recommendations made in the report for the October 2010 site visit are still relevant. EHL senior environment staff should have a 'reviewing role' over and above EPC-5A's proposed access routes in a given section of ROW. A defined set of access routes (or 'baseline' as suggested in the last report) should be agreed upon between company and contractor, respecting the principle of footprint minimization on the landscape scale. Only after this more critical review of access requirements should the contractor proceed with the pre-construction survey at the fine-scale. We recommend that the contractor's request for any additional access roads beyond the 'baseline' be reviewed by EHL environmental staff as well as the IESC. The Project might consider taking a south to north or 'phased' approach in reviewing (and establishing the baseline for) segments of ROW requiring access during construction.
- 3) EHL should define its commitments in terms of reinstatement, erosion control and induced access control 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.
- 4) Moving forward, it is recommended that EHL provide a realistic account of what is and what is not an 'existing' access road. The use of this terminology should be confined to the following - an access route that is traversable with modest upgrades. Reinstatement requirements should be defined accordingly.
- 5) The Project should establish an appropriate mechanism in the Management System to record areas of high biodiversity value that are being entirely avoided during constructions but are not being captured through the preconstruction surveys.
- 6) Continue to engage both NAQIA and contractors to ensure that all contractors are made aware of the Quarantine Procedure and the risks to the Project schedule if importation is not well planned.
- 7) As part of the upcoming residual risk assessment, further consider risks in the event that the QMP cannot be carried out as envisaged for every cargo shipment. Address PNG's capacity in terms of both operational and physical controls based on these risks.
- 8) The consultant tasked to undertake the independent assessments of the Weeds Management Plan should reconcile the Project's initial approach to weeds management as designed in the Weeds Strategy with respect to current in-field practice and new findings.
- 9) Consider identifying an appropriate mechanism to share data gained on species occurrences in the Upstream Project Area (through the pre-construction surveys and in the existing ESIA) with a scientific organization(s).
- 10) In the upcoming report for the monitoring of freshwater ecology, ensure that a justification is provided for those water crossings that were excluded from the design, especially for the four indicated in the presentation developed for the IESC. The reasons for their exclusion are not clear.
- 11) Based on modelling to date, it is assumed that even the largest scouring of the riverbed in the Omati will not affect the pipe/bottom configuration. In order to take a more conservation approach, the Project should include a contingency as part of the Omati Post-lay Monitoring Plan (developed by EPC2) in case scouring is actually deeper than this assumption (for example, a sidescan hydroacoustic survey two to four years after pipe laying activities).
- 12) Dredging activities in the Omati River should be confined to daylight hours during the peak spawning times for barramundi. This would be those days when slack water occurs on nights following the full and new moons during November-December and February-March.
- 13) In the Hydrology and Scouring Study report, and with respect to predictions made on exceedences of acceptable scouring in the Omati, the meaning of term 'significant' should be defined both in terms of distance along the river bed and duration of time of scouring.
- 14) The Project should consider conducting real-time sediment monitoring during trenching and backfill at the LNG site landfall at Caution Bay.

¹⁰ See related recommendation made in Section 5.4 of this report.

5 SOCIAL

5.1 INTRODUCTION

5.1.1 Scope of Social Review for this Site Visit

The March 2011 review focused on ‘outside of the fence’ issues with a lesser emphasis on camp management, labor and employment. A labor and employment specialist will participate as part of the next IESC field review in July. In total, the IESC engaged with some 150 people individually or in groups, including those affected by resettlement, communities living adjacent to Project works areas and other key informants.

The IESC social review included (but was not limited to) the following activities:

- introductory presentations by L&CA (formerly ‘SELCA’) in Port Moresby;
- in-field discussions with a range of project personnel including project managers, L&CA officers, the Resettlement and contractor community liaison and field staff;
- discussion with members of the Environmental Law Centre (independent observers of the RAP process);
- meeting with the Resettlement team at Nogoli;
- visit to a cashew outgrower program, Rigo District, to form part of a community development support program in the LNG terminal area;
- observation of part of a meeting with the Barging Route Waterways Committee Executive at Kikori;
- Meetings with key informants and community representatives in Papa village (near the LNG Plant);
- meeting with the Lake Mabuli Women’s Group, part of livelihood restoration initiatives in Hides;
- visit to Komo Nursery, established as a demonstration area and to provide seed stock/propagules for agricultural livelihood restoration;
- observation of a pre-resettlement meeting with people affected by heavy haul road 1B displacement;
- meeting with the heavy haul road 1A resettlement committee;
- inspections of garden re-establishment and discussions with resettler families displaced by the Komo airstrip (settlement adjacent to the Komo Pioneer Camp);
- site inspection and discussion with people displaced by the QA 1 quarry site;
- site inspection, informal discussion with people living adjacent to the proposed Timalia River borrow area; and
- informal interviews with individuals and groups affected by the project including displaced landowners and users at Kopeanda resettlement, the Komo airstrip, the HGCP & members of communities in the vicinity of major works areas.¹¹

The IESC consulted with Project affected people in groups and individually. Some consultations occurred through organized meetings. Others occurred informally on the roadside, in gardens or in the proximity of proposed or actual PNG LNG work sites. They captured views of both men and women. The breadth of interaction and exposure of the IESC to affected people during the March 2011 review was very good.

In two sections, this report makes reference to UN International Committee on Economic, Social and Cultural Rights General Comments. These do not directly form part of the Lender Environmental and Social Requirements. The General Comments do, however, provide important guidance in areas that might otherwise present a risk for alien tort-type actions.

¹¹ Sites visited during the March 2011 IESC visit included, but were not limited to: Nogoli camp; QA 1 quarry site; Kopeanda landfill (roadside discussion); Timalia River proposed borrow site; Para School; Heavy Haul Road 1B section; Heavy Haul Road 1A section; resettlement area adjacent to the Komo Pioneer Camp; Komo Nursery, Komo Government centre; Kobalu Camp; Kantobo-Mubi road; Mubi bridge; Gobe Camp; Gobe to Kope Road; Kope bridge; Kikori Camp; Kaiaim Spicapag camp; Kikori; Papa village, neighbouring the LNG terminal.

5.1.2 Waiver

The IESC social review is substantially based on interviews conducted with project affected people, NGOs 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, component RAPs and other Social Management Plans. As such, the review does not purport to be a fully comprehensive evaluation of compliance.

5.2 L&CA (FORMERLY SELCA) 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.

5.2.2 Observations

5.2.2.1 L&CA (formerly SELCA) Reorganization

Since the last IESC visit in October 2010, SELCA had undergone a further refinement of its organization. This included a name change to Land and Community Affairs (L&CA). This name change was deemed to better reflect that 'community affairs' was the cornerstone of L&CA functions. Key changes since the last review included the following:

- Shift of resettlement-related logistics (e.g. rations delivery, resettlement-related building materials procurement and transport) and hard construction (resettlement housing delivery, schools, community roads, tracks, etc) to Project Development Support (outside of L&CA);
- Strategic Community Investment moved to Project Development Support (outside of L&CA);
- Resettlement field team reporting directly to the EHL's Field Community Affairs Managers.

The series of re-organizations have addressed most of the concerns IESC has expressed in earlier reviews. The shift of resettlement related logistics and hard construction to the Project Development Support team is viewed positively as this group is able to mobilize contractors directly to undertake works. While some ongoing refinement is inevitable, the IESC hopes that the L&CA organization can now go through a period of consolidation, with stable leadership, and a focus on achieving full resourcing.

Elsewhere in this report, the IESC has raised Level II non-conformances relating to the lack of social specialist input into site screening and preconstruction surveys (see Section 5.4) and the lack of monitoring of 'outside of the fence' social management plans. It is unclear in the present L&CA organization where responsibility for these functions rests. Poor performance in these areas may in part reflect a lack of clear functional accountability.

The IESC was pleased to note the recruitment of a very senior national for Community Affairs Manager, whose broad experience and network should add greatly to the effectiveness of this team. The IESC concurs with the Community Affairs Manager's hope that L&CA will recruit more extensively from the body of well qualified and experienced PNG nationals.

While challenges remain, particularly with respect to providing field accommodation for women specialists, progress had been made in increasing project beds along the pipeline route. A solution was also imminent for improving the office accommodation of L&CA team members, currently working out of Nogoli.

5.2.2.2 Information Management

Information management contractor, Borealis, had made solid progress in system design, process mapping and design of input interfaces and reporting templates for the project wide-wide grievance management and tracking system and for monitoring and record keeping systems. The L&CA team is lagging the

environmental team in terms of adoption of the new system. Beyond refinement of the system and interfaces, intensive effort must be put into training to ensure that predominantly field based teams such as Lands, Community Affairs and Resettlement adapt effectively to using the new system.

5.2.2.3 Social Monitoring and Reporting

Social monitoring and reporting was lagging behind environmental monitoring. L&CA had prepared clear and concise monitoring and reporting templates for itself and for its EPC contractors covering the 'inside the fence' social management plans (i.e., Camp Management and Labor and Working Conditions). A monitoring schedule was presented by EHL for the forthcoming six months (February to July 2011). By the time of this IESC visit, one monitoring review had been completed covering most of the EHL/contractor camps (excluding Kobalu). Reports to date highlighted shortcomings in camp inductions and absence of functioning camp/worker grievance mechanisms as the most significant areas of non-conformance. The standard of Contractor reporting was also noted as below EHL's expectations and an area requiring further work by the L&CA Interface leads. The IESC considered the resultant monitoring report to be a clear and concise management tool.

The IESC was given three social monitoring reports:

- (i) Social Monitoring Report EPC3 Pioneer Camp, LNG Plant Site, Site Visit 5 October 2010;
- (ii) Social Monitoring Report EPC3 Pioneer Camp, LNG Plant Site, Site Visit 23 November 2010;
- (iii) Social Management Plans Monitoring Report Well Pad A Camp 17 & 18 November 2010.

The above reports included thorough monitoring and identification of observations and non-conformances for 'inside the fence' Social Management Plan commitments for the LNG Pioneer Camp and Well Pad A camp. While purporting to cover 'Community Impacts', 'Community Infrastructure', 'Community Engagement' and, 'Community Health and Safety' management plans, only report (i) contained a section on 'traffic management' with some notes on mitigations 'outside of the fence'. On the basis of the reports presented, the IESC concludes as follows:

- monitoring of the approximately 120 'outside of the fence' mitigations and management commitments defined in the 'outside of the fence' Social Management Plans is not occurring in any regular or systematic way;
- the geographic coverage of 'outside of the fence' social monitoring activities to date (covering 1 camp) is completely inadequate given that the Project is active over multiple work sites, camps, storage facilities, quarries and borrows and many hundreds of kilometers of roads and tens of kilometres of pipeline ROW;
- the social monitoring report template does not adequately cover the approximately 120 monitorable mitigations and management commitments contained in the Community Impacts Management Plan, Company Community Health Safety and Security Management Plan, Community Engagement Management Plan, and, Community Infrastructure Management Plan;
- the approach of treating 'outside of the fence' monitoring activities as an extension of camp monitoring is not a realistic way of verifying activities that by their nature, must require consultation and verification with adjacent communities and that must extend around all active works areas and transportation routes.

The IESC considers the lack of monitoring and verification of conformance of 'outside of the fence' social plans as a Level II non-conformance that will be rapidly escalated if it is not addressed promptly. Monitoring and reporting is integral to ensuring compliance with the Lenders' Environmental and Social Requirements.

Each Management Plan has a table indicating required 'Management and Monitoring'. Monitoring actions as specified in these tables must be undertaken. An L&CA team needs to be made accountable for 'outside the fence' monitoring and resourced accordingly. Templates for EPC Contractors to monitor and report against their equivalent 'outside of the fence' contractor plans need to be developed to the same level as the 'inside the fence' plans.

The IESC considers such reporting as an integral part of ensuring compliance with the Lenders' Environmental and Social Requirements and will pay close attention to performance in this area going forward.

5.2.3 Recommendations

- 1) Focus on achieving full resourcing of the L&CA organization.
- 2) Within L&CA, establish clear accountability for SMP compliance with respect to site screening, pre-construction surveys and monitoring of the 'outside the fence' SMPs.
- 3) Project management Team to reinforce to EPC Contractors the Project's (and Contractors') obligations to conduct comprehensive worker/camp inductions, to maintain grievance management systems and to report monthly on compliance with SMPs.

5.3 LAND ACCESS

5.3.1 Project Strategy

The Project strategy for land access can be summarized as follows:

- 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);
- to avoid or at least minimize involuntary resettlement wherever feasible by exploring alternative project designs (IFC PS5 Objective);
- the client will consider feasible alternative project designs to avoid or at least minimize physical or economic displacement, while balancing environmental, social, and financial costs and benefits. (IFC PS5, para. 7); and
- Screening, identification and management of social impacts as required complying with the environmental and social management plans that together comprise the ESMS.

5.3.2 Observations

EHL invited the IESC to review two cases where contractors were seeking to access land:

- Timalia River borrow proposed by MCJV; and
- Daware construction camp site being considered by Spiecapag.

Reviews indicated a need for clearer contractor land access processes and for EHL to take a more proactive role. There was inadequate attention paid to potential social impacts in both situations. Livelihood and possible physical displacement impacts in the case of the Timalia River site had not been addressed. EHL and its contractors were responsive to the IESC's criticisms and thereby averted site-specific non-conformances.

The IESC notes, however, that the systemic issue raised in the May 2010 review persists. Social and physical/economic displacement impacts are not being adequately addressed in site selection studies. The Timalia River Borrow Pit Pre-Construction Survey observed eight houses clustered within the proposed borrow pit worksite and a number of additional houses under construction. In spite of these observations, the pre-construction survey made no reference to the potential for resettlement, the likelihood of livelihood impacts for these families or of measures to avoid adverse environmental impacts upon them, or to ensure their safety. On the basis of these two site investigations, there appears to be no step in site selection and preconstruction surveys to ensure that requirements contained in the social management plans (Community Impacts Management Plan; Company Community Health Safety and Security Management Plan; Community Engagement Management Plan; Community Infrastructure Management Plan) are complied with. Accordingly, the IESC re-raises this as a level II non-conformance.

The IESC came away with the following observations:

- the process and channels for contractor land access requests need to be clarified. It is suggested that contractor land access requests should in the first instance be directed to the Project management team who can verify the Project need for the land and prioritize resources such as Land and Resettlement teams to acquire it. The current approach where EPC Interface Leads go directly to the Resettlement team is not efficient;

- EHL should always lead the processes of notifying, informing, consulting and negotiating with customary landowners and occupants for temporarily or permanently acquired lands. In the case of the Timalia River site, attempts to negotiate with the customary occupants by the contractor appeared to have led to confusion and delays rather than an accelerated process. The contractor's haste to occupy the site could also easily have led to a situation where the occupants were construed to be under duress or where insufficient time was allowed for free, prior, informed consultation (IFC PS 7). At Daware, consent to use the land appeared to have been assumed on the basis of discussion with a clan leader who clearly had a vested interest, rather than through broad consultation with all clan members (IFC PS 7);
- ELC should always be present during negotiations and should witness every Project agreement with customary landowners and occupants. Their role is to verify that all parties fully understand the terms of any agreement and sign without duress. It provides assurance that the Project is compliant with IFC PS 5 and PS 7, and it also helps reduce the risk of possible later challenge using the *Fairness of Transaction Act* (1993). See further discussion in Section 5.5.2.3;
- EHL's senior social and environmental specialists should be involved earlier in the screening of alternatives, in ensuring that footprints have been minimized and in agreeing social and environmental constraints to be applied at preferred sites. This implies a partnering or cooperative approach between EHL and its contractors, rather than the current approach of EHL being handed a near fait accompli site selection at the end of the process, when it is generally too late to be able to positively influence outcomes;
- contractor site selection studies and pre-construction surveys were too inward focused and site-specific. They were not considering contextual social issues and impacts. For example, site screening for the Daware construction camp did not consider traffic generation and potential safety impacts on communities and schools living along road networks to be used by camp traffic, or possible livelihood impacts that might be associated with filling or altering drainage in a *Pandanus* swamp;
- pre-construction surveys must include some-one from the resettlement team. The pre-construction survey for the Timalia River identified active garden areas but failed to recognize the likelihood of economic displacement or the need to follow procedures set out in the RPF;
- site selection studies and pre-construction surveys must address social impacts and social management plan requirements as well as those of environmental management plans.

Contractors are coming under increasing schedule pressure and increasing pressure to find viable quarry sites, lay down areas and the like. EHL must remain mindful of its IFC PS 5 and RPF obligation to avoid and minimize land and displacement impacts, and to ensure that customary landowners and occupants have sufficient time to make informed decisions, free from duress. The Land, Community Affairs and Resettlement teams must also be given sufficient lead time to follow statutory and lender required processes.

5.3.3 Recommendations:

- 1) Clarify process steps and channels for contractor land access requests.
- 2) Ensure that EHL always leads the processes of notifying, informing, consulting and negotiating with customary landowners and occupants for temporarily or permanently acquired lands in accordance with the RPF.
- 3) Ensure that ELC is always present during land access and resettlement negotiations and that an ELC officer witnesses every Project agreement with customary landowners and occupants.
- 4) Move to a more cooperative approach between EHL and contractors with respect to site selection and involve EHL's senior social and environmental specialists earlier in the site selection process.
- 5) When a preferred site is selected, agree jointly (EHL and the contractor) the social and environmental constraints for its development.
- 6) Include social and resettlement specialists in site selection and pre-construction survey teams.
- 7) Explicitly reference social management plan requirements in pre-construction surveys.

5.4 RESETTLEMENT

5.4.1 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;
- conduct consultation processes that achieve free prior and informed participation of affected people and communities (including hosts) in decision making related to resettlement was 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;
- devise measures to support physical relocation and re-establishment. Identify and provide special assistance to people who are especially vulnerable to displacement impacts;
- 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 will stop.

5.4.2 Observations

Headline findings from the March 2011 review were as follows:

- Physical resettlement was about 50 percent complete at the time of the March 2011 review (IESC estimate);
- EHL had in place IESC-approved RAPs or CRPs covering all active Project work areas (except for the Komo airstrip access road - see Section 5.4.2.3);
- EHL has given the IESC an unequivocal undertaking that it will pay full replacement value for trees and crops - this undertaking will apply retrospectively and to all tree and crop payments going forward (see Section 5.4.2.4);
- a risk assessment had been completed for Well Pad A indicating that more than 100 families will need to be relocated to create a buffer around this pad - this resettlement was not anticipated in the RPF (see Section 5.4.2.6);
- access to water was an issue raised with the IESC at several resettlement locations – where feasible, more attention needs to be paid to anticipating water supply issues ahead of physical resettlement and not after the event (see Section 5.4.2.5 and Section 5.5.2.2); and
- the Resettlement team is still challenged in terms of internal monitoring and reporting – development of a 2-3 page global project ‘dashboard’ report that highlights land acquisition and resettlement performance, compliance status and delivery challenges and that goes to the Project management team on a monthly basis is recommended (see Section 5.4.2.8).

The IESC observed that much resettlement team effort was being diverted in reactionary responses to Contractor ad hoc land requests for quarries, borrows, laydown areas and the like, often at the expense of completing scheduled RAP preparation. In addition to the suggestion that all Contractor land requests go through the Project management team as noted in Section 5.3.2, consideration might be given to establishing a RAP *quick response* team to be available to deal with contractor ad hoc requests – after these have been screened and prioritized by the Project Management team.

5.4.2.1 Resettlement Logistics

At the time of the March 2011 IESC visit, responsibility for resettlement-related logistics and construction had only recently been transferred to the Project Development Support team. The Project Development Support team was in the process of reviewing procurement strategies to accelerate the delivery of resettlement housing. As timely delivery of compensation, including housing, is an IFC PS requirement, solid progress is expected by the time of the next IESC review.

5.4.2.2 Progress in Defining Physical and Economic Displacement

Table 5.1 provides latest Resettlement team estimates of Phase 1 (2010-2014) physical and economic displacement based on completed census and surveys. Bracketed figures indicate estimates provided in the October 2009 RPF. These will be progressively updated as further censuses and surveys for project components are completed.

Table 5.1: Updated Project Estimate of Phase 1 Physical and Economic Displacement

Project Facility	Description	Area	Estimated Physically Displaced Households		Estimated Economically Displaced Households		Total Displaced Households
		Ha	N	Δ	N	Δ	N
Komo airstrip		517	29 (24)	-	10 (6)	-	39 (30)
Komo access road		-	16	+16	5+132 minor compensation	+137	153
Facilities	Including: HGCP Kopi facilities (TBD) Juni training facility	386	56 (+TBD) (63)	-	10 (+TBD) (8)	-	66 (+TBD) (71)
Pipelines	Pipeline and spine lines based on 1000 m corridor	1,254	20 (50)	-	13+60 minor (TBD)	+27	93 (50)
Well pads	Hides well pads: A, B, C, D, E and G	96	165 (+ TBD) (TBD)	+165	70+300 minor (+TBD (TBD)	+370	535 (TBD)
Heavy Haul Road	Based on 50 m corridor	522	About 150 (253)	-	100+200 minor (TBD)	-	450 (253)
Quarries	Approximately 30 quarries including buffers	898	32 (55)	-5	13 +335 minor (TBD)	+421	497 (55)
Landfill	Hides & Gobe (TBD)	57	35 (+TBD) (15)	+2	51+60 minor (+TBD) (TBD)	+97	300 (+TBD) (15)
HDD	Tagri, Mubi, Wah and Kikori	31	TBD (5)	-	TBD (TBD)	-	TBD (5)
Camps	Based on 20 possible options provided to contractors	230	25 (TBD)	-5	17+80 minor (TBD)	+75	122 (TBD)
Total			528 (+TBD) (465)	+173	1,573 (+TBD) (TBD)	+1,127	1,719 (+TBD)

Notes:

1. The table is based on data provided by the EHL Resettlement team in March 2011.
2. Bracketed figures indicate RPF October 2009 estimates.
3. The table excludes any economic displacement in the Omati River basin fishery and LNG site/ downstream fishery.
4. The table also excludes Komo airstrip absentee owners. 440 payments had been made to absentee landowners at the time of the review.
5. The delta column indicates changes relative to the October 2010 review.

The most significant changes to resettlement numbers were as follows:

- number of physically displaced has increased by 173 (14% over RPF estimate) – almost entirely due to resettlement for the Well Pad A buffer (not anticipated in the RPF);
- number of economically displaced was not estimated in the RPF, but the number of those significantly affected was slightly lower than estimated at the time of the last review; and
- number of beneficiaries had been significantly swollen by minor beneficiaries – those that receive small payments for trees or small sections of garden affected by the Project.

On the latter issue, EHL cannot prevent customary owners constructing houses or establishing gardens on their customary land until the census is completed and a cut-off date has been declared. Such recent settlers cannot be dismissed as ‘speculators’ or ‘opportunists’ because they have a customary right to settle on the

land and they usually do so only with the blessing of their fellow clan members. The Project is most exposed where it is delayed in completing the census and inventory due to a security problem or similar, during which time many compensable structures and gardens could appear on the prospective site.

The lesson is that once the Project moves to demarcate the land it requires, it must proceed rapidly and in an unbroken sequence to complete the census and surveys and move towards entering into resettlement agreements with occupants. The risk of not doing this is the need to deal with compensation for large numbers of structures and gardens that appear almost overnight.

5.4.2.3 Land Access and Resettlement Process Issues

During the last review, the IESC noted problems with the sequencing of RAP preparation, Lender/IESC review and approval, and disclosure before commencement of displacement.

At time of writing, EHL had IESC-approved RAPs or Communal Resource Plans covering all active work sites with the exception of the Komo Access Road¹² and the LNG plant jetty Communal Resource Plan (CRP) is the document name that EHL has adopted to cover Project works areas that involve livelihood displacement, without physical resettlement.

Non-conformance (M1.10) related to this issue has been closed.

Table 5.2: Lender Review and Approval of RAPs (March 2011)

RAP	Received	IESC Reviewed	Lender/IESC Approved
Komo Airstrip	✓	✓	✓
Hides Gas Conditioning Plant	✓	✓	✓
Hides Quarries 1-3	✓	✓	✓
Heavy Haul Road	✓	✓	✓
Komo Airstrip Access Road	✓	✓	×
Omati to Kaiam CRP (KP 227-292)	✓	✓	✓
Kaiam to Kantobo CRP (KP 174-227)	✓	✓	✓
Hides Quarries 1-3: Addendum for Well Pad B	✓	✓	✓
Hides Quarries 1-3: Addendum for Quarry Expansion	✓	✓	✓

5.4.2.4 Valuation of Trees and Crops

The Project has given the IESC an unequivocal undertaking that it will pay 'full replacement value' for trees and crops based on full replacement values as determined by the independent valuation study. This undertaking will apply retrospectively (including to IPCAs) and to all tree and crop payments going forward. This addresses non-conformance (M1.12) which is now closed.

IESC and EHL had some discussion on a practical approach to disbursing top-up compensation where this was required. It was agreed that all top-up payments would be delayed until all Stage 1 resettlement had been completed i.e. for about six months. All Stage 1 displaced families will initially be compensated at Valuer General's rates. Top-up payments will then be subsequently disbursed during the first half of 2012. The reason for this was that it would be difficult to manage new compensation payments going forward (at

¹² The IESC has reviewed a draft of the Komo Access Road and expects a finalized version shortly.

a different and higher rate to past payments), while trying to manage expectations and retrospective top-up payment demands at the same time. For most families, a top-up payment in 2012 will be an unexpected windfall, and will in effect represent a form of compulsory saving. Rates should be adjusted to reflect any inflation over the period of delay in payment.

EHL has yet to complete an independent valuation study for the mid and lower altitude sections of the Project. This should be finalized as soon as possible.

5.4.2.5 Mitigation of Adverse Impacts on Community Infrastructure and Impairment of Access to Services

Each RAP now includes an appraisal of affected community infrastructure and, where applicable, a time-bound commitment as to when such infrastructure will be replaced. Progress had been made in designing and tendering for the road around the Komo airstrip and in design of a road to resettlement areas behind the HGCP. The IESC will monitor progress with delivery during each review.

One area that needs more attention is ensuring maintenance of access to water. The IESC heard complaints about access to water at several resettlement locations, namely Kopeanda, QA1 quarry, Komo airstrip and Well Pad A. Complaints took various forms: (i) greater distance from which water had to be gathered (sometimes also involving carrying water up extended and very steep gradients) due to severance of access (e.g. Kopeanda, QA 1 quarry); (ii) poor quality of the water available at the resettlement location (adjacent to Komo Pioneer Camp); or, (iii) insufficient tank capacity where EHL had installed a water collection system (Well Pad A that had experienced a rapid population increase).

EHL is providing rain water collection structures which, given the year round distribution of rain, are an excellent and sustainable solution. But these structures are often being installed many months after physical relocation has been completed. Access to water should be considered as part of RAP preparation. Where problems can be anticipated, a water collection structure should be installed ahead of physical relocation, not many months later. This is clearly one of the challenges of relying on a strategy of self-relocation, but EHL has a duty of care to ensure that resettled households have access to essential services.

See also discussion on the 'right to water' in Section 5.5.2.2.

5.4.2.6 Well Pad A

The IESC May 2010 Report recommended the need to establish a safety buffer around Well Pad A. A risk assessment has subsequently been completed and a buffer envelope has been identified. In the intervening period, spontaneous settlement has occurred around Well Pad A. Establishment of the buffer will now entail resettlement of more than 100 households. This was a predictable situation and indicates poor forward planning.

The lesson should be learned for all other well pads. In spite of the inhospitable climatic conditions, the risk of speculative structures being built within the future buffers around well pads is high. The Project has no power to prevent such construction on customary lands unless it has acquired and compensated for the right to restrict such uses. Buffers should be defined and covered by leases at the same time as well pads are acquired. In the absence of a comprehensive risk assessment, the buffer could initially be defined based on the drilling rig 45 dB A noise contour. It may not be necessary to exclude all uses from buffer leases, but if a lease is in place, EHL at least has a mechanism for controlling adjacent development and uses.

It is very probable that some of those who have built houses in the vicinity of Well Pad A are resettlers displaced by other PNG LNG components. If this is the case, EHL's planning oversight will have resulted in some families investing money and resources in constructing replacement houses and gardens in a location where they clearly were not going to have security of occupation or tenure. The IESC would regard this as a very fundamental non-conformance with IFC PS 5.

5.4.2.7 Banking and Access to Compensation

Not unexpectedly, significant challenges exist in maintaining banking services to those displaced families that elected to retain a portion of their compensation money in term deposit bank accounts. Through interviews with displaced households, some issues became apparent:

- displaced households may not be receiving notifications when their compensation term deposits become due and therefore may not be aware when they can draw on their term deposit funds; and

- access to banking facilities for all remains difficult.

This is a complex issue that is beyond EHL to solve. In the short term, EHL needs to mentor displaced families to be sure that they receive key notices about their compensation deposits and know what to do when they receive them. Sponsorship of regular banking officer visits to the key resettlement locations also needs to be maintained for some time yet. Efforts to have ATMs installed within or close the construction camps should be continued.

5.4.2.8 Resettlement Monitoring and Reporting

Resettlement monitoring requirements are outlined in Chapter 10 of the RPF. The resettlement team provided an internal monitoring report to the IESC covering the period January to February 2011, too late for inclusion in the March review. The IESC had time to make only a cursory review of this document.

The primary function of resettlement 'internal monitoring' is to provide succinct reports to the Project management team on land acquisition and resettlement performance, compliance status and delivery challenges. Internal monitoring reports are not for public disclosure. On other projects, such reports have also enabled the IESC to get a rapid appreciation of resettlement progress and challenges between its reviews.

The resettlement monitoring report is excessively long (129 pages). It will not become a replicable and useful management tool in its present format. A dashboard type summary, such as that adopted for camps monitoring that highlighted progress within the period and performance against 5-10 key indicators might be much more useful and less resource-intensive to prepare.

The internal monitoring report draws on quantitative socio-economic surveys. Such surveys have limited value during the period in which displaced peoples' livelihoods are being significantly subsidized by rations handouts, compensation monies and short-term employment. It would be a more prudent use of resources to delay such surveys until 18 to 24 months after resettlement subsidies have ceased. They should be used for 'outcome' monitoring and would be more credible if undertaken by a third party such as the 'external monitor'. Another opportunity is to coordinate with the Integrated Health and Demographic Surveillance System (iHDSS) monitoring being undertaken by the Community Health team. Resettled households' data could be disaggregated and compared with the overall survey population.

The statistical analysis presented in the present report is in several instances misleading and presented without critical commentary.¹³ The livelihood restoration measures developed by Dr. Bourke and his team (as cited in the last IESC report) provided a far more useful and robust picture of progress with garden re-establishment than the averaged data used in the January-February internal monitoring report.

Resettlement team internal monitoring activities must involve team members spending time in the field undertaking face-to-face interviews with a cross section of people at various stages of resettlement in much the same way as the IESC team does on its monitoring reviews. This qualitative approach quickly and cost effectively provides feedback about aspects of the resettlement program that are going well or badly.

It is suggested that a workshop (with possible IESC involvement if this was seen to add value) should be conducted to clarify the scope, objectives, activities, techniques and reporting requirements for internal monitoring.

5.4.2.9 Fisheries Baseline and Livelihood Plans

RPF Table 7 refers to two livelihood plans that are required to cover fisheries impacts, namely:

- item 12 Omati River Basin Fisheries; and
- item 13 LNG Site / Downstream Fisheries.

These plans were added to the RPF schedule at the specific request of the Lenders. The Lenders noted the importance of recognizing and mitigating impacts of coastal/marine works and exclusion zones (construction and operations) on artisanal fishing activities.

¹³ For example, figures that show landowners have much greater garden area post-relocation than they did before does not necessarily indicate that displaced families have enhanced their garden holdings. More probably, they indicate that landowners had garden areas that they chose not to disclose in pre-relocation surveys. This possibility should at least be commented on in the monitoring report.

Livelihood impacts posed by pipeline construction in the vicinity of Kido Village should also be assessed and, if warranted, a Communal Resource Plan should be prepared to address these.

For the LNG plant jetty, the IESC recommends that the Project approach the National Maritime Safety Authority or responsible port authority with a view to establishing the extent of any operations phase exclusion zones to be applied around the LNG jetty and shipping channels. The impact of these should be taken into account in preparing the LNG site fisheries livelihood plan or Communal Resources Plan.

As noted in the ESIA, the foreshore adjacent to the LNG plant has been the subject of conflicting customary ownership claims. Whatever approach is taken to mitigating project impacts on those households involved in fisheries (reportedly a quite small subset of the overall coastal village populations), it should avoid re-igniting ownership conflicts.

Fisheries baseline studies should also capture shoreline gathering activities (e.g. crabbing, shellfish gathering and the like).

5.4.2.10 Removal of Illegal Settlers at Quarry 1A

The removal of illegal settlers, such as those that occupied Quarry 1A post-resettlement, should be done strictly in accordance with IFC PS 5 and following due process as required under PNG law. In all cases, this process should be managed directly by EHL and not by its contractors. EHL would also be strongly advised to follow the procedural protections prescribed in the CSECR General Comment on Forced Eviction, some of which are more detailed than PS 5, namely¹⁴:

- genuine consultation with those affected;
- adequate and reasonable notice prior to the scheduled date of eviction;
- information on the proposed eviction to be made available in reasonable time to all those affected;
- especially where groups of people are involved, government officials or their representatives to be present during an eviction;
- all persons carrying out the eviction to be properly identified;
- evictions not to take place in particularly bad weather or at night unless the affected persons consent otherwise;
- provision of legal remedies; and
- provision, where possible, of legal aid to persons who are in need of it to seek redress from the courts.

The General Comment also makes it clear that evictions should not result in individuals being rendered homeless.

ELC should always be present at the time of eviction.

This is one of the highest risk activities that EHL can engage in. Without due care, it could leave the company exposed to alien tort-type actions.

5.4.3 **Recommendations**

- 1) Provide scheduling support to the Resettlement team so that the schedule for land access and RAP preparation is integrated with the Project Management teams' master schedule and contractor land access requirements.
- 2) Provide the schedule to the IESC so that it can be proactive in reviewing and turning around RAP and CRP documents quickly.
- 3) Consider establishing a *core* resettlement team to address scheduled land access and RAP preparation and a *quick response* team to be available to deal with contractor ad hoc requests (e.g. for quarries, spoil disposal, camps, laydown areas etc) – after these have been screened and prioritized by the responsible Project Management team.
- 4) Complete the independent compensation rates study to cover mid altitude and lowland areas.

¹⁴ International Committee on Economic, Social and Cultural Rights, General Comment 7 on 'Forced Eviction'.

- 5) Pay greater attention to assessing impacts of land acquisition on individual and community access to water. Anticipate water supply needs and install water collection structures prior to, rather than after relocation.
- 6) Control uses around all well pads by taking out leases over buffer areas at the same time as well pads are acquired. In the absence of a comprehensive risk assessment, size the buffer based on the drilling rig 45 dBA night-time noise contour.
- 7) Continue efforts to locate ATMs within or near to project camps or in other secure locations.
- 8) Provide support to displaced families to be sure that they receive key notices about their compensation deposits and know what to do when they receive them.
- 9) Maintain sponsorship of regular banking officer visits to the key resettlement locations.
- 10) Conduct an internal workshop to clarify the scope, objectives, activities, techniques and reporting formats for internal monitoring.
- 11) For land acquisition and resettlement, develop a 2-3 page global project 'dashboard' report that highlights land acquisition and resettlement performance, compliance status and delivery challenges that goes to the Project management team on a monthly basis.
- 12) Look at opportunities to coordinate resettlement outcome monitoring with the Integrated Health and Demographic Surveillance System (iHDSS) monitoring being undertaken by the Community Health team.
- 13) Consider the need to extend fisheries baseline and livelihood plans to cover Kido Village.
- 14) Approach the National Maritime Safety Authority (or other responsible agency) with a view to establishing the extent of operations phase exclusion zones to be applied around the LNG jetty and shipping channels and take these into account in preparing coastal Communal Resources Plans.
- 15) Inshore fisheries baseline studies and communal resources plans should capture shoreline gathering activities (e.g. crabbing, shellfish gathering and the like).

5.5 RESETTLEMENT INDEPENDENT ADVOCATE

5.5.1 Project Strategy

EHL has retained 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 ELC 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.

5.5.2 Observations

The role of the Environmental Law Centre provides important assurance to the Lenders (and other external stakeholders) as to the Project's resettlement performance, its observance of the rights of landowners and its compliance with PNG legislation. The IESC again met with ELC during the March 2011 review. Some of the key issues discussed included the following:

- Incorporated Land Groups (ILG);
- Right to water;
- *Fairness of Transaction Act* (1993);
- Huli and local language contracts.

5.5.2.1 Incorporated Land Groups (ILGs)

The IESC was interested to hear ELC's views on 'incorporated land groups' and their likely effectiveness as a mechanism for distributing royalties from the PNG LNG Project as envisaged under the Oil and Gas Act (Section 169). The incorporation of land groups is governed by the provisions of the Land Groups Incorporation Act (LGIA), 1974. While the formation of ILGs and the distribution of benefits are the responsibility of the government, the consequences of an ineffective or inequitable system of distribution will undoubtedly have an adverse impact on EHL's 'social license to operate'. Conversely, if royalties can

be distributed equitably and transparently, they will form a powerful tool for giving landowners in the Project area a real sense of ownership in the Project and a vested interest in supporting its operations. Such an outcome is consistent with IFC PS 5 which encourages projects to provide "...opportunities to displaced persons and communities to derive appropriate development benefits from the project." (PS 5, para. 8).

The Government has commissioned a consultant (Heritage Consultants Ltd) to facilitate the incorporation of landowning groups in the Project license areas. ELC expressed a number of concerns regarding the process:

- sheer numbers of ILGs likely to apply (presently 800-900, but could increase to 1,500-1,800) and the historical tendency of ILGs to split into smaller and smaller groups;
- lack of capacity of landowners to comply with the statutory requirements for formation of an ILG, keeping records and filing annual returns;
- lack of capacity in the Lands Department to effectively administer ILG requirements; and
- the even more onerous requirements (e.g. mapping, birth certificates, requirement for a management committee) that are implied by two pending amendments, Land Groups Incorporation (Amendment) Act, 2009 and the Land Registration (Customary Land) (Amendment) Act, 2009.

An alternative approach suggested by ELC would be distribution of royalties to individual beneficiaries based on a census. This approach is not precluded by the Oil and Gas Act.

It is hoped that the government will consult broadly with the potential beneficiaries, going beyond just clan leaders, to hear their preferences for distribution. Some earlier surveys reported in the ESIA indicated a majority preference for a per capita census-based royalty distribution approach rather one through ILGs.

5.5.2.2 Right to Water

ELC noted that it had received two complaints about loss of access to water and commented that the 'right to water' is recognized under international law e.g. the *UN International Covenant on Economic, Social and Cultural Rights* (ICESCR).¹⁵ Under some circumstances, to leave communities without reasonable access to water might be construed as a Human Rights violation. EHL should take care not to leave itself exposed in this regard. See also IESC comments on access to water in Section 5.4.2.5.

5.5.2.3 Fairness of Transaction Act (1993)

ELC drew the IESC's attention to the *Fairness of Transaction Act* (1993) and cited this piece of legislation as one of the key reasons why EHL should ensure that ELC is present to witness all agreements with displaced landowners and occupants. The *Fairness of Transaction Act* (1993) will "...allow for the re-opening and review of any transaction irrespective of fault and validity, enforceability or effect of any agreement..." in situations where one party may be economically weaker or disadvantaged relative to the other party, or where one party may not be able to exercise free choice or where the agreement might be construed as not 'genuinely mutual'.

As part of complying with the concept of 'fairness of transactions', ELC recommended that EHL should be expediting its own execution of contracts signed with landowners. ELC noted that it is unreasonable for EHL to encourage all households to sign their agreements as quickly as possible, and then to delay its own execution of those contracts, sometimes by 1-1.5 months. ELC considered that this was patronizing to the weaker or relatively disadvantaged party.

5.5.2.4 Huli and Local Language Contracts

ELC noted that Huli (or other local language) copies of contracts were still not being provided to families signing resettlement agreements. This non-conformance has not been addressed for three consecutive reviews. The non-conformance is accordingly escalated to Level II.

¹⁵ Committee on Economic, Social and Cultural Rights General Comment 15 of the CESCR asserts: "The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses. An adequate amount of safe water is necessary to prevent death from dehydration, to reduce the risk of water-related disease and to provide for consumption, cooking, personal and domestic hygienic requirements".

5.5.3 Recommendations

- 1) Ensure that EHL is present and witnesses all land and resettlement agreements, amongst other reasons to protect EHL from possible claims under the *Fairness of Transactions Act* (1993).
- 2) Look at ways EHL can avoid delays in its execution of resettlement agreements to avoid the appearance of asymmetry in its dealings with displaced households and as a gesture of respect.
- 3) See recommendations on access to water in Section 5.4.2.5.

5.6 LIVELIHOOD RESTORATION

5.6.1 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 9 month or 6-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 advise on compensation investment and business options.

5.6.2 Observations

EHL has assembled a highly experienced livelihood restoration team. The team, guided by Dr. Mike Bourke, has developed a conservative and appropriate livelihood restoration strategy for Highland resettlers that focuses on technologies that have proven successful in the PNG Highlands over the last 20 years. The program initially focuses on re-establishing sweet potato gardens at replacement sites for basic food sufficiency. Through nurseries and demonstration farms established at Komo and Mabuli, the livelihood restoration team will develop and distribute propagules for Pathogen Tested Sweet Potato, and other improved varieties of maize, Irish potato, cassava, peanuts, winged bean, common bean, pumpkin cucumber, pineapple and guava. These types will not only be higher yielding, but they also have the potential to extend the availability of carbohydrate (e.g. maize) through the agricultural year, thus improving food security. Other programs that are progressively being rolled out include food processing, *marita*¹⁶ oil extraction, livestock (broiler chicken production, ducks, improved pig raising techniques), honey, carp and *didistoa* (agricultural supply store) establishment. International experience indicates that the two years presently budgeted for the agricultural livelihoods program is too short to have sustainable benefits. EHL needs to explore ways to extend the program either through additional EHL funding or through leveraging project funding to develop partnerships with the PNG Department of Agriculture, bilateral/multilateral development agencies or agricultural NGOs.

The present livelihood strategy covers only the Highlands. Equivalent livelihood strategies need to be developed and rolled out to address livelihood impacts for the mid and lower altitude areas of the Project.

The IESC was impressed by the establishment of the Nursery next to be government center at Komo. The symbolic value of re-establishing an agricultural facility on the former Department of Agriculture land at Komo should not be underestimated.

The IESC noted the following challenges:

- the livelihood restoration program is presently budgeted for only two years. There is ample international experience, including ExxonMobil's on the Chad Cameroon project that indicates two years is not an adequate timeframe to produce sustainable changes in agricultural production or livelihood systems;

¹⁶ *Marita (Pandanus conoideus) is an indigenous fruit that is oil-rich and high in Vitamin A (carotene). Traditionally, the oil has been used as a sauce to garnish staple foods such as sweet potato and banana. There is international interest from Japan and South Korea in use of marita oil for body and hair lotions.*

- the Woman’s ‘food processing’ program has generated significant interest and levels of participation, but the program is to be very short in duration. It can be counterproductive and generate bitterness to mobilize a group, develop interest and then drop support before it is self-sustaining. Successful programs from the Resettlement livelihood program should be adopted and extended through Community Support program;
- resourcing and logistical arrangements need to be scaled up to cover the full geographical range of Project garden impacts and the increasing numbers of displaced families for which livelihood restoration should be delivered i.e. livelihood restoration assistance will need to be delivered;
- the present livelihood strategy covers only the Highlands. Equivalent livelihood strategies need to be developed and rolled out to address livelihood impacts for the mid and lower altitude areas of the Project;
- the agricultural livelihood restoration monitoring system developed by Dr. Mike Bourke needs to be maintained.

5.6.3 Recommendations

- 1) Fully resource the Livelihood Restoration team and ensure there is accommodation for its women specialists so that the team is able to service the expanding number of displaced households.
- 2) Explore the potential of partnering with the Provincial Department of Agriculture so that the latter can develop capacity and potentially take-over nursery operations and extension activities after the Project livelihood programs have been completed.
- 3) Develop standardized livelihood monitoring and reporting templates (repeated).
- 4) Develop a strategy for extending agricultural livelihood program so that you a sustainable benefits (e.g. through community investment support, author of partnering with the Department of agriculture or other bilateral/multilateral assistance).

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

Some significant improvements were observed with respect to community safety. Community Safety outreach programs in the Hides - Komo area are managed primarily through the L&CA organization and the individual EPC contractors utilize field staff, including traffic control personnel and spotters to protect

the local community. EHL and the EPC Contractors implement work protocols designed to minimize potential community impacts, including the use of controlled convoys for heavy traffic along the Highlands Highway. CCJV spotters were observed to effectively control the movement of pedestrians around heavy equipment being operated at along the road from the HGCP site to the CCJV quarries, which represents a significant improvement over what was observed in October 2010. A temporary fence around the HGCP worksite was constructed in Q4 2010, which will provide a safety barrier between the public and construction activities as works progress. Fencing around the Komo air field was being completed at the time of our visit and fencing around the LNG construction area was complete. Traffic control was also observed to be effectively implemented by MCJV in the Komo area.

Improvements still need to be made. Although pedestrian footpaths are being planned (such as from Lake Mabuli to Para School) the Project still has not provided communities with alternative access routes (i.e., footpaths or walkways) around worksites, which is reportedly one of the reasons why pedestrians continue to traverse these areas. Although fencing has been installed to restrict community access to the QA1 quarry being operated by MCJV, community members were still observed to be present in work areas. Traffic management will still need to be a focus of the community safety program. Although some sensationalist press releases have attributed community deaths to Project traffic, this has not actually been the case. Nevertheless, it is recognized that clan unrest can be triggered by traffic accidents (e.g., on 15 February 15, 2011, a non Project related vehicle accident in which a drunk driver killed two local women in vicinity of Nogoli resulted in the murder of a Mt Hagen man). One of our observations is that the potential for this type of retaliation provides a strong incentive for EHL drivers to be exceptionally careful, but traffic safety will always need to be of primary concern.

Deficiencies in identifying community impacts as part of the preconstruction surveys and in compliance monitoring are noted in Sections 5.2.2.3 and 5.3.2.

5.7.3 Recommendations

- 1) Make completion of community paths in Hides to segregate vehicle and pedestrian traffic a high priority, especially along routes used by children going to and from schools.

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 Company 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:¹⁷

- the philosophy underpinning Project security is 'community partnerships';
- security works closely with SELCA which is responsible for frontline community liaison and interaction;
- the Project is committed to adherence to the Voluntary Principles of Security and Human Rights (ExxonMobil Corporation is a signatory);
- 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 Exxon Mobil standards and under the guidance of the Exxon Mobil security team; and
- EPC Contractors may not directly communicate with the Royal Papua New Guinea Constabulary (RPNGC).

¹⁷ Based on presentation to IESC by ExxonMobil's Graeme Sayce and Jimmy Vigil, 7 May 2010.

5.8.2 Observations

Key security challenges identified by the Security team remain as follows:

- unfulfilled government commitments (Benefit Sharing Agreement commitments) and related unrealistic landowner expectations;
- ongoing threat from inter-clan feuds and fights and issues relating to labor relations;
- alcohol related incidents remain prevalent despite the alcohol ban in the Southern Highlands province;
- systemic criminal activity; and
- in Port Moresby, carjacking continues to be a serious problem.

Timely release by the PNG Government of funding to support mobile squad activities in the Project work area as noted during the previous review continues to be an issue.

The security team has filled 37 out of 52 positions. Recruitment is underway to achieve full strength.

5.8.2.1 Incidents

The Security team reported that there had been two significant incidents since the October 2010 review as follows:

- 15 February 2011 – a non-Project related vehicle accident in which a drunk driver killed two local teachers in the vicinity of Nogoli resulted in the pay-back murder of a Mt Hagen man in Komo; and
- 21 January 2011 - Well Pad A Camp was briefly invaded by youths as an outcome of an incident involving the death of a young child.

The Well Pad A incident was the culmination of a series of events occurring in the Hides area in early January 2011. These included:

- the presence of significant number of people in Hides for a blockade of the HGCP site that had been ongoing over preceding days – reason for the blockade was the alleged failure of the government to deliver BSA commitments;
- a celebration at Kopeanda for signing of resettlement agreements and receipt of compensation involving alcohol consumption;
- a *haus kri* during which the relatives of a deceased child and others (perhaps 400-700 people) congregated at Well Pad A to negotiate customary assistance from the Project - food, generators, building materials for the tomb; and
- a breakdown in the funeral negotiations over a request for substantial compensation led to the crowd becoming angry and a group of youths breaking into the camp causing property damage and minor injuries to two personnel.

The camp was locked down. 25-30 Mobile Squad officers were deployed. Warning shots were fired and law and order was quickly restored.

At time of writing, the findings of a coroner's report on the death of the child had not been made public. An autopsy had been conducted in Mendi by a specialist from Port Moresby. Circumstances of the child's death were unclear, but a rumor had arisen locally that the child had ingested a white powder ('explosives') from a Project work site. This seems unlikely as explosives are not normally left untended on worksites.

While the trigger event was the breakdown of negotiations over customary assistance for the death of the child, the causal chain led back to the unresolved business between the government and the local landowners. This contributed to an atmosphere of heightened expectations and the presence of a large gathering of people.

5.8.2.2 MOU with the RPNGC

In spite of requests on each previous IESC visit for a copy of EHL's MOU with the RPNGC, and undertakings on each occasion that this would be provided, the IESC has not received the MOU. EHL also advised that no attempt has been made to "...encourage the relevant public authorities to disclose the

security arrangements for the client's facilities to the public..." as provided for in IFC PS 4, para. 14. This has been recorded as a nonconformance.

EHL reported that a new police commissioner is about to be appointed, and that the new appointee may wish to review the content of the MOU with EHL. It is recommended that the opportunity be taken to discuss the IFC PS 4 requirement with the incoming commissioner with a view to its promoting its public disclosure.

Heading into the 2012 election period, there is every likelihood that there will be escalating mobile squad activity in the project area and elsewhere in the Southern Highlands Province. Well ahead of this time, it is important that EHL has a transparent and publicly disclosed MOU with the RPNGC so that the boundaries of each party's activities are publicly understood.

5.8.2.3 Looking Beyond the Perimeter Fence

The recent incursion into the Well Pad A Camp and blockage of EHL work sites are an indication of the kinds of incident that EHL may increasingly face in the lead up to the 2012 election. EHL is aware of this and has commenced a risk assessment.

Going forward, it is recommended that EHL adopt a more multidisciplinary approach to identifying local security risks that includes extensive community engagement. Many groups have defined approaches for doing this. One such group is International Alert and their tool kit, "Conflict-Sensitive Business Practices: Guidance for Extractive Industries". There is an extensive literature on PNG mining experience. There are other models that have worked in a Melanesian context with law and order challenges such as the 'community policing' adopted by the BP Tangguh project. These approaches have various elements in common:

- focus on dialogue and developing trust with the host communities;
- establishing good lines of communication;
- working together (company, communities, government) to assess risks, identify scenarios, determine the impacts on each party and plan options for responding; and
- if possible, entering into some kind of agreement or protocol that sets out expectations, roles and procedures.

Typically, the above steps would take about two years of intensive effort to develop into a constructive working relationship. In the short term, dialogue with Government involvement could go a long way to helping moderate demands and expectations. Demands from the community are becoming more strident because the fear is that no one is listening.

It is clear from the RAP consultations (and the recent blockages) that most of the current community grievances are directed at the Government or relate to legacy issues from the oil field development. It is clear that the Government needs to be engaged, or EHL will continue to be used as a lever to seek attention. The level of engagement needs to go further than the payment of infrastructure grant funds which will only exacerbate tensions if they are disbursed in the same seemingly arbitrary and un-transparent manner as the business seed money grants.

5.8.3 **Recommendations**

- 1) Use the occasion of the appointment of a new deputy police commissioner as an opportunity to lobby for public disclosure of EHL's MOU with the RPNGC.
- 2) Develop a clear community engagement action plan for the Hides and Komo areas directed towards improving the security environment for both communities and the Project.
- 3) Lobby the Government to use its recent intervention following the HGCP blockages as a starting point for entering into dialogue with local communities with a view to addressing community grievances and un-met expectations (Note: EHL reports that the Government has commenced such engagement).
- 4) Lobby the Government to develop a transparent and equitable procedure for disbursing infrastructure grant funds to avoid the kinds of conflict generated by the business seed money.

5.9 PROJECT INDUCED IN-MIGRATION

5.9.1 Project Strategy

During Due Diligence, the Project committed to undertake a project induced in-migration risk assessment. A final report was completed in June 2010. The final report will be used as the basis for developing an in-migration management plan or plans.

5.9.2 Observations

The IESC was again disappointed at the slow progress in development of the in-migration management plan. While a more detailed and thoughtful framework was articulated, at least in point form, there appeared to be very little urgency in carrying out the field work necessary to commence monitoring and development of the action plans. The Project Induced In-Migration Management and Monitoring Plan and related implementation measures need to be properly resourced and completed. The two expat specialists running the study need to be supported by national staff so that work can continue while the expats are out on rotation. There should also be transfer of skills and capacity building of a local team.

The influx of people and spontaneous settlement around Well Pad A in Hides is a straight-forward example of how in-migration can adversely affect Project activities (see also Section 5.4.2.6). Resettling the 100 or more families that have recently settled in that location has the potential to have a high cost in terms of schedule, compensation and tying up resettlement team resources. Elsewhere, such as in Kikori and in some of the villages around the LNG plant, influx is more subtle, but it is well underway. According to a local informant, Kikori, for example, has had a perceptible increase in population. This is driven by traders from the Southern Highlands. The traders typically befriend local families, stay with them and eventually build houses within their host families' land. Appearance of cleared gardens in the forests on the periphery of the town is evidence of Highlander presence. The need for spatial planning, such as might form part of an action plan, is now.

Three principal components were identified for the PIIM Management and Monitoring Plan:

- monitoring of PIIM impacts and compliance with EHL Social Management Plans;
- building PIIM awareness and providing training to internal and external stakeholders; and
- building community resilience with facilitation, preparation and supervision of community-led village PIIM Action Plans.

The components, activities and outputs of the PIIM program look entirely appropriate. Perhaps the cost and schedule implications of the Well Pad A resettlement will galvanize the Project into giving the PIIM program the priority and resources it needs. The IESC hopes this is the case.

The IESC is surprised at the exclusion of the Hides-Komo area from capacity building and preparation of PIIM action plans. While the population changes there are driven by the return of IDPs and wontok-based population inflows, this cluster would appear to be experiencing far and away the most dramatic population redistribution, spatial planning challenges and risk of population induced environmental change.

5.9.3 Recommendations

- 1) Develop a work plan (schedule, budget, resources) for completing the PIIM action plans within a reasonable timeframe i.e. so that village/ community planning is pro-active and not after the event.
- 2) Consider extending the 'Capacity Building – Supervision of Preparation of Integrated Area PIIM Action Plans' component to the Hides-Komo area (in addition to the LNG plant site, Kopi/Kikori, Moro, Gobe/Samberigi clusters) which field observation suggests is already confronting significant spatial planning challenges and potential for environmental deterioration.

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;
- improved capacity and skills of local business to capture business opportunities associated with the project both locally and nationally;
- ensure that project environmental and social standards and commitments are adequately communicated by the contractor to its sub contractors and suppliers and included in their contractual arrangements.

5.10.2 Observations

The extension of Project environmental and social standards to sub contractors is discussed in Section 3.2.2.2. Much of their commitment to improve local business is reflected in the use of lancos that supply labor and services to the different EPC Contractors. The success of this approach is reflected in the national workforce currently working on the Project. EHL reported that earlier projections for national spend and projected employment were understated, and are likely to be significantly exceeded. As of March 2011, PNG workers made up 77 percent of the total Project workforce. The national workforce in Q1 2011 was about double EHL's original (pre-construction) projection (Figure 5.4).

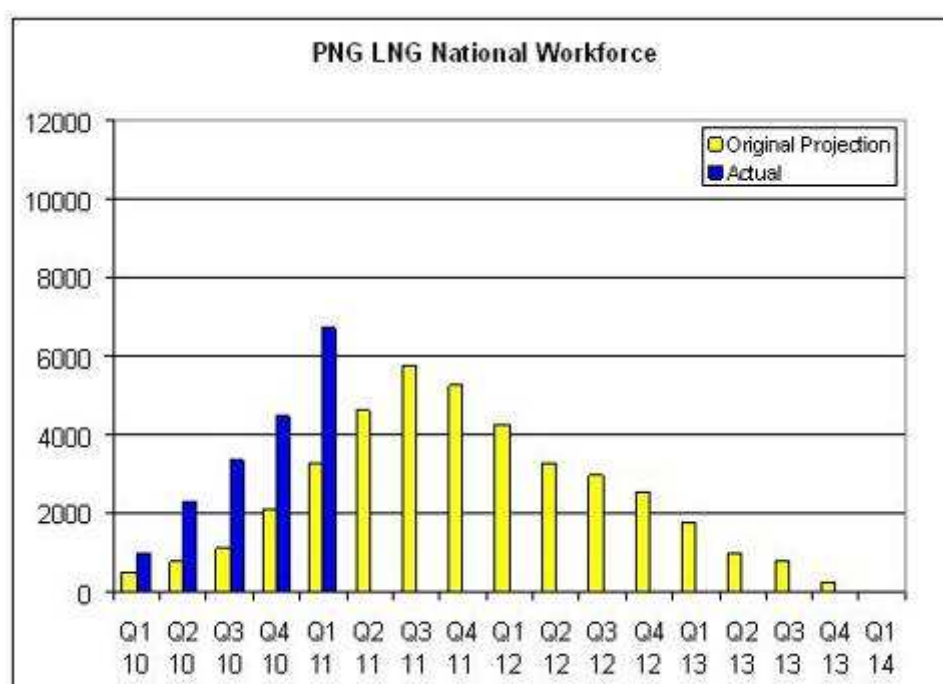


Figure 5.1: PNG LNG National Workforce – Actual versus Projected

Source: Updates provided by EHL.

5.10.2.1 Training and Workforce Development

The EPC3 Project Management Team is operating and managing Pom CTF (Port Moresby Construction Training Facility) and has graduated 446 civil laborers, of which 24% are women. The Juni training facility to be operated by the CBI Clough JV (CBIC) has not opened due to construction delays associated with EPC4 construction of the HGCP. EHL plans to use the bed space at that camp until CCJV is in a position to take over in the August-September time frame.

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.

5.11.2 Observations

During the March 2011 review, the IESC discussed with EHL its draft Community Support Strategy incorporating a Community Development Support Plan submitted against Milestone Schedule Item #19. Actions to finalize the strategy and plans were agreed. EHL has undertaken to provide an updated plan prior to the IESC's next visit in July 2011. The CDSP will provide community investment budgets up until the end of the construction phase. The delay in completion means the two documents will be far more evolved than would otherwise have been the case.

The Community Development Support team has developed and is starting to implement a well-conceived community investment program. This has been developed around the three pillars of 'strengthening social resilience', 'community capacity building and partnerships' and fostering 'local economic development'. See the figure below.

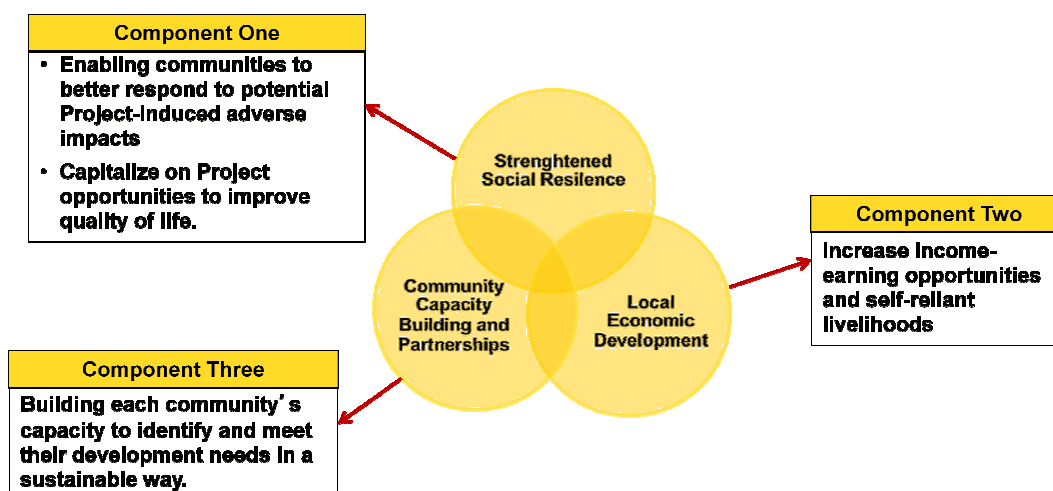


Figure 5.2: Community Development Support Framework

Source: EHL Community Support team presentation, March 2011.

In addition to addressing well-defined community needs, consideration should be given to using community investments strategically to address the following situations:

- spread Project benefits and blur the boundaries between winners (compensation and royalty recipients) and those that miss out;
- relationship building with villagers/communities that are strategic for accessing or accommodating key Project facilities or that have a history of blockading or impeding project activities; and
- providing some benefits and occupation through volatile or high risk periods such as during construction workforce demobilization and in the period from the end of construction until royalties start to flow.

Baruni village, on the road between Port Moresby and the LNG plant site is an example of a community that should be targeted for strategic community investment. It does not fall within the Project Impact Area and therefore will not benefit from royalties or land opportunities. It is, however, impacted by project traffic which passes through the middle of the community. If aggrieved, the villagers can potentially block the main road access to the LNG plant site. Community investment will not necessarily prevent villages from blockading, but the good will generated may facilitate earlier dialogue and more rapid resolution of any dispute. There are similarly strategic villages in many locations throughout the Project area.

5.11.3 Recommendations

- 1) Examine strategic Project requirements for the community investment program and identify locations (and periods) where focused investment may be warranted to ensure EHL's social license to operate.
- 2) Examine potential synergies between Community Support programs and the Livelihood Restoration programs being undertaken as part of Resettlement program. Efficiencies in geographical reach and logistics may be possible. Community Support may be able to extend the duration of some excellent livelihood initiatives such as the Women's food processing programs in Hides and Komo.
- 3) Ensure that the Community Support program is subject to external third party reviews at mid-program and end-of-first round programs. Such reviews are invaluable for evaluating program effectiveness and for refining program selection and design going forward.

5.12 LABOR AND WORKER CONDITIONS

5.12.1 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 particularly give first priority to the employment to PNG citizens originating from within Lanco areas;
- implement an equitable and transparent recruitment process; and,
- provide fair terms and conditions of employment and comply with relevant laws enhance PNG citizens skills base through training provided during employment.

5.12.2 Observations

A labor and employment specialist will form part of the IESC team for the July 2010 review. The next review will include a more detailed review of project performance against IFC PS 2, national legislation (including the PNG Employment Act, 1978) and EHL's Camp Management Plan and Labor and Workers Conditions Management Plan.

March 2011 observations were as follows:

- the EPC Interface and Contractor Compliance team needed to be fully resourced – 4 national and 4 expat positions were unfilled at the time of the March review;
- there was no Interface and Compliance Lead in the Business Development area which includes the 'lancos' through which landowners provide services and labor to the Project;
- the EPC Interface and Contractor Compliance team had developed clear templates for EHL monitoring and reporting and for contractor monthly reporting covering both camp and labor/working conditions;
- EHL had completed one monitoring review of the major camps which revealed non-conformances in a number of labor/worker conditions areas including inductions, worker grievance management, and employee policies and procedures on harassment, discrimination and disciplinary areas. Remedial actions have been specified;

- it is unclear to the IESC how EHL and its Contractors are complying with matters such as rest periods, maximum daily work hours and overtime rates as provided for in PNG Employment Act (1978). This will be an area for further review during the next IESC visit;
- in one instance, a light vehicle driver assigned to the IESC team was noted to have worked in excess of 12 hours and on his own account, without a meal break. If it does not already exist, clear guidelines should be developed covering driver working hours, breaks, meals and rest periods, including for drivers of light vehicles. Journey management plans, driver logs or similar should be introduced to ensure guidelines are complied with;
- the IESC observed that drivers and interpreters were not allowed to use camp mess facilities. The reasons for this were unclear. It could easily be construed as discriminatory when all other professional and technical staff appeared able to avail themselves of mess facilities;
- in some cases, it might be perceived that there is a conflict between the Interface and Contractor Compliance Leads 'interface' and 'compliance' functions. Some judgment needs to be applied in allocating staff for compliance monitoring or audits. It may make sense to ensure Leads do not audit or monitor their own Contractors.

Gender-specific observations on camp management are included in Section 5.16.

5.12.3 Recommendations:

- 1) If it does not already exist, develop and implement guidelines to regulate driver working hours, breaks and rest requirements.
- 2) Investigate why drivers and interpreters are not allowed to use camp mess facilities and determine if there is a more inclusive approach to their being able to enjoy the same access as other Project team members.
- 3) Assess whether there is a conflict between the Interface and Contractor Compliance Leads 'interface' and 'compliance' functions and, if warranted to achieve effective audits, rotate Leads so that they are not reviewing their own contractor.

5.13 CAMP MANAGEMENT

5.13.1 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 (i) avoid or reduce negative impacts on the community and maintain constructive relationships between local communities and workers' camps; (ii) 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.

5.13.2 Observations

Camp management is an important component of the PNG LNG Project. EHL projects EHL projects that approximately 23 camps containing approximately 18,000 beds will have been constructed and demobilized over the duration of the Project with expected peak towards the beginning of 2012 (see Figures 5.3 and 5.4).

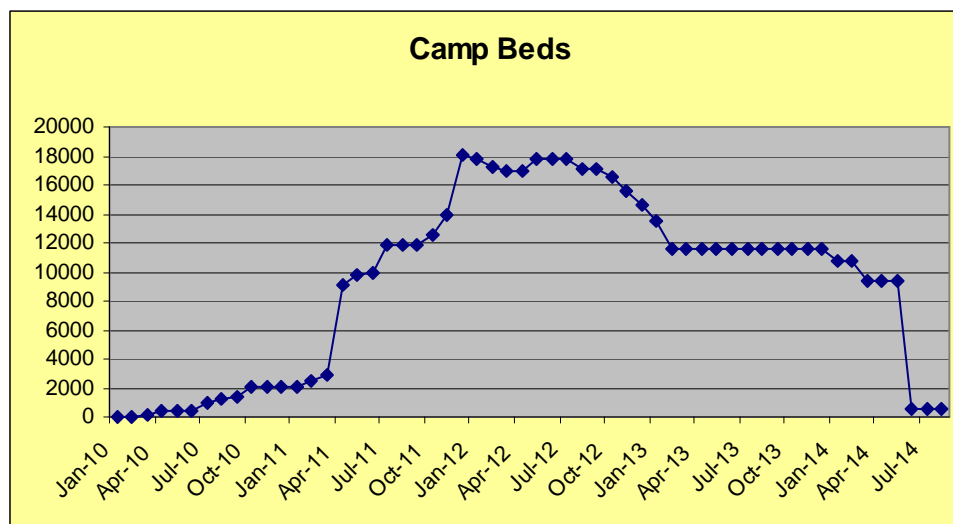


Figure 5.3: Projected Requirements for Camp Beds

Source: Presentation to IESC by EHL, 15 March 2011.

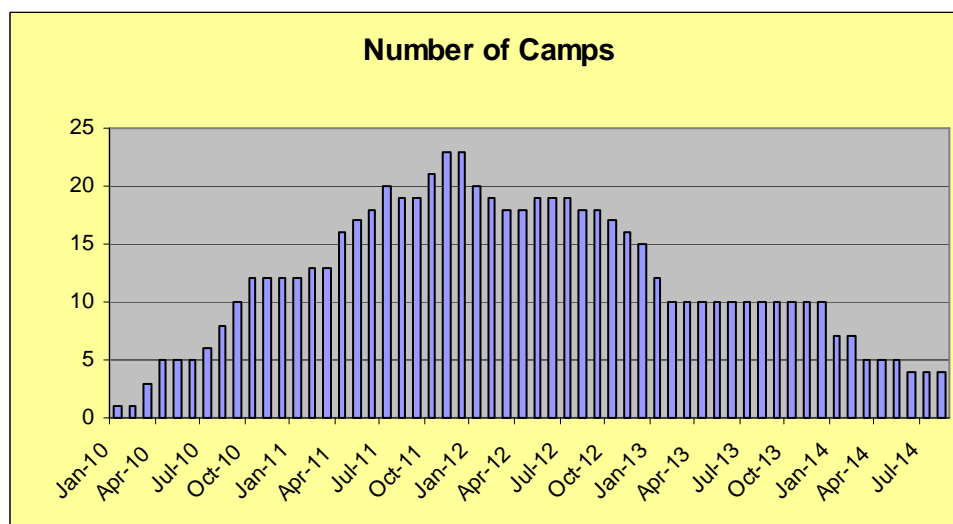


Figure 5.4: Projected Number of Camps

Source: Presentation to IESC by EHL, 15 March 2011.

The IESC October 2010 site visit report pointed out several issues regarding the management of camps, specifically with regard to the confusion associated with the classification of camps and variations in standards applied to the different classes of camps. In particular, there was no obvious auditing procedure that could account for both social and health related impacts nor was the spacing or other physical requirements for the various camp classes spelled out in a manner that could be audited. It was not clear which social requirements such as recreation facilities, prayer rooms, mental health assistance (Mitigations 24.003, 24.028, 24.032, respectively) apply to which class of camp. A Camp Grievance Mechanism and on-site workers' training/induction in alignment with the Camp Management Plan still needed to be implemented across the Project. Since the previous IESC site visit in October, EHL has made good progress to resolve these uncertainties on the basis of a pan-project review and 12 internal audits.

Requirements are divided into two broad classes: (i) camp to build a camp and (ii) construction camp. There are many names under the category of "camp to build a camp" such as bush camp, fly camp, field camp, transit camp, pioneer camp, etc. and these terms are not consistently applied across the Project, so it has proven simpler to lump them all under the category of "camp to build a camp." Full conformance with the Camp Management Plan was intended to be applied only to the permanent construction camps. Lower standards could be allowable for the "camp to build a camp" category with the understanding that they are

intended to apply to smaller numbers of workers over a shorter duration than the permanent camps. In any case, the “Field Camp Safety and Health Philosophy” would still need to be enforced. Nonetheless, the requirements for the two groups of camps, especially for the “camp to build a camp”, category according to Project commitments, are not fully clear. The Project is working on this and is in the process of developing an auditing approach. This is a topic that will be reviewed in greater detail in the next field visit.

Infrastructure improvements have been made at some camps. The deficiency identified with respect to covered walkways and bed spaces at Well Pad A Camp has been resolved. EHL provided a satisfactory explanation regarding the policy for the use of physical controls for mosquito intrusion prevention at camps. The Level 1 non-conformance associated with these topics from the October 2010 report (Item M2.11) has been rescinded.

EHL has initiated a process to implement a camp disciplinary and grievance procedure, cultural awareness training (including gender awareness¹⁸), and community orientation at all of the camps. Although no details were provided on the contents of these new procedures and training, the IESC considers this as a very positive step. However, the results of EHL’s internal audits indicates that there are still significant gaps, in particular for having grievance and disciplinary procedures in place and a mechanism to record disciplinary actions and grievances (less than two thirds of camps comply). Accordingly, the two Level I non-conformances from the October 2010 trip report (M.12 and M.13) have been maintained. Although not an explicit mitigation measure in the Camps Management Plan, there is currently no outlet for women to express sensitive grievances that may be difficult to report to male staff (e.g., sexual harassment or assault).

The Project is also considering the development of a “Camps Residence Committee”. The Residence Committee would be an informal group of female and male campers that would be responsible for event planning in the camps and/or obtaining informal feedback on the camp experience, such as the selection of meals or the adequacy of facilities. Such a committee might help promote leadership and camaraderie amongst campers, and we support this idea.

Another issue identified in the October 2010 report was the general availability of bed space, which has forced environmental and social teams to either not be able to work in the field or, to live under conditions not intended to last more than a few weeks, e.g., the tent camp at Nogoli. Progress has been made in this area in that the Nogoli tent camp has been dismantled and EHL is occupying the Juni training camp facility until EPC4 needs to start a training program. A larger issue is that the “camps to build camps” in some cases are being occupied far longer than was originally intended. As noted in Section 1.1, some of these delays are significant. The original schedule was for the site preparation for the HGCP site to have been completed by December 2010, but camp construction and infrastructure development are not yet complete such that site preparation activities can start and the actual preparation activities are expected to require several months.

IESC recognizes that there are different types of camps and that the Camp Standard was intended to be applied to the permanent construction camps and not the “camps to build camps.” Where we see the discrepancy is that some of these “camps to build camps” have been in operation so long that they effectively serve as permanent construction camps. Even in the case of permanent construction camps, it is understood that the personal space requirement has been lowered in the case of the EPC3 camps at the LNG site, a situation representing approximately half of all of the workers on the PNG LNG Project. The Level II non-conformance identified in the IESC report for the October 2010 site visit is still considered valid, both from the standpoint of camp management and also because it is considered to be a change to a standard that should have been associated with a Class I MOC. This non-conformance can be rescinded if the details of the conditions whereby the criteria and duration are clearly defined for allowable reduced personal space or the Project accepts that the situation is a non-conformance until normal working conditions have resumed. In any case, this is a situation the IESC expects to review in much greater detail during the next site visit.

¹⁸ This recommendation (i.e. “A gender component should be included in training/inductions at all levels...”) was made in Section 5.16 on Gender in the IESC’s last report for the October site visit. It is being included in this section given its broad relevance to camps and similarity to training on cultural awareness.

5.13.3 Recommendations

- 1) Reclassify the MOC for the reduction in the minimum space requirements per person to a Level I and provide formal notification to Lenders and the option to assess this change (repeat recommendation).
- 2) Continue to work on the camp auditing approach, especially for the “camp to build a camp” category.
- 3) Continue to work with the EPC Contractors to develop uniform, Project-wide procedures, in particular for grievance and disciplinary actions and a mechanism to record disciplinary actions and grievances.
- 4) Assign a female leader in each camp (with the right credentials) as the go-to person for females needing to express sensitive grievances.

5.14 STAKEHOLDER ENGAGEMENT AND CONSULTATION

5.14.1 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.

5.14.2 Observations

Following a change of leadership, the Stakeholder Engagement Strategy had been revised to have a greater emphasis on proactively servicing contractor activities. This had resulted in a significant improvement in community preparation ahead of key contractor works. For example, programs delivered in the previous five months included road traffic awareness, community blast awareness, pipeline survey preparation and dredging awareness. Programs were directed towards communicating key safety messages, creating understanding of no-go zones, alleviating community fears and explaining features of each activity to manage community expectations. The emphasis has been on non-written modes of communication. In areas around the LNG plant, a drama group has been developed for providing project information in an accessible and entertaining way. Church groups, schools and women groups have been targeted as a means to leverage information dissemination to a wider audience.

Overall, the IESC was heartened by the present focus of stakeholder engagement on developing L&CA capacity to better deliver community preparation and safety awareness at a grass roots level.

Recent incidents and blockages in the Hides area point to the challenges for stakeholder engagement going forward. These challenges will become more pronounced in the lead up to the 2012 elections. In the lead-up to the elections, the Project's ability to counter misinformation and resolve the resultant tensions through dialogue rather than blockages will be at a premium. It is critical that EHL continues to develop meaningful relationships and forums for interaction, information dissemination and gathering of feedback at community level and amongst community leaders.

5.14.3 Recommendations

None arising from the present review.

5.15 GRIEVANCE MANAGEMENT

5.15.1 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;
- 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.

5.15.2 Observations

Developments since the last review included the following:

- the Community Affairs Manager had been made accountable for the grievance management system;
- a Grievance Coordinator had been appointed and one Regional Grievance Leads was in place with two more due to take up positions imminently;
- specialist contractor, Borealis, had made solid progress in process mapping, designing input interfaces and reporting templates for the EHL project-wide grievance management system;
- the Contractor Compliance and Interface team had completed monitoring reviews of major contractor systems and recorded a number of non-conformances with respect to contractor camp and worker grievance systems – a concerted effort is underway to improve contractor grievance management systems and reporting; and
- Spiecapag maintains the best grievance management and reporting system on the Project – a model that should be emulated by all.

Some interviewed EPC Interface and Contractor Compliance Leads noted that their contractors were still defensive about recording complaints and hold a perception that grievances implied fault. EHL management needs to be proactive in reassuring contractors that grievance management systems are for business improvement and do not imply a fault or oversight.

From an informal check of the grievances register for one of the coastal villages adjacent to the LNG plant, the IESC made the following observations:

- each grievance should have recorded against it a corrective action, together with the party to be responsible for implementing that action, the target date for completing that action as well as the date of actual completion;
- grievances should not be recorded as 'closed out' until the agreed corrective action has been implemented;
- each closed grievance should have a recorded outcome – this could be as basic as the complainant was satisfied with the outcome; the complainant was partially satisfied with the outcome and a further corrective action was agreed or not agreed; or, the complainant was not satisfied and was referred to the third party dispute resolution mechanism (for example);

- clear protocols and tracking actions need to be developed for transferring a grievance from one party to another e.g. from EHL's L&CA team to an EPC contractor. A grievance should not be recorded as closed out simply because it has been transferred to another team or party.

These are typical issues encountered in the early roll-out of a large project grievance management system. They highlight the importance of ongoing training to make L&CA officers and others with exposure to the public fully conversant with how to record a grievance, how to track it and how to close it, or otherwise how to transfer it to a third party.

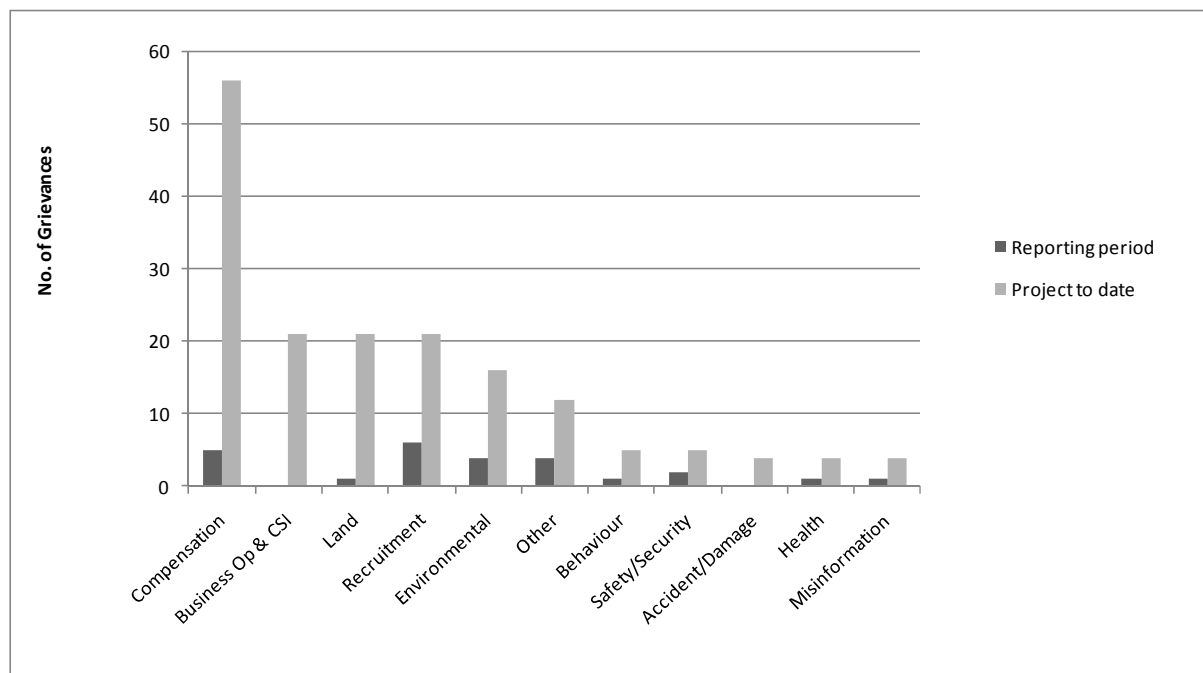


Figure 5.5: Breakdown of Grievances by Category for Q1 2011 Compared to All Grievances recorded to Date

Source: EHL Community Affairs team, March 2011.

5.15.3 Recommendations

- 1) Ensure that each complaint has recorded against:
 - a clearly defined corrective action;
 - party responsible for executing that action;
 - target date for completion; and
 - actual date of completion.
- 2) For each closed out grievance record an outcome (e.g. complainant was satisfied/ not satisfied) based on consultation with the complainant after the corrective action has been completed.
- 3) Develop clear protocols for transferring a grievance from one party to another (e.g. from EHL to a contractor) and ensure that a grievance is not recorded as closed by dint of it having been transferred.
- 4) EHL senior management to reinforce to Contractors that grievance management is considered part of business improvement and good management – receipt of complaints does not imply fault or oversight.

5.16 GENDER

5.16.1 Project Strategy

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.

5.16.2 Observations

Some improvements were observed this visit with respect to women's accommodations. Well Pad A now includes accommodations for women and the MCJV Komo camp now provides public restrooms for both women and men. Accordingly, the Level 1 non-conformance associated with these topics in the IESC's October 2010 report (Item M2.14) has been rescinded.

Bed availability for women is still an issue in the Upstream Project Area as raised in the previous two IESC reports (May 2010 and October 2010). In the October 2010 report, we had made the recommendation that EHL conduct a Project wide assessment on the availability of women's accommodations in the Upstream Project Area to ensure that women have equal access to EHL camps, including the newer camps. This recommendation was made in alignment with the objectives of Performance Standard 2. We received no update on this during the site visit, and given that bed availability remains an issue for women, we now consider this a non-conformance with Performance Standard 2.

We also had recommended that the Project conduct a full review of the extent of security provisions currently required by the Project for women's quarters only. This recommendation was made based on feedback obtained during the October 2010 site visit as women reported that they generally felt safe on camps, even late at night. Women interviewed at that time were satisfied with the basic security requirements (e.g., curtains on windows, peep holes, duress alarms), but the large metal enclosures or wire fencing with lockable doors fixed over and around the women's sleeper units were considered excessive. Since that time, there has been an incursion of aggressive villagers into the Well Pad A camp (January 2011). During this site visit, we did not have the opportunity to conduct structured interviews with women. We did observe that the enclosure at Moro B, which had been once removed, has now been placed back over the women's units. Similar enclosures made of wire fencing were also fixed around selected sleeper units at Kobalu and at Well Pad A camps; however, at Kobalu, both males and females reside inside enclosed units. It was explained that the enclosure at Kobalu was not necessarily implemented for the purposes of protection of women, but instead was to ensure an additional layer of protection for 'VIP' residents at the camp. Some national women at Moro B camp with whom the IESC spoke expressed their feelings that the enclosure would act as a red flag to outsiders in the event of another aggressive incursion, signaling where the women could be found. They also reported a feeling of being trapped between the two doors as the width of the door could easily be blocked by one or two able men.

It should be made explicit that the IESC is not in a position to make recommendations on security provisions nor are we attempting to do so in this or in any other report. These important measures are to be decided upon by security professionals. We do note however that the panel of experts in charge of mandating security provisions in the Upstream Project Area is comprised of men only. The inclusion of national women in particular may provide unique and useful insight on operating within the very complex and singular cultural landscape of Melanesia. We understand that the Project has good reason to consider the safety of women in camps given the well-documented and known threat of violent assault of women in PNG.

From a compliance perspective, we do raise the issue that, despite some modifications to the enclosure at Moro B, it does continue to restrict light flow and possibly ventilation. This same issue was raised in the IESC's May 2010 report. This is compounded by the fact that the sleeper units are situated within the enclosure so that their windows are facing towards the inside rather than the outside of the unit (which would facilitate the passage of light/air). This design is inconsistent with the rest of the sleeper units on the camp.

The women with whom we spoke at Moro B camp were not provided any formal explanation of the purpose or benefit of reinstating the enclosure over their sleeping quarters. This has led to the perception that the enclosure represents some type of discrimination as the female residents within the enclosure at Moro B are comprised of nationals only (expatriate as well as other national women reside outside the enclosure). As mentioned above, at Kobalu camp, the reported reason for the enclosure is for 'VIP' residents and not for women. The Project's overall approach with respect to the enclosures is not clear.

In the previous two IESC reports, we spelt out measures to enhance the level of participation of women in the Project workforce. This includes measures to be taken at PomTech and the eventual Juni Training Center. During this visit, we were not able to specifically follow-up on this recommendation but plan to do so during the next IESC site visit.

5.16.3 Recommendations

- 1) Conduct a Project wide assessment on the availability of women's accommodations in the Upstream Project Area to help equal opportunities for women's participation in the Project (repeat recommendation).
- 2) Ensure that the enclosures provide adequate light and air flow at the level of non-enclosed sleeping quarters.
- 3) Engage with women (or women/men in the case of Kobalu) living in enclosed quarters at all camps. Explain the Project's motivations for erecting the enclosures and obtain their feedback and perception of their living conditions.
- 4) Enlist competent women, including national women, to assist in conducting a formal security review of the extent and type of security provisions being implemented for women's quarters only (repeat recommendation with modification).
- 5) Ensure that women are included in the panel of experts in charge of mandating security provisions in the Upstream Project Area.
- 6) Adopt specific measures to enhance the level of participation of women in the Project workforce (repeat recommendation).

6 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 managed primarily through the L&CA organization and has been treated in Section 5.7. Project health and safety commitments towards the local communities are part of the ESMP as defined in the Community Health and Safety Management Plan, Company Community Health, Safety and Security Management Plan, and the Community Impact Management Plan. Other requirements for health and safety are contained in documents outside the scope of the ESMP. Three of these documents, the Project Safety Plan, Project Health Plan, and the Journey and Traffic Management Procedure were therefore specified in the LESR to be relevant to demonstrate compliance with Lender Group requirements. In terms of community safety (see Section 5.7), Project traffic has proven to be the most significant adverse impact to communities in many other projects similar to PNG LNG and for that reason was targeted for inclusion within the umbrella of the LESR.

6.1 COMMUNITY AND WORKER HEALTH

6.1.1 Project Strategy

Project health commitments are defined in the Community Health and Safety Management Plan (to be implemented via Contractor Implementation Plans) and the Company Community Health, Safety and Security Management Plan and the Community Impact Management Plan (to be implemented via Contractor Implementation Plans). Health planning specifically for worker health is defined in the Project Health Plan. The over-riding 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 (see Section 5.7).

6.1.2 Observations

The Project Health program is organized into both occupational health as specified in a Project Health Plan and into community health within the requirements of the Community Health & Safety Management Plan. These plans are well developed and appropriate for a Project of the scope of PNG LNG. The Community Health Impact Mitigation Plan (CHIMP) was developed March-April 2009 and is currently being implemented. Since its inception, the community health program has evolved into an Integrated Health and Demographic Surveillance System (iHDSS) that covers the topics of health delivery services, communicable diseases, STIs and HIV/AIDS, and non-communicable diseases in association with the Papua New Guinea Institute of Medical Research (IMR) and implemented through NGOs.

The iHDSS has a major component to take advantage baseline surveys to document the true burden of disease in different geographic regions of the Project and accurately identify impacts on community health that may be induced by the Project. This is accomplished by means of demographic studies including census and household registrations that encompass a wider area than similar studies undertaken by the Land and Community Affairs organization that focuses more on demographics within the Project footprint. Similar studies are being undertaken at control sites that represent similar conditions to the Project, but are in areas that are not affected by the Project. Standard information obtained as part of the demographic studies include consumption/expenditure; assets; food security; housing characteristics; and educational attainment. Health indicators are defined on the basis of morbidity and mortality surveys; non-communicable diseases; fertility/reproductive health; core welfare indicators; and vaccination coverage. To ensure scientific oversight and transparency, an International Science Advisory Board has been created with highly qualified experts from the U.S., Australia and Europe.

Community health services have been targeted for specific health issues associated with different Project area, grouped as the Hides Area, Southern Highlands Province; Northern Logistics Route; Gulf – Kopi/Kikori – Omati Gulf Province; and LNG Plant site and local villages. Services are being provided in association with different NGOs in the different areas and reflect different health needs. For example, the leading cause of death in the Hides area is pneumonia, whereas in the Gulf – Kopi/Kikori – Omati Gulf Province area the leading cause of death is from sepsis (infections).

It should be pointed out that the community health program undertaken by EHL is one of the most comprehensive ever undertaken for a private sector development project. We expect that it is one of the aspects of the Project that will leave behind a positive legacy.

With reference to worker health, the Project health program continues to be very aggressive in terms of having full-time medical staff from International SOS and with the implementation of a comprehensive malaria mitigation program implemented by Mosquito Zone. Most of the work sites visited have clinics with doctor and/or paramedic on-site H24.

At the beginning of construction, one of the most challenging aspects of occupational health was foot problems when PNG workers began to wear protective footwear and severe problems of foot fungus, infections and blisters began to appear. Primarily through worker health awareness programs and tool box sessions, local workers have been educated in proper foot care and boots appropriately sized boots are now available, such that this health issue has nearly disappeared. Outbreaks of gastroenteritis appeared in upstream camps in Q4 2010, but after an aggressive campaign of kitchen inspections there have been no outbreaks since about January 2011. IESC conducted formal inspections of the kitchens at Gobe and the Spiecapag Main Camp 1 (Scraper Station) and found that hygienic practices were being followed.

One of the most significant worker health issues is tuberculosis (TB), which is a national priority in PNG and has been treated by the Project through a comprehensive screening and awareness programs. Diagnosis of infectious TB is not an easy process and additional X-ray equipment has been recently procured. EHL is working to set up a new WHO endorsed method which will allow for more accurate evaluations to determine if a patient has active infectious TB without the need for X-ray equipment. Test equipment has arrived in-country and EHL plans to work with PNG IMR to evaluate its feasibility for use in the field. This evaluation is planned for March 20-21 in Madang. If this testing proves successful, this new equipment has the potential to revolutionize the effectiveness and efficiency with which the Project can address evaluation of potential TB cases in the field without as much need for X-ray capability.

6.1.3 Recommendations

- 1) The community health program currently being undertaken represents the cutting edge of what can be achieved within the framework of a private-sector development project and EHL has the potential for emerging as a world leader in this field. EHL should take care to assure that community health is maintained as a fully integrated program, involving both monitoring and community services.
- 2) Kitchen inspections are being undertaken, but it was not clear to what degree that they are being done systematically by persons specialized in kitchen hygiene. Make sure that kitchen inspections are being done systematically with involvement of medical staff specializing in hygienic practices.
- 3) Examine ways that the Integrated Health and Demographic Surveillance System (iHDSS) and related surveys can be leveraged as a tool for wider resettlement and other SMP monitoring.

6.2 WORKER SAFETY

6.2.1 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.

6.2.2 Observations

Worker safety continues to be a primary focus of EHL and the EPC contractors. Within EHL different organizations have responsibility for various aspects of worker safety. The Safety Group is directly responsible for occupational worker safety and maintains accident statistics that demonstrate good Project performance. Safety statistics as of January 2011 presented by EHL, in particular the occurrence of only two Lost Time Incidents (LTI) after more than 15.9 million man-hours and a low Total Recordable Incident Rate (TRIR) of 0.67, demonstrate the overall concern for safety and represent continual improvement since the last IESC trip in October 2010. A positive indication of the success of the overall safety program is that the TRIR has continued a downward trend since the last IESC field visit.

Based on field observations, good use of personal protective equipment (PPE) was observed. The IESC also attended several early morning toolbox meeting where safety was observed to be a primary topic where lessons learned at work sites were reviewed with the workforce. EHL is making the effort to take the lessons learned from the Early Works contractors and make that information available for the EPC contractors tasked with the main construction. The Project continues to stress core safety processes (e.g., Job Safety Analysis, Personal Risk Assessment, and Observation and Interaction) to address safety issues, in particular an observed increase in hand-related incidents. Safety is also managed through the application of security protocols and countermeasures to address the local environment.

6.2.3 Recommendation

- 1) Extend the umbrella of worker safety to the third-party facilities and activities identified as requiring stewardship. Safety should be one of the most important aspects of this stewardship (repeat recommendation).

7 CULTURAL HERITAGE

7.1 PROJECT STRATEGY

Cultural heritage refers to tangible forms of cultural heritage, such as tangible property and sites having archaeological (prehistoric), palaeontological, 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;
- 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 is provided along with a Salvage Plan designed to provide guidance for reporting and excavating finds.

7.2 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.

The status of EHL's cultural heritage management report was summarized in a first Annual Report dated February 2011 prepared for the PNG National Museum and Art Gallery (Museum) to advise the cultural heritage findings made to develop the Project. This annual cultural heritage summary report was prepared to satisfy formal reporting requirements of cultural heritage to the Museum under the National Cultural Property (Preservation) Act 1965 and covers activities undertaken since early 2009 through all of 2010. This report documents that a total of 1,648 cultural heritage sites have been identified in the Project area during through the end of 2010.

Ongoing archaeological activities at the time of the site visit continue to be related mainly to pre-construction surveys and the management of chance finds. The preconstruction surveys are currently focused at the following locations:

- the Hides well pads and well pad access roads surveys on Hides Ridge;
- pipeline ROW primarily focused on sections of the route between the Lake Kutubu region and Hides; and
- other early works infrastructure and access sites as may be required to support construction.

The preconstruction surveys for the Hides well pads and access roads are expected to be complete by December 2011. Preconstruction surveys for the ROW are expected to be complete by mid-2011.

Although the in-field component of both the HGCP site and LNG Facilities site salvage programs has been completed, the analysis of salvaged materials and the assessment of data from these programs are ongoing. Reports of these programs are due for completion in the last quarter of 2011 and the first quarter of 2012 respectively.

As the Project progresses, chance finds are expected to represent the main field component of the Project's cultural heritage program. During this visit, MCJV reported on the chance finds currently being made at the Komo airfield and along the Heavy Haul Road. MCJV has trained archaeological spotters to identify artifacts, bone remains, fossilized materials, etc. that may have a relationship to human culture. As of March 2011, 58 chance finds were recorded within the vicinity of the construction footprint. These chance finds include both archaeological sites (stone/wooden artifacts, burials, skeletal remains, etc.) and oral tradition sites (legends, myths, folklores that are tied down to a landscape). Artifacts including 36 stone tools and 9 sacred spirit stones are planned to be turned over to the National Museum.

The cultural resource management programs undertaken by CCJV along the Southern Logistics Route and by Spiecapag along the pipeline ROW were reviewed in the field. In both cases sacred sites had been identified that were respected, in some cases causing re-routings to be made.

7.3 RECOMMENDATIONS

- 1) Consider identifying places where local populations could view artifacts uncovered in their communities after construction is complete, but before they have final curation at the National Museum.

APPENDIX A

IESC 3RD MONITORING VISIT – TRIP SUMMARY AND DOCUMENTS PROVIDED

TRIP SUMMARY***March 2:***

IESC Environmental Team - EHL Offices in Brisbane:

- Update on status of Waste management;
- MOC- Status and review (including LESR Lender reporting process);
- Spill Prevention & Response;
- Summary of Non Conformance and Incidents;
- Fibre Optic Cable - Status Update.

IESC Social team - Port Moresby:

- Government Interface re. Seed Payments;
- Other meetings.

March 3:

IESC Environmental Team – Travel from Brisbane to Port Moresby and review of pre-read material.

IESC Social Team:

- Visit Cashew Outgrower Program, Rigo District;
- Plant Site villages: meeting with village representatives as per October trip.

March 4:

IESC Environment and Social team - Port Moresby:

Presentation on:

- Construction update and overview;
- Resources and Organization;
- Contractor Management Progress (Social);
- Contractor Management Progress (E&R);
- Update on plans & implementation, including E&R interface;
- National Content Update;
- Associated Facilities;
- Stakeholder Engagement;
- L&CA - Grievance Procedure;
- Health Program.

March 5:

IESC Environment and Social team - Port Moresby:

- Community Development Support;
- Resettlement Progress & Plans;
- Project Induced In-Migration Action Plans – Status;
- Transfer Visit to Moro.

March 6:

IESC Environmental & Social Team – transfer to Nogoli:

- Environmental & Social: visit Juni Training Facility;
- Environmental & Social: visit to MCJV TB1 quarry;

- Social: visit to Kopeanda Landfill site and discussions with re-settlers (Anton Kaile);
- Presentation on Well Pad A issues;
- Presentation on Sidecasting.

March 7:

IESC Environmental & Social Team – Highlands:

Environmental:

- Visit to C1/EPC4 HGCP Site;
- Visit to Hides Quarry Road;
- Visit to: Wellpad A, C1 main camp site, Tokaju camp.

Social:

- Building & laydown site visit - discussion with workers regarding training, house building and community infrastructure;
- Meeting with HQR households;
- HGCP re-settlers meeting- Lake Mabuli temporary water structure/community meeting place;
- Discussion with Lake Mabuli Women's Group and inspection of community nursery.

March 8:

IESC Environmental & Social Team – Highlands:

Environmental:

- Visit to: QA1 and QA2 quarry sites, Akara Creek, Tigari river, CCJV maintenance area at Nogoli.

Social Team:

- Resettlement Planning meeting QA1 Committee Meeting;
- Mini workshop with resettlement team;
- Borealis presentation and discussions with resettlement team.

Environmental & Social:

- Discussions on Non Conformances and Recommendations: Status Update.

March 9:

IESC Environmental & Social Team – Transfer to Komo:

Environmental:

- EPC5B Komo: Pioneer camp and main camp general inspection and data collection;
- Heavy Haul Rd; lay-down area, reinstatement nursery.

Social:

- On-site inspection of community footpath at southern end of airstrip and interaction with resettled households;
- Visit to Komo Nursery, Open House/Community Discussion on agricultural livelihoods;
- Meet with HHR 1D Committee;
- Meeting with HHR Section 2 Trade Store operators.

March 10:

IESC Environmental & Social Team – Transfer to Kantobo:

- Fly-over OSL sidecast areas;
- Visit to Kantobo camp;
- Drive through Kantobo – Mubi Road with visits at Mubi road sites North and South, C1 Mubi Laydown area, C1 Mubi Quarry West Site.

March 11:

IESC Environmental & Social Team – Transfer to Gobe:

- Tour of Gobe camp;
- Visit to OSL landfill;
- Documentation review and meetings with Project personnel.

March 12:

IESC Environmental & Social Team – Transfer from Gobe to Kopi and visits to:

- Kikori river Bridge;
- EPC5A Kaia Site and Pipeline ROW;
- EPC5A Kopi Scraper Station Main Camp Site;
- RoW from KP 266 towards Omati river crossing;
- EPC5A Kopi Shore Base Site.

March 13:

IESC Environmental & Social Team – Kopi:

- Visit to C1 CPF by Pass and Ridge Camp by Pass Sites;
- Transfer to Moro and visits to Daware proposed camp location and Sukubira potential quarry site;
- Documentation review and meetings with Project personnel.

March 14:

IESC Environmental & Social Team – transfer to Port Moresby:

- Visit to the LNG site: site tour and camps;
- Documentation review and meetings with Project personnel.

March 15:

IESC Environmental & Social Team – Port Moresby:

Presentations on:

- Camp Management;
- Update on plans and implementation including open camps (EPC3) and accommodation space requirements;
- Information Management System update and demonstration of representative modules;
- Fisheries Presentations/discussions;
- Omati fisheries;
- Omati dredging;
- Offshore trench modelling;

- Onshore freshwater ecology;
- Fibre Optic Cable.

March 16:

IESC Environmental & Social Team – Port Moresby:

Presentations on:

- Follow-up on Fisheries;
- Invasive species and Quarantine Management;
- Borealis;
- Stream 1. (11.30-12.00) Remote Sensing program;
- Presentations/Discussions -Biodiversity/ Offset Delivery Plan/Milestone Schedules # 15 & 16.

March 17:

Close-out meeting preparation.

March 18:

IESC Environmental & Social Team – Port Moresby:

- Close out Meeting;
- IESC departure.

DOCUMENTATION RECEIVED**On-site documents:***PRESENTATIONS:*

- *Incident & Non Conformance Summary* - ppt presentation;
- *Spill Prevention & Response* - ppt presentation;
- *PNG LNG Project Telecommunication Scope Change IESC Review* - ppt presentation;
- *PNG LNG Project MOC log – table dated 2011.01.31;*
- *Stakeholder Engagement Overview and Update* - ppt presentation;
- *Associated facilities Update* – ppt presentation;
- *National Content 2010 End of year Q4 Accomplishments* – ppt presentation;
- *Grievance Management Process* – ppt presentation;
- *Lenders – Security Report* – ppt presentation;
- *Socio – Economic, Land & Community Affairs Update* – ppt presentation;
- *Implementation of Project Social Management Plans* – ppt presentation;
- *Poster project Construction* – map
- *Community Development Support* – ppt presentation;
- *Resettlement Progress & Plans* – ppt presentation;
- *Project Induced in-migration Update* – ppt presentation;
- *SHP (mendi) Advocacy Program* – ppt presentation dated 23.02.2011;
- *Upstream Infrastructure Progress Update* – ppt presentation dated Feb 2011;
- *C1 Infrastructure Progress Photos Kaiam & Gobe – Mubi – Kantobo Road* – ppt presentation dated 05.03.2011;
- *Waste Management – It Al Counts* – ppt presentation;
- *Self Review of OIMS System 6-1 (Environmental Management) Rev 4.2* – ppt presentation;

- *Sidecasting and Spoil Management – Hides* – ppt presentation dated 06.03.2011;
- *Daware Site Overview D'Appolonia Visit* – ppt presentation dated 13.11.2011;
- *Land and Communities Affairs National Fisheries Team Update* – ppt presentation dated 15.03.2011;
- *Caution Bay Spoil Modelling – Pipeline Trenching & Backfilling* – ref doc. 15.03.2011;
- *D'Appolonia Assessment, Port Moresby* – ppt presentation dated 15.03.2011;
- *Fibre Optic Cable – Environmental Baseline Data & Company / Contractor Obligations* – ppt presentation dated 15.03.2011;
- *Freshwater Ecology Monitoring* – ppt presentation dated 15.03.2011;
- *Omati River Dredging – Preconstruction Survey* – ppt presentation dated 15.3.2011;
- *Omati River - traffic and Resource Use Survey* – ppt presentation dated 15.3.2011;
- *Caution Bay Mangroves* – ppt presentation dated 16.03.2011;
- *Caution bay Marine Ecology* – ppt presentation dated 16.03.2011;
- *Water Quality and Sedimentation* – ppt presentation dated 16.03.2011;
- *Lake Kutubu Conservation Program* – ppt presentation;
- *Biodiversity Strategy* – ppt presentation dated January 2011;
- *Environmental Cold – Eyes Review (CER)* – ppt presentation dated 11.12.2010;
- *Quarantine Management Program* – ppt presentation dated 16.03.2011;
- *SELCA and E&R Information Management System (IMS)* – March 2011;

ENVIRONMENTAL MATERIAL:

- *Third party Waste facility Inspection* – doc;
- *Waste Management Spreadsheet* – xls file;
- *Water Discharge Result Summary* – xls file;
- *Waste Management Photos: Construction Phase* – ref. doc.RPGGP – EH-SPZZZ – 000003 Rev. B RB PIC;
- *Waste management Review* – ref.doc. PGGP – EH-SRZZZ-000003;
- *Wastes Monthly Statistic Summary Tables* – xls file;
- *Waste record – Gobi* – xls file;
- *Waste record - Hides* – xls file;
- *Waste record – Kantobo Camp* – xls file;
- *Email describing discrepancies*;
- *Waste water monitoring Records – Kantobo* – xls file;
- *Waste water records - Gobe* – xls file;
- *Well pad A Waste water Monitoring Records – Hides* – xls file;
- *HGCP to Hides Quarries Road Pre – Construction Survey Results and mitigation Measures* – ref. doc. PGHU – EN – SRZZZ – 420040;
- *Consolidated Waste Control Activity Control Activity Monthly Report* – xls file dated January 2011;
- *WWT Discharge Water Quality Monitoring Report for the Month of January 2011*;
- *Water Use Summary for the Month of January 2011* – xls file;
- *Disturbed Area Map* – ref doc dated 31.01.2011;
- *Disturbed Area Photo* – ref doc. dated January 2011;
- *Contractors Monthly Construction Environmental Report* – ref doc. dated February 2011;
- *Approval of Access Road to Quarry*;
- *Caution bay Burial Modeling – PGLN-EN-JRZZZ-960050* – ref doc dated February 2011;
- *Chance Finds Report Form* – ref doc dated 16.02.2011;

- *Environmental Coordinators Committee Monthly meeting* – ref. doc. February 2011;
- *Environmental Monthly target for the month of February 2011*;
- *Contractor's Environmental Management Plan* – document transmittal;
- *CJJV Environmental Department Organizational Chart*;
- *Environmental Policy Statement*;
- *Certificate of Completion* – ref doc dated 27.01.2011;
- *Construction Environmental Management Plan Temporary Fuel Storage Tank Guidelines* – ref. doc 16.02.2011;
- *Leighton Quarry Environmental Permit*;
- *Marine Sedimentation and Water Quality Data Report – Caution Bay* – ref. doc. PGLN-EN-JRZZZ.960051;
- *Lake Kutubu WMA* – map;
- *Lake Kutubu Catchment Management Plan* – ref. doc. dated 30.11.2008;
- *Quarantine Risk Assessment Charter* – ref. doc. dated march 2011;
- *Monitoring tropical forest impacts using remote sensing* – ref. doc. edit by Firescape Science;
- *PNG LNG Project: Benchmarking for Biodiversity - Field Guidelines (for Coffey Environments)* – ref doc. dated February 2011;
- *PNG LNG Project: Benchmarking for Biodiversity - Field Guidelines (for Coffey Environments)* – ref doc. dated October 2010;
- *Biodiversity Strategy* – ref doc n. PGGP-EH-SSZZZ-000003;
- *Scope of Work: capture of pre-disturbance baseline* – ref. doc. CR 1284_84_v1 dated February 2011;
- *Environmental Patrol Report with CJJV and Subcontractors* – ref. doc. dated February 2011;
- *Caution Bay Pipeline Burial Modeling* – ref. doc. PGLN-EN-JRZZZ-960050 dated February 2011;
- *Hydrology and Scouring Study Omati River* – ref. doc. PGHU-SA-YRPPL-700006;
- *Omati River Sedimentation Baseline Study* – ref doc dated June 2010;
- *Coral and Fish (CF) Sites* – map dated 27.06.2010;
- *Environmental Monthly Report No.14*– ref. doc PGHU-SC-BRZZZ-000014 dated 21.02.2011.

OTHER DOCUMENTS:

- *Archaeological Site Verification Summary Report* – ref. doc. PGHU-SRZZZ-400006;
- *Proposed Landfill General Arrangement, Earthworks and Lining* – ref. doc. PGLN-YK-SDLAY-901100;
- *Cultural heritage Annual Report* – ref. doc. EHL – PM-GN6-2011-01416;
- *EPC4 Temporary Camp plan* – xls file dated Feb 2011;
- *Upstream Weekly Report – as of Week Ending 25.02.2011*;
- *Follow-up – Notification of Environmental Incidents* – letter dated 24.02.2011;
- *EMDC Projects Incident Report Form P020*;
- *PNG LNG Incident Register Environment 2009-2010* – xls file;
- *PNG LNG Master Proj. FO NC Reg 07032011* – xls file;
- *TapRoot Investigation Report Mud Slide Incident* - doc dated 13.11.2010;
- *Incident notification – Well pad A protest and breach of facility security by Landowners on 21 January 2011* – doc dated 28.01.2011;
- *Heliped Refuelling* – pictures;
- *Kobalu Registers*;

- *Verification Noise Monitoring;*
- *Pre Clearance Environmental Checklist - EPCB Komo Airport – doc. Record No. PCE091;*
- *Water Quality Field Kit – Optional Equipment List – xls file;*
- *Chance Finds (Artifacts) Summary Report – doc dated 08.03.2011;*
- *PNG LNG EPC – 5B PROJECT – Organisation Chart Environmental – rev. 6 dated 21.02.2011;*
- *PNG LNG Project Drawing Type;*
- *Monthly Noise Monitoring Results – xls file;*
- *Earthworks – Topsoil Stockpiling & Spoil Areas – ref doc. PGHU – MC – CDDet – 420001;*
- *Laboratory Report Cover Sheet – doc. dated 23.02.2011;*
- *Laboratory Report Cover Sheet – doc. dated 15.03.2011;*
- *Laboratory Report Cover Sheet – doc. dated 09.03.2011;*
- *Water Quality Summary table;*
- *C1 Camp Layout – map;*
- *Status of CCJV Plans – xls file;*
- *Chain of Custody Form Cultural Heritage Artefacts – ref. doc. dated 25.10.2010;*
- *Monthly Status Report – ref. doc. PGHU – CJ –BRKPI – 000001 dated 07.03.2011;*
- *Road Bridge Register – C1 – xls file dated 20.02.2011;*
- *Spoil Dump Site Assessment – Hides – Doc. dated 09.12.2010;*
- *Spoil Dump Site Assessment – Hides – Doc. dated 13.12.2010;*
- *Spoil Dump Site Assessment – Hides – Doc. dated 15.12.2010;*
- *Hides SpineLine Road Sinkholes – map;*
- *Environmental Control Procedure for Waste Management – ref. doc. PGHU – CJ-SPZZZ-000008;*
- *Email describing ash mng't gobe - email doc;*
- *Induced Access Register – xls file.*

Post-mission documents:

- *Omati Fishing Gear survey;*
- *OMati Household Survey;*
- *Omati Local Vessel Survey;*
- *Omati Subsistence Fishing Survey Women;*
- *Omati Subsistence Fishing Survey Men;*
- *Omati TEK Survey;*
- *Omati waterway traffic Survey;*
- *Catch Landings Survey: Giudelines for completing the Questionnaire;*
- *Survey Form;*
- *Catch Landings Survey Questionnaire Sheet 2;*
- *Fisheries Catch Landing Survey undertaken by UPNG for PNG LNG Project: Monthly Progress Report Contract No. C1606-0044;*
- *Upng Catch Landings Survey Quarterly Report;*
- *Strategy for Sampling, identification and Mapping of potential Dieback Area – ref. doc. PGHU-SC-SRZZZ-000022 rev 2 dated 15.12.2011;*
- *Quarries IN THE epc-3 Area;*
- *Induced Access & the Onshore Pipelines – ref. doc. dated March 2011;*
- *Pre-construction Survey Progress Update – Hides Spine-Line (C1) and Pipeline ROW (EPC5A) – ppt presentation dated 17.03.2011.*