PNG LNG Quarterly Environmental and Social Report

First Quarter 2011

PNG LNG

Energy for the World. Opportunity for Papua New Guinea.
Eneji Bilong Wol. Luksave Bilong Papua Niugini.

Printed on 100% post-consumer recycled paper.

Corporate Separateness Notice: Nothing in this material is intended to override the corporate separateness of local entities. Working relationships discussed in this material do not necessarily represent a reporting connection, but may reflect a functional guidance, stewardship, or service relationship. Where shareholder consideration of a local entity matter is contemplated by this material, responsibility for action remains with the local entity. The terms corporation, company, affiliate, ExxonMobil, Exxon, Mobil, Esso, our, we and its, as used in this material may refer to Exxon Mobil Corporation, to one of its divisions, or to the companies affiliated with Exxon Mobil Corporation, or to any one or more of the foregoing. The shorter terms are used merely for convenience and simplicity.

While this Report uses US English; document titles, institutions and legislation use exact titles, which may include variations of English, depending on the country of origin. In addition, all units of measure published in this Report are metric units.

For the purposes of this Report, the currency conversion rate used, between Papua New Guinea Kina (Kina) and United States Dollars (US$) is 0.3895 [1 Kina = US$0.3895]. This rate is as published by the Bank of Papua New Guinea at March 31, 2011.

PNG LNG

About This Report

The Papua New Guinea Liquefied Natural Gas Quarterly Environmental and Social Report – First Quarter 2011, reports on the Project's recent construction, safety, health, environment and social management activities.

This Report demonstrates the progress made each quarter and is a commitment by the Project to ensure the citizens of Papua New Guinea, interested non-government organizations and other stakeholders are kept well informed.

This Report is published on the Project website, www.pnglng.com. Printed copies are also available.

Contents

First foundation poured for the PNG LNG Plant

"Following site preparations and road and infrastructure development over the past year, pouring the first foundation for the LNG Plant represents a significant milestone in the PNG LNG Project's partnership with Papua New Guinea."

Decie Autin, Project Executive, Esso Highlands Limited

The Papua New Guinea Liquefied Natural Gas (PNG LNG) Project (Project) celebrated two key milestones in the first quarter of 2011 with a ground-breaking ceremony for the construction of the process trains and the first concrete foundation poured for the LNG Plant, which will be a key Project facility.

Process area ground-breaking ceremony

Esso Highlands Limited, a subsidiary of Exxon Mobil Corporation, is constructing and will operate the Project on behalf of co-venturers: Oil Search Limited, National Petroleum Company PNG Limited, Santos Limited, JX Nippon Oil and Gas Exploration Corporation, Mineral Resources Development Company Limited and Eda Oil Limited, and their affiliates.

This is the fifth PNG LNG Quarterly Environmental and Social Report demonstrating how Esso Highlands Limited, as operator of the Project, is delivering on commitments in the areas of safety, health, environment and social management.

Pre-construction activities

Pre-construction survey work along the onshore pipeline Right of Way continues, with approximately 67 percent of the 292-kilometre main pipeline route surveyed so far. By mid-February, onshore pipeline pre-construction surveys identified 68 cultural heritage sites requiring avoidance or protection.

The Project's Management team is working with social and cultural specialists to avoid or mitigate construction impacts in these areas.

67% of the 292-kilometre main pipeline route has been surveyed

Construction

As the LNG Plant and other key Project sites move into the heavy construction phase, contractors are scaling up their mobilization into Papua New Guinea. Infrastructure improvements and upgrades, including road and bridge works and the installation of construction camps continued. Meanwhile, the Upstream Infrastructure contractor achieved a safety milestone with five million hours worked without a Lost Time Incident. In recognition, they received the Annual Project Executive Safety, Security, Health and Environment (SSHE) Award for excellence in worker involvement in safety, effective subcontractor management and collaboration and teamwork.

Decie Autin, Project Executive, Esso Highlands Limited, presenting the Annual Project Executive SSHE Award to the Upstream Infrastructure contractor

Table 1 – Contracts and construction highlights

Contract	Contractor	Major Activities During the First Quarter 2011
Upstream Infrastructure (C1)	Clough Curtain Brothers Joint Venture	Bridge repair and strengthening works completed. Bulk earthworks for the Hides Gas Conditioning Plant diesel refueling area completed. Completion and opening to traffic of the Kikori River Bridge. Completion of the new section of road from Kantobo to the Mubi River.
LNG Plant Early Works (C2)	Curtain Brothers Papua New Guinea Limited	Bulk earthworks and culvert extensions completed for the road that connects Motukea Island and the LNG plant site.
Offshore Pipeline (EPC2)	Saipem	The subcontract for line pipe transportation from the coating facility to site awarded. Fishery and community engagement reports finalized for submission to the Papua New Guinean Department of Environment and Conservation.
LNG Plant and Marine Facilities (EPC3)	Chiyoda and JGC Corporation	Ground-breaking ceremony marking handover of the process area to the subcontractor for construction of the process trains. First concrete foundation poured for the pipe rack in Process Train 1. Completion of jetty pile testing. The LNG tanks model review completed. Manufacture of the nine percent nickel steel plate required for the inner membrane of the LNG tanks completed. Factory acceptance testing for the first Gas Turbine Generator successfully completed.
Hides Gas Conditioning Plant and Hides Wellpads (EPC4)	CBI Clough Joint Venture	Factory acceptance testing of mainline gas compression packages and gas turbine power generation packages completed.
Onshore Pipeline (EPC5A)	SpieCapag	Factory acceptance testing of all mainline manual and actuated valves completed. The main construction camp at Kopi became operational.
Komo Airfield (EPC5B)	McConnell Dowell and Consolidated Contractor Group Offshore	Phases 1 and 2 of the Main Camp completed, providing an additional 140 beds. Agreement reached with a local Landowner Company to construct a footpath around the airfield perimeter improving community travel and access.
Associated Gas Development	Various	Fabrication of the replacement offloading buoy progressed. The labor and construction management contract awarded for the refurbishment of the Kumul Marine Terminal.
Drilling (new wells and workovers)	Nabors Drilling International Limited	The contracts for directional drilling, measurement while drilling, logging while drilling, formation evaluation, perforating, liner hangers and communications awarded.

Safety, health and security

There are risks associated with any project involving multiple worksites and heavy machinery. These risks are greater in areas of rugged and remote terrain. The Project had a fatality this quarter when an Onshore Pipeline contractor crew member, who was clearing the pipeline Right of Way, died from injuries sustained in a tree felling accident near Gobe. We extend our deepest sympathies to the family and friends of the crew member. Relevant authorities were immediately notified and an investigation into this incident was undertaken by the Project.

In a separate event in the Southern Highlands Province, several subcontractors were injured while traveling in a contractor's helicopter. They received appropriate medical care and Papua New Guinean authorities are investigating the incident.

During this quarter, in support of worker health, the Project launched a 'Stay Fit and Well, Prevent Tuberculosis' campaign involving workforce awareness and monitoring and a treatment referral program in support of World Tuberculosis Day on March 24.

Another Health team initiative involved stop work meetings, known as health stand-downs, across the Project to emphasize malaria risks and prevention in response to new malaria cases being reported.

In addition, the Project is implementing integrated vector control programs and improving tuberculosis pre-employment medical screening procedures to enable better detection of latent tuberculosis cases.

The safety and security of the Project workforce and surrounding communities remains a priority. The Project's security strategy is directed towards developing lasting, constructive relationships with communities impacted by Project operations, and encouraging landowners and communities to use the formal process established for addressing any grievances. The Project welcomes steps taken by local community leaders and the Papua New Guinean Government to improve law and order through an increased police presence and promoting the development of local business associated with the Project.

There was an incursion during the quarter involving approximately 150 people at the Wellpad A Camp. It resulted in non-life threatening injuries to three Project workers, the relocation of non-essential personnel and operations being suspended for worker safety reasons. The cause of the incursion is subject to an investigation. Early findings indicate that the cause is not Project related. The Project's Security team has reviewed and refined facility and camp designs and related security programs.

Social development

The Project continues to invest heavily in promoting economic growth and creating positive impacts for communities within the Project Impact Area. For example, this quarter, 24 health education scholarships were awarded to students from the Southern Highlands, Gulf Province and Central Province through a partnership with Divine Word University and the non-government organization, Population Services International.

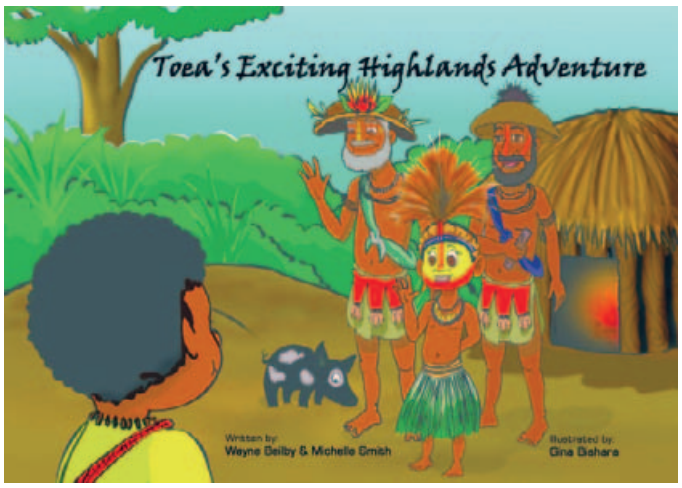
In addition, school packs containing much needed materials for the school year were distributed to more than 22,500 children. This coincided with the launch of the Kastom Stori/ Sene Gori Competition, which encourages school-aged children to learn from their elders about Papua New Guinea's traditions and culture.

22,500
school packs distributed to children

Distribution of the first two books in the 'Toea' children's book series to all 82 elementary schools in the Project Impact Area also continued. The books follow the adventures of a young character who travels to different areas within Papua New Guinea and develops a cultural understanding of the people. The books are endorsed by the National Education Department and aim to provide quality reading materials to elementary school-aged children.

Recognizing that agriculture is a major component of the livelihoods of Papua New Guinea's rural communities, the Project is supporting the development of agriculture-based ventures, with projects underway in Hides, Omati and at the LNG plant site. These ventures seek to promote economic development in rural areas by supporting communities in producing fresh produce, establishing cashew orchards and helping women in the Kikori area form a company to supply goods such as seedlings.

Preparing school packs for distribution



The second book in the 'Toea' series

Large construction projects can directly lead to an influx of people who perceive that there may be economic and employment opportunities and access to improved community services or family security. There has been a rise in speculative developments, including houses and gardens, appearing after the completion of a census in a Project Impact Area. In its community communications, the Socioeconomic team is continuing to highlight the cut-off dates after which new structures are ineligible for compensation.

Another important initiative involves supporting villages in the LNG plant site area to develop their own community based in-migration plans to help manage the migration of people who may be attracted to the area.

Developing Papua New Guinean businesses

Through a focus on local skills development, empowerment and ownership, the Project can leave a lasting legacy that benefits future generations.

The Enterprise Centre continues working with local business in a range of practical ways to help them identify and compete for Project-related opportunities and develop their business skills. Demand for Enterprise Centre training is growing rapidly with more than 600 days of training provided to approximately 250 participants from Papua New Guinean businesses during this quarter. This is an increase of 275 days over the previous quarter's total. The Centre's capability is growing in line with the needs of local businesses, with business advisory services expanded to the four LNG plant site villages during this quarter.

Purchasing local goods and services is also helping increase local suppliers' capability to meet global standards. During this quarter, over 475 million Kina (US$185 million) was spent on Papua New Guinean goods and services, bringing the in-country Project spend-to-date to more than two billion Kina (US$779 million). This investment largely relates to the early infrastructure development program, the onshore pipeline and infrastructure activities, construction of the Komo Airfield, early works at the LNG plant site, and ongoing logistics and aviation spend.

Project contractors are also supporting Landowner Companies with Project-related spend on these companies exceeding 280 million Kina (US$110 million) to date.

Workforce development

More than 5,300 Papua New Guinean citizens employed representing 75% of the Project workforce

The Project is scaling up workforce development, training and health initiatives in line with its rapidly growing workforce. By the end of March, more than 7,000 people were employed on Project activities. More than 5,300 Project workers are Papua New Guinean citizens, representing 75 percent of the Project workforce.

Graduate engineers undertaking an 18-month development program

The Project is meeting the need for qualified construction workers and maximizing employment opportunities for Papua New Guinean citizens by providing training facilities at several in-country locations. So far, the Project and its contractors have provided more than 80 courses comprising over 1,500 sessions, attended by more than 5,000 Papua New Guineans.

Environmental performance

By carefully managing natural resources such as water, timber, quarry materials and soils, the Project is demonstrating its environmental commitments. Topsoil management is important, because it preserves the bank of seeds and enables natural regeneration from plant material contained within soil, which is critical to successful reinstatement. Quarry 266, near Omati, which was a pre-existing borrow pit used to supply fill material for the Kopi Scraper Station Camp, was reinstated during the quarter using topsoil that had been appropriately stored and managed.

Papua New Guinea's terrain, climatic conditions and the inherent nature of its soil combine to make erosion and sediment control a significant challenge for the Project, requiring ongoing monitoring and vigilance. The inspection and assessment of erosion and sediment control devices is incorporated into contractors' verification assessments and forms part of toolbox talks and environmental awareness training. Lessons learned by a designated team who reviewed and maintained erosion and sediment control measures on the Gobe to Mubi River Road were also extended to other Project areas and the Onshore Pipeline contractor.

In addition, a Project-wide waste management review identified key waste generation and management activities and their corresponding challenges. A greater focus on waste is reducing reliance on other organizations for waste support and increasing self-sufficiency at Project worksites.

Substantial quantities of materials are being imported for the construction of the LNG Plant, pipelines and other facilities. By reporting cargo movements to Papua New Guinea's National Agriculture Quarantine and Inspection Authority (NAQIA) ahead of the required 90-day notice period, the Project is helping identify any higher risk shipments and any specific NAQIA directions before cargo leaves its port of origin.

To facilitate a consistent approach, and assist the NAQIA wherever possible, contractors are also sharing information about meeting compliance requirements, particularly in unique situations such as clearance of coated pipe while at sea.

Grey Goshawk *Accipiter novaehollandiae* found in the Project Impact Area

Stakeholder and community engagement

The Project's community engagement focus has shifted from providing general information about the Project to assessing the information needs of communities and providing more tailored programs for individual villages. Communities continue to express appreciation for Project teams who visit remote villages to consult with them, share information or work together towards community development objectives.

A Safety Awareness Program focused primarily on traffic and road safety and construction site safety has been deployed across the full Project Impact Area. This quarter was the first time the Program targeted schools and communities along the pipeline.

In addition, a PNG LNG Plant Site newsletter was launched covering local interests, concerns raised in community meetings and upcoming contractor schedules. A total of 1,600 newsletters were distributed to churches, schools and community organizations across the four LNG plant site villages. Due to community interest, the print run will be increased to 2,500 for the April 2011 edition.

1,600 copies of the first PNG LNG Plant Site newsletter distributed

Addressing community concerns remains a high priority for Project and contractor teams. During the quarter, a review of the Community Grievance Procedure was conducted as part of the Project's continuous improvement process. A grievance coordinator position was also established to ensure that the Project grievance process reflects best practice, including the timely close-out of grievances. By the end of March a concerted effort reduced the number of open grievances by almost 75 percent.

The Project continues working with Government agencies such as the Department of Works, so materials and equipment for construction activities are efficiently mobilized. For example, the Highlands Highway is vital for the movement of people and goods between the Highlands region and the coast including materials and people for the Project.

This quarter the Project presented a detailed engineering study of the Highlands Highway to the Papua New Guinean Government's Department of Works. The resulting report will help the Government implement short- and long-term maintenance and upgrading to meet forecast needs.

Land access is also critical for Project activities. Resettlement and land access compensation activities continued during this quarter with particular emphasis on the Heavy Haul Road, Kopeanda Landfill site, Wellpad Access Road, Komo Airfield, Hides Gas Conditioning Plant, Hides Quarry 1 and Hides Quarry 3 and the southern portions of the pipeline. The Project has negotiated and executed most of the In-Principle Compensation Agreements, which are a step in the process for obtaining land access, with 82 In-Principle Compensation Agreements signed by clan representatives and Project management.

Official presentation of the Highlands Highway repair and maintenance upgrade report

The Project aims to minimize the need for resettlement where possible and to conduct necessary resettlement activities in accordance with international best practice as defined by the International Finance Corporation social safeguard policies and Papua New Guinean laws.

The Project is entering an exciting and challenging period of activity in 2011 as both the complexity of construction activity and the number of workers involved rapidly increase. Regardless of this, protecting worker and community health and safety, preserving Papua New Guinea's environment and cultural heritage and working constructively with communities will remain fundamental to all Project activities.

1 Introduction

The PNG LNG Project is entering its second year of construction. This Quarterly Environmental and Social Report is the fifth in a series of quarterly reports, providing updates on construction activities and the safety, health, environmental and social management aspects of the Project.

Publishing this information demonstrates the Project's commitment to transparency and keeping Papua New Guinean citizens, interested non-government organizations and other stakeholders well informed about the Project as it progresses.

This Report is available on the Project website at www.pnglng.com. Printed reports and translated summaries are also distributed to make information available to Papua New Guinean citizens who may have limited access to the internet.

The Project involves the development of gas production and processing facilities in the Southern Highlands and Western Provinces of Papua New Guinea. It incorporates liquefaction and storage facilities (located northwest of Port Moresby on the Gulf of Papua) with a capacity of 6.6 million tonnes per annum. More than 700 kilometres of pipelines will connect the facilities. The investment for the Project's initial phase, excluding shipping costs, is estimated at US$15 billion. Over the life of the Project, it is expected that over 250 billion cubic metres of gas will be produced and sold. This will provide a long-term supply of LNG to customers in the Asia region including: Chinese Petroleum Corporation, Taiwan; Osaka Gas Company Limited; The Tokyo Electric Power Company Inc.; and China Petroleum and Chemical Corporation (Sinopec).

The Project will progress in development phases, with the first LNG deliveries scheduled to begin in 2014. The location and elements of the Project are illustrated in Figure 1.1. *Appendix 1* details how the contracts for Phase I of the Project are divided.

Plate 1.1 – Process area ground-breaking ceremony

Figure 1.1 – Project elements

Kopi Shore Base | LNG Plant | Juha Production Facility | Gobe Production Facility

Juni Training Facility | Offshore Pipeline Install | HGCP Site | Agogo Production Facility

Komo Airfield | Moro Airfield | Kumul Terminal | Kutubu Processing Facility

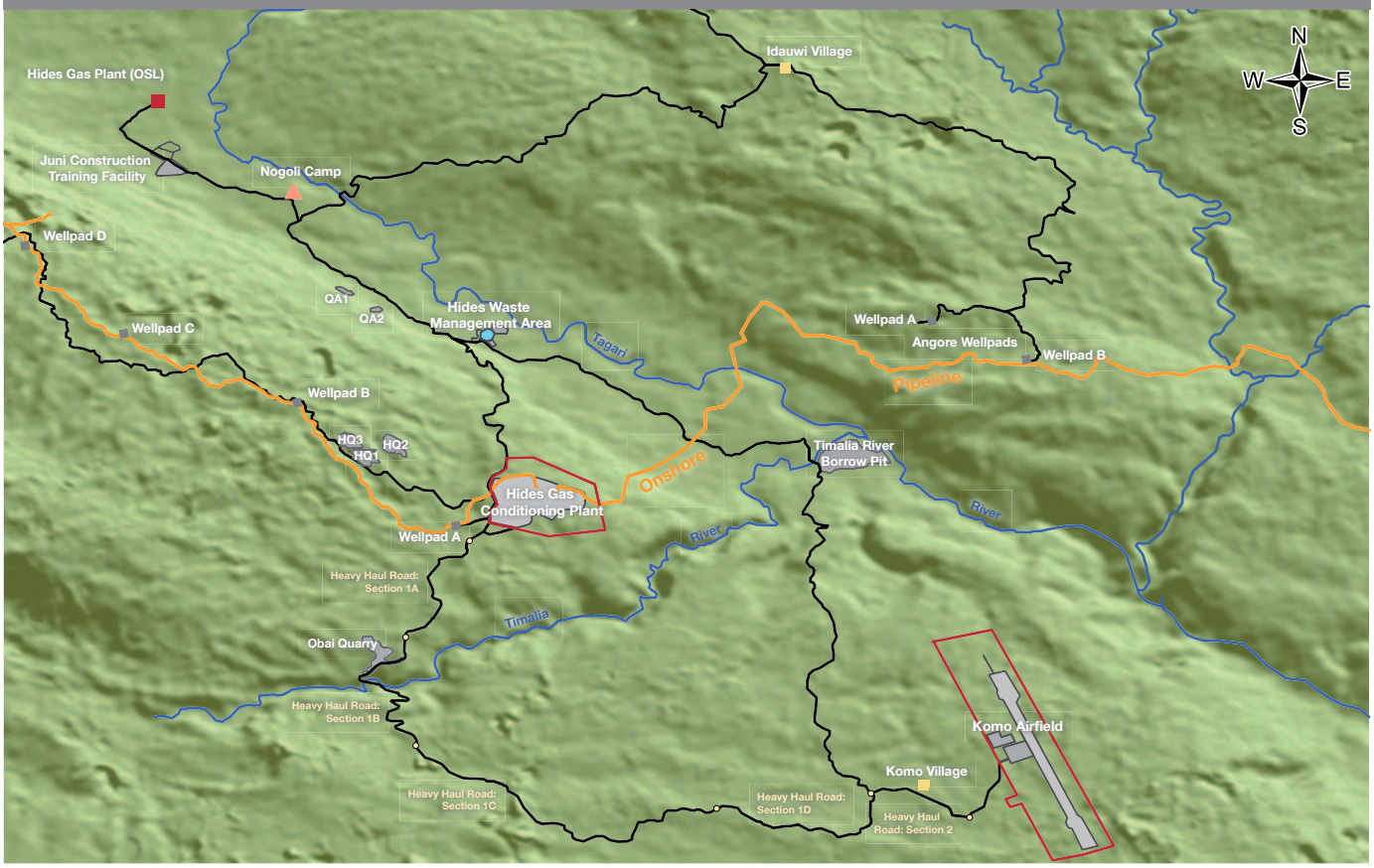
2 Construction Overview

The Project celebrated two key milestones this quarter. First, a ground-breaking ceremony marked the handover of the process area to the subcontractor for construction of the LNG Plant process trains. This was followed by the first concrete foundation being poured for the LNG Plant.

The main contractors continue scaling up their mobilization into Papua New Guinea, particularly the Onshore Pipeline contractor and the LNG Plant and Marine Facilities contractor and subcontractors.

2.1 Highlands area

Figure 2.1 – Highlands area Project activities (all phases)



2.1.1 Upstream Infrastructure

The Upstream Infrastructure contractor achieved five million work hours without a Lost Time Incident this quarter while progressing key activities at the following sites:

- Northern Logistics Route:
  - Bridge repair and strengthening works were completed, with all bridges re-inspected and certified.
- Hides area/Hides Gas Conditioning Plant (HGCP):
  - Bulk earthworks for the diesel refueling area were completed and earthworks commenced for the concrete batch plant and the HGCP and Hides Wellpads contractors' camp areas. Equipment has been mobilized for water bore drilling.
  - Work continued on installation and commissioning of the Upstream Infrastructure Camp.
  - Work at the Hides Waste Management Facility at Kopeanda commenced with clearing activities, installation of the security fence and site compound and office facilities set up.
- Southern Logistics Route:
  - The Kikori River Bridge was completed and opened to traffic.
  - Work continued on the Mubi River Bridge with piling works and assembly of the main span truss.
  - The new section of road from Kantobo to the Mubi River completed.

Plate 2.1 – Kikori River Bridge

Plate 2.2 – Mubi River Bridge truss assembly

2.1.2 Hides Gas Conditioning Plant and Hides Wellpads

The contractor continued detailed engineering, procurement and planning. Notable milestones this quarter included:

- Factory acceptance testing of mainline gas compression packages at the manufacturer's premises.
- Factory acceptance testing of gas turbine power generation packages.
- Award of subcontracts for concrete supply and temporary power generation during construction.

At the HGCP site, the contractor continued installing camps and infrastructure in preparation for full mobilization.

2.1.3 Komo Airfield

Bulk earthworks to the main runway area progressed despite heavy rainfall during the quarter. Meanwhile, Phases 1 and 2 of the Main Camp were completed, providing an additional 140 beds.

Agreement was reached with a local Landowner Company (Lanco) for construction of a footpath around the airfield perimeter improving travel and access for the local community.

Heavy Haul Road construction activities continued with clearing and grading of the road.

2.1.4 Drilling

Construction activities continued for the two new drilling rigs. In addition, contracts were awarded for directional drilling, measurement while drilling, logging while drilling, formation evaluation, perforating, liner hangers and communications.

2.2 Onshore Pipeline

The Onshore Pipeline contractor continued engineering, procurement and construction activities, including:

- Completion of factory acceptance testing of all mainline manual and actuated valves.
- Right of Way (ROW) clearing and pipeline stringing and bending.
- Mobilization of front-end crews and welders/operators and commencing the welder qualification process.
- The 750-bed main construction camp at Kopi becoming fully operational and continued construction and commissioning of additional camps along the ROW.

Plate 2.3 – Drill rig assembly

Plate 2.4 – Kopi Camp

Plate 2.5 – Pipeline stringing

2.3 Offshore Pipeline

Detailed engineering, procurement and execution planning activities continued. Other activities included:

- Award of the subcontract for line pipe transportation from the coating facility to site.
- Finalizing the fishery and community engagement reports for submission to the Papua New Guinean Department of Environment and Conservation.
- Successful completion of factory acceptance testing of the first complete Gas Turbine Generator.

2.4 LNG Plant and Marine Facilities

Detailed engineering, procurement and planning activities included:

- Completion of the LNG tanks model review.
- Issue of construction drawings for underground and foundation works for the process area.
- Manufacture of the nine percent nickel steel plate required for the inner membrane of the LNG tanks completed.

LNG plant site preparation and early works also continued including:

- Installation and commissioning of the temporary seawater intake and desalination plant.
- Clearing and grading of the process and utility areas.
- The commencement of excavation work for foundations in the LNG tank area.
- A ground-breaking ceremony marking the handover of the process area to the subcontractor for construction of the process trains.
- The additional milestone of pouring the first concrete foundation for the pipe rack.
- Completion of pile testing for the jetty and shipment of specialist cantilever bridge assembly equipment, which will be used to construct the jetty.
- Installation of subcontractor camp facilities.

Plate 2.6 – First concrete foundation pour at the LNG plant site

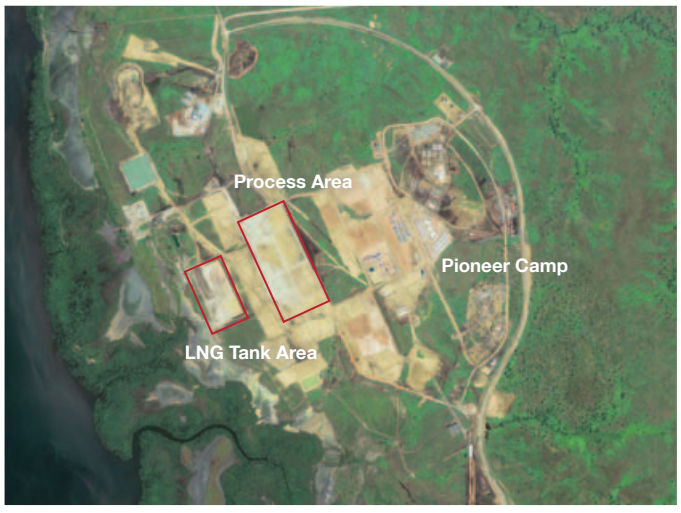


Plate 2.7 – Satellite image of the LNG plant site, March

2.5 Associated Gas Development

Detailed engineering, equipment procurement and execution planning progressed for the Kutubu Central Processing Facility, Gobe Production Facility, crude export system and Kumul platform upgrades. The contract for labor and construction management for the refurbishment of the Kumul Marine Terminal was also awarded.

Plate 2.8 – Offloading buoy fabrication

Plate 2.9 – New Central Control Room foundations at the Kutubu Central Processing Facility

Factory acceptance testing on a number of process equipment packages took place this quarter prior to shipping equipment to site. Meanwhile, fabrication of the replacement offloading buoy progressed well at the fabrication subcontractor's yard in China.

Preparatory civil works continued at the Kutubu Central Processing Facility in addition to ongoing camp construction activities at the Oil Search Limited Ridge Camp.

2.6 Development support execution, logistics and aviation

Upgrades to the Napa Napa and Papa Lea Lea roads, which connect Motukea Island and the LNG plant site, continued with bulk earthworks and culvert extensions completed.

Expansion works at the Moro aviation base also progressed with concrete works and erection of the new maintenance hangar finished.

During this quarter, the first Project-owned helicopter was mobilized. Two Project-owned helicopters will be deployed and retained into the production phase.

Overall, material logistics planning for Drilling and HGCP and Hides Wellpads mobilization is ongoing.

2.7 Pre-construction surveys

Project worksites are subject to pre-construction surveys, which address archaeology/cultural heritage, social sensitivities, ecology, weeds and, where necessary, water quality (for example, in camps). Identified sensitivities are matched with management and mitigation measures outlined in the Environmental and Social Management Plan (ESMP) or newly defined measures, as necessary.

Similar to last quarter, pre-construction surveys primarily concentrated on the onshore pipeline with approximately 67 percent of the 292-kilometre main pipeline route surveyed. Progress was slowed over February and March due to longer than scheduled times required to secure land access.

Plate 2.10 – Overview of the Napa Napa and Papa Lea Lea roads

Pre-construction survey updates for this quarter are illustrated in Figure 2.2.

Figure 2.2 – Pre-construction survey progress

1 Protected Areas
2 Protected Species
3 High-Conservation Value Habitat
Report in Preparation
Issued to DEC
4 Sites or Habitats of Ecological Significance
5 Cultural Heritage Sensitivity
6 Social Sensitivity
☑ Approved by Project
DEC Permission to Construct
* Submission/Approval Month/Quarter (Q) (2011)

Survey Site	Sensitivities Surveyed						Status	
	1	2	3	4	5	6		*
SOUTHERN SUPPLY ROUTE								
Mubi West Quarry		✓		✓	✓		↘	Q1
Mubi Quarry Chainage 9500 - 9800		✓		✓			↘	Q1
HIDES								
Hides Waste Management Area		✓		✓	✓		↘	Q1
Hides Wellpads B to G and Access Road		✓		✓	✓		↘	Q1
ONSHORE PIPELINE FACILITIES								
Access Roads, Borrow Pits and Pipe Laydown Areas between Kopi and Omati Area		✓		✓			↘	Q1
Gobe Landfill				✓			↘	Q1
Kaiam Camp and Laydown Area		✓		✓			↘	Q1
Pinnacle Quarry, Kilometer Point 275		✓		✓			↘	Q1
Tamadagi Camp and Laydown Area		✓		✓	✓		✎	-
Daware Camp and Laydown Area, Access Road and Associated Quarry	✓	✓		✓			✎	-
Auni Guest House				✓			✎	-
Omati River Push-Pull Platform and Tie-in Point		✓		✓	✓		✎	-
Helicopter Approach and Take Off, Camp 1, Scraper Station		✓		✓			➲	Q1
Access Road Kilometer Point 252.7 - KP236, Shoo-fly Road to KP242, KP239, KP236 and KP232 and Associated Aggregate Quarries		✓		✓			↘	Q1
Onshore Pipeline Right of Way: Kilometer Point 69.4 - 85.4		✓		✓	✓		✎	-
Onshore Pipeline Right of Way: Kilometer Point 85.4 - 120.2		✓		✓	✓		✎	-
Onshore Pipeline Right of Way: Kilometer Point 120.2 - 153		✓		✓	✓		✎	-
Onshore Pipeline Right of Way: Kilometer Point 153 - 173		✓		✓	✓		✎	-
Onshore Pipeline Right of Way: Kilometer Point 174 - 190		✓		✓			✎	-
Onshore Pipeline Right of Way: Re-alignment Kilometer Point 196.4 - 198		✓		✓	✓		✎	-
Onshore Pipeline Right of Way: Re-alignment Kilometer Point 243 - 245		✓		✓	✓		✎	-
Onshore Pipeline Right of Way: Kilometer Point 278 - 292 (ground truthing results)		✓		✓	✓		☑	Q1
Gobe Spurline Kilometer Point 2.4 - 2.8 (Wah Fault Crossing)		✓		✓	✓		✎	
KOMO AIRFIELD								
Komo Quarry QA-1				✓	✓		↘	Q1
Tamalia Boulder Quarry		✓			✓		↘	Q1

Environment Permit sensitivity definitions:

1 - Protected Areas
Recognised or pending protected areas which include but are not limited to wildlife management areas, conservation areas, Ramsar sites, provincial reserves, national reserves, sanctuaries and protected areas, and national parks.

2 - Protected Species
Any species protected under Papua New Guinea legislation or listed in Convention on the International Trade in Endangered Species appendices, or in the International Conservation Union (IUCN) Red Data Book as Critically Endangered, Endangered Vulnerable or Data Deficient.

3 - High-Conservation Value Habitat
Any habitat identified within the high-conservation value Forest Toolkit as being within categories high-conservation value 1-5.

4 - Sites or Habitats of Ecological Significance
Sites or habitats of ecological significance such as:
a) caves with a large entrance which may be used by bat colonies
b) pinnacles containing bat colonies
c) birds of paradise or bower bird display trees or display grounds
d) *Pandanus* swamp forest
e) Antarctic Beech *Nothofagus spp.* Forest
f) areas of Antarctic Beech *Nothofagus spp.* Dieback
g) *Pharotis imogene* (New Guinea big-eared bat) colonies
h) sandalwood *Santalum macgregorii* trees
i) high-value conservation swamps containing juvenile fish nursery habitat
j) swamps in sink holes < 50 m deep on Hides Ridge
k) areas of infestations of priority weeds or pests
m) mangrove stands and forest
n) seagrass beds
o) coral reefs.

5 - Cultural Heritage Sensitivity
Any site in which any cultural property as described in s. 20(1) of the National Cultural Property (Preservation) Act has been located.

6 - Social Sensitivity
Issues include, but are not limited to:
a) impact on previously undisturbed sites of cultural heritage
b) significant and unpredicted loss of resources that affects livelihoods.

3 Safety, Security, Health, Environment and Social Management

Protecting the environment and the safety and health of Project workers and communities, within which Project-related activities occur, is a high priority for the Project. The Project also aims to promote economic growth and social development for Papua New Guinea while bringing natural gas to the Asia region.

3.1 Approach

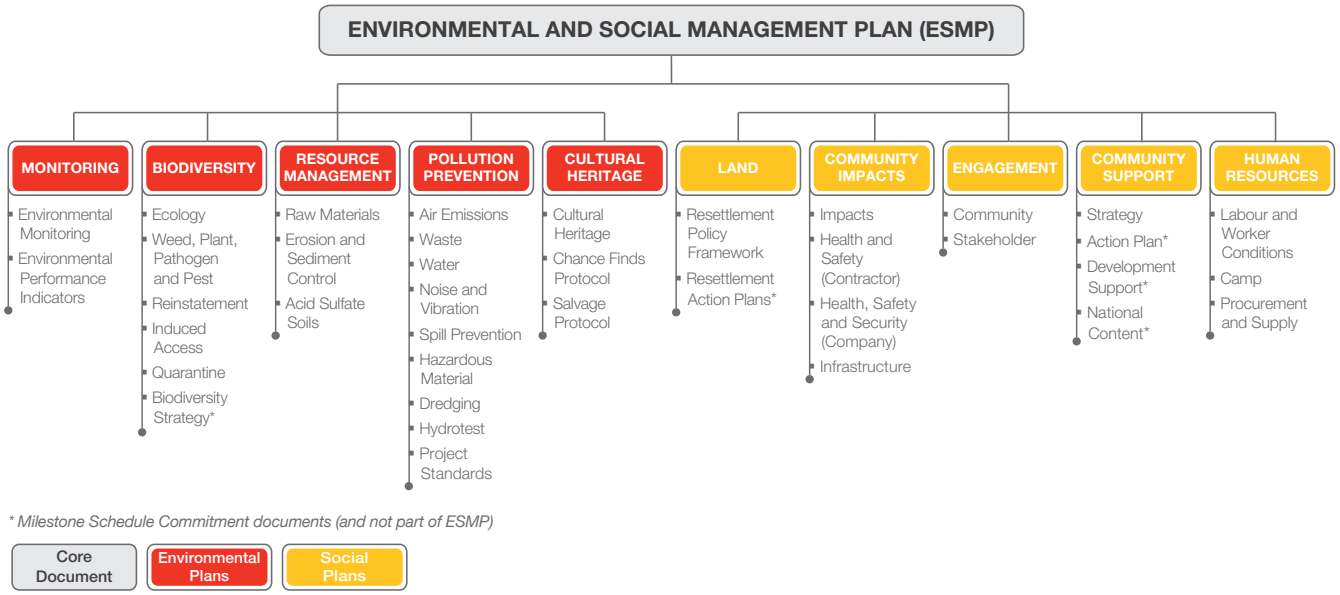
Details regarding the Project's commitment and approach to environmental and social management are documented in the Environmental and Social Management Plan, also referred to as the ESMP. The ESMP provides an overview of environmental and social management risks associated with the Project and details monitoring and mitigation activities adopted in response.

The ESMP is supported by a series of discipline-specific plans, which are outlined in Figure 3.1. All of these plans were developed from the Project Environmental Impact Statement and approved by the Lender Group as part of the Project's accountability and compliance requirements. They are publicly available on the Project website at www.pnglng.com/commitment.

In addition to the ESMP, the Project has a Safety Management Plan, a Health Management Plan, a Regulatory Compliance Plan and a Security Management Plan.

Collectively, these documents demonstrate the Project's priority toward sustainable economic growth in Papua New Guinea and reflect the global experience of ExxonMobil. These Plans enable a best practice culture across the Project as construction work progresses.

Figure 3.1 – Environmental and Social Management Plans



3.2 Security

Underpinning the Project's security strategy are efforts directed towards developing lasting, constructive relationships with communities impacted by Project operations and encouraging landowners and communities to use the formal process established for addressing any grievances. With the safety and security of the Project workforce and surrounding communities a priority, the Project also welcomes steps taken by local community leaders and the Papua New Guinean Government to improve law and order through an increased police presence and promoting local landowner businesses associated with the Project.

Based on experience in Papua New Guinea and within other regions where ExxonMobil operates, the Project has a range of physical security countermeasures and contingency plans in place. For example, the Project has an Operations Centre in Port Moresby from which effective responses to security issues are coordinated and managed and Papua New Guinean workers are trained in the managerial and technical skills required for operating the Centre.

During the quarter there was an incursion involving approximately 150 people at the Wellpad A Camp. It resulted in non-life threatening injuries to three Project workers, the relocation of non-essential personnel and operations being suspended for worker safety reasons. The cause of the incursion is subject to an investigation. Early findings indicate that the cause is not Project related. The Project's Security team has reviewed and refined facility and camp designs.

During March, the Project supported a course whereby Royal Papua New Guinea Constabulary instructors trained line officers in Tari on the Voluntary Principles of Security and Human Rights. The Royal Papua New Guinea Constabulary also made a number of arrests relating to an arson attack at Kaiam in September 2010, which damaged Project vehicles and equipment.

3.3 Revenue management

The Project opposes corruption by supporting transparency, and promoting honest and ethical behavior. Good governance, accountability and revenue transparency are critical to ensuring the value unlocked from the Southern Highlands' gas resources results in economic growth, increased opportunities and a better standard of living for Papua New Guinean citizens.

The Government of Papua New Guinea is establishing Sovereign Wealth Funds to secure long-term returns to its citizens as a result of earnings from the Project. A Sovereign Wealth Fund is a state-owned investment fund, which invests globally to build financial assets for future generations, while also operating as an effective and transparent funds management vehicle.

Discussions between the Government of Papua New Guinea and the Australian Government to learn from Australia's experience with Sovereign Wealth Funds gained momentum during this quarter. A number of meetings took place and an initial report is expected in April 2011, which will inform the design of the funds.

The Papua New Guinean Government has also established a committee to begin examining the Extractive Industries Transparency Initiative.

The Project commends both of these initiatives.

3.4 Management of Change

All changes to the Project's scope are reviewed and endorsed through a Management of Change Procedure prior to implementation. Proposed changes are considered against Project requirements spanning safety, security, health, environment and social management as well as operability and maintenance, regulatory and cost, and scheduling requirements. Classifications are then applied to ensure that all changes are appropriately managed. For example, Class II changes are of moderate significance and require Lender Group notification in the PNG LNG Quarterly Environmental and Social Report. Class I changes require Lender Group review prior to implementation.

During this quarter, no Class I or Class II changes were approved. The Project is discussing changes and their potential impacts with the Lender Group's Independent Environmental and Social Consultant (IESC) during their monitoring visits. For example, during the IESC's March visit, the Project outlined a proposed change to install a subsea fiber optic cable along the offshore pipeline route to provide a high integrity, high bandwidth communications route that will link the LNG facilities to the Hides area.

3.5 Environmental and Social Milestone Schedule update

During this quarter, activities relating to the Project Environmental and Social Milestone Schedule were as follows:

- It was agreed with the IESC, during their March monitoring visit, that the 'Interim Draft' of the Biodiversity Monitoring Program is no longer required because a description of the basic monitoring program was included in the Biodiversity Strategy (Revision 2) provided at the end of 2010. Delivery of the final Biodiversity Monitoring Program remains unchanged and is due the first quarter of 2013.
- The development of the Project Offset Delivery Plan was also discussed with the IESC with the first draft required at the end of 2011 rather than the first quarter 2011 as originally specified in the Milestone Schedule.
- Agreement was also reached on the plan for programs to promote and enhance conservation aims in the Lake Kutubu Wildlife Management Area to be included with the overall Project Offset Delivery Plan. The draft plan was originally scheduled for issue in the fourth quarter 2010 but has been rescheduled for the end of 2011.

4 Procurement and Supply

As the Project fully engages in the construction phase, supplier development remains an integral part of the national content strategy. The Project is continuing to invest significantly in developing the capacity of Lancos by assisting them to further develop into long-term sustainable businesses. As part of this, the Project is promoting the competitiveness of Lancos and other Papua New Guinean businesses, and supporting them in terms of business practices, quality, safety, health, environment and operations integrity.

4.1 Supplier development

Project contractors continue to support the use of Lancos, with Project-related spend on Lancos exceeding 280 million Kina (US$110 million) to date. This investment was largely directed to construction labor, catering and camp management, security, passenger transport services and trucking on the Highlands Highway. The Project also provides access to business development officers, consultants, advisors and training to Lancos to advance their technical, operational and business management capabilities.

Where Lancos are not available or able to provide required services, the Project engages, where possible, local Papua New Guinean businesses, for example, the cleaning contractors at the Project's main office in Papua New Guinea.

In the first quarter, over 475 million Kina (US$185 million) was spent on Papua New Guinean goods and services, bringing the in-country Project spend-to-date to more than two billion Kina (US$779 million). This spend largely reflects the dedicated early works, infrastructure construction including the Upstream onshore pipeline, continued works on the Komo Airfield, early works at the LNG plant site, and ongoing logistics and aviation needs.

4.2 Enterprise Centre

For the past year the Enterprise Centre, an independent organization located within the Papua New Guinea Institute of Banking and Business Management premises at Port Moresby, has been helping local businesses through a range of services. The Project sponsors a range of business development activities through the Enterprise Centre, and the Institute of Banking and Business Management is constructing a new building for the Enterprise Centre, which will house the PNG LNG Project Information Centre.

4.2.1 Business training and assessments

Demand for Enterprise Centre training continues to grow rapidly. In total, 623 days of training were provided to 246 participants from Papua New Guinean businesses during this quarter. This is 275 days more than the previous quarter, as shown in Figure 4.1.

Women's vision at Porebada becomes a reality

Porebada Ahine Limited, a company incorporated by over 200 women from Porebada Village, has successfully delivered its first order of stitched camp supplies (bed sheets, quilt covers, curtains, towels and pillow cases) to the LNG plant site Pioneer Camp. Working through the Laba Alliance Group, this success followed training, business advisory and mentoring services provided by the Enterprise Centre to ensure the business met its obligations.

Women from Porebada Village working on stitched camp supplies

Figure 4.1 – Capacity building in training

NOTE: The Papua New Guinea Institute of Banking and Business Management provided training prior to the Enterprise Centre's opening in April, 2010.

Upstream areas and women's business groups were the focus of business training this quarter. Of the 104 participants from the Southern Highlands Province who received training, 71 were women.

Another key role for the Enterprise Centre is assessing companies and providing feedback to assist them in meeting the requirements of potential contractors. During this quarter, the Enterprise Centre assessed 12 Papua New Guinean businesses.

Compliance and regulations training for Papua New Guinean businesses

In the first quarter, the Enterprise Centre organized compliance and regulations training in relation to the *Investment Promotion Authority Act* and the *Companies Act*. The training aimed to help participants understand their responsibilities to ensure the companies they represent are fully compliant with Papua New Guinea's statutory regulations. The workshop included speakers such as the Investment Promotion Authority Manager, Thomas Tarabu, and was attended by over 40 business executives.

Remington Technologies appoints Enterprise Centre for training

During this quarter, the Enterprise Centre won its first independent contract to conduct staff training for Remington Technologies, a company providing document management solutions in Papua New Guinea. The Centre trained employees from Port Moresby, Lae, Madang, Wewak, Goroka, Mt. Hagen, Kimbe and Kokopo in cost control and budgeting and conducted a two-day workshop on leadership and planning for Remington's key line managers. The Remington contract is one example of how the Enterprise Centre is building its ability to operate as an independent, sustainable Papua New Guinean company once Project construction is complete.

Plate 4.1 – Leadership and planning workshop for Remington Technologies

Advisory services extended to LNG plant site villages

Four LNG plant site village communities at Papa, Lea Lea, Porebada and Boera are benefitting from an extension of the Enterprise Centre's business advisory services.

The Enterprise Centre is working with LNG plant site villagers to widen their understanding of business entrepreneurship and establish sustainable business practices through training in areas such as cash flow, budgeting and developing business plans and proposals. During this quarter, more than 140 villagers participated in a 15-day advisor's visit to their community.

4.2.2 Enterprise Centre communication and events

The Enterprise Centre participated in Provincial Government Interface workshops in six provinces across the Project Impact Area and the Highlands Highway during this quarter. The workshops were organized by the Project and included Project representatives and almost 100 provincial administrators. A workshop was also facilitated for the Project's Bidding, Tendering, Procurement and Operations team to inform them about the Centre's services relating to sourcing and procurement in Papua New Guinea. In addition, the Enterprise Centre facilitated a meeting between the Project and more than 24 interested registered Papua New Guinean suppliers of waste management services.

5 Communities

The Project aims to anticipate and understand community perspectives, particularly in relation to potential impacts of construction activities on Papua New Guinean communities.

5.1 Structure and relations

A set of management plans, outlined in Table 5.1, has been developed to help the Project manage community interactions and potential impacts from construction activities.

Table 5.1 – Scope of ESMP community impact management plans

Plan	Scope of Plan
Community Engagement Management Plan	Covers community relations, grievances and disruption.
Community Impacts Management Plan	Addresses impacts that may affect the structure of, and relations within, communities.
Community Infrastructure Management Plan	Aims to avoid or minimize the impact of construction activities on existing community infrastructure and services.
Community Health and Safety Management Plan	Focuses on avoiding or minimizing risks to, and impacts on, the health, safety and security of the local community during construction.

These community impact management plans form part of the ESMP, as outlined in Figure 3.1.

5.1.1 Community grievance management

Effective community grievance management is a critical component of the Project. The Project Community Grievance Procedure is facilitated by an electronic Information Management System, which members of the Socioeconomic team have been trained to use. Grievance cards, to help communities with registering grievances in the field, have also been widely distributed to communities potentially affected by the Project.

During the first quarter, the Community Grievance Procedure was revised as part of the Socioeconomic team's continuous improvement process. Enhancements included a more structured and thorough internal review process and straightforward communication of the Procedure. A review of grievance subject categorization was undertaken and a grievance coordinator position established to ensure the Project grievance process reflects best practice, including timely close-out of grievances.

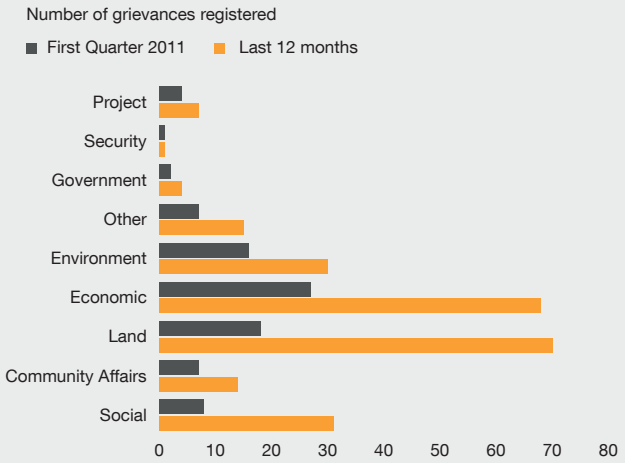
During this quarter, 90 grievances were registered, using the revised categorization method, as shown in Figure 5.1.

The two most common categories of grievances relate to economics and land:

- Economic grievances relate to business development and participation in the Project's construction phase, for example, when landowners expect a guarantee of early works contracts.
- Land compensation and land ownership grievances are common. Compensation based on the standard Papua New Guinean Government Valuer General rates, as well as how benefits from the land are shared by individuals and clans, results in a high number of grievances.

Under the leadership of the newly appointed grievance coordinator, a concerted effort was made to close grievances that remained open from the previous quarter. This resulted in a 75 percent reduction in all open grievances by the end of March.

Figure 5.1 – Grievances registered by category



Timely and thoughtful review, analysis and closure of grievances will continue with special emphasis on close cooperation and coordination with contractors as they address grievances specific to their scope of work.

5.1.2 Project Induced In-Migration Study

During this quarter, implementation of the Project Induced In-Migration Action Plan focused on LNG plant site villages, with meetings conducted to raise awareness among the villagers about the potential social risks and benefits of in-migration into their villages.

As a result, a Village Development Committee was established at each LNG plant site village to develop their own community based in-migration plans.

Preparation for Project Induced In-Migration meetings with the Upstream areas of Kopi/Gobe, Moro, Hides, and Komo is underway with implementation planned to start in the second quarter 2011.

5.1.3 Fisheries surveys

The Project conducted fisheries surveys in the four LNG plant site villages of Papa, Lea Lea, Porebada and Boera. In February, 2.5 tonnes of fish were weighed in these areas, with support from local village assistants trained in how to conduct the fish survey.

Plate 5.1 – Local fishers in Porebada preparing their catch for weighing

Plate 5.2 – Barging Route Waterways Memorandum of Understanding Committee workshop in Kikori

In January, six local artisanal lobster fishers were interviewed at Yule Island, a trans-shipment location for the offshore pipeline. The fishers verbally confirmed the arrival of a small number of migratory tropical Ornate Rock Lobsters *Panulirus ornatus* from the Gulf of Papua. The lobsters were found in the coastal reefs near-shore of the offshore pipeline route. The fishers have advised that during the past decade the rock lobster harvest has been poor, which may be attributable to prawn trawlers in the Gulf of Papua.

Understanding recent lobster harvests is important in establishing a baseline for future monitoring of lobster populations.

5.1.4 Social considerations for logistics activities

As part of the Barging Route Waterways Memorandum of Understanding signed in the third quarter 2010, a workshop was conducted with eight barging route tribal groups in March. The workshop was intended to establish a developmental framework for projects that will benefit the Papua New Guinean communities as a whole. The tribal groups identified six broad community development areas, and developed project selection criteria and a set of common values that they will use in identifying and selecting appropriate projects.

Agreement was also reached on how to resolve concerns and grievances raised by Omati community members to both the Department of Petroleum and Energy and the Project. Partnerships continue to be developed with communities along the Southern Logistics Route to maintain understanding and communal ownership of Project activities.

5.2 Infrastructure, services and resources

The Project has worked in partnership with Local Level Government, national Government departments and contractors to construct a series of traffic calming devices and pedestrian crossings on the road passing through Baruni Village, near the LNG plant site.

Upgrades to the Papa Lea Lea Road, connecting Konebada to the LNG plant site continue with the first surface coating anticipated during the second quarter 2011.

In Hides, the Project continued construction of 19 '*haus wins*', which are open, communal meeting places with rainwater tanks that serve to improve water supplies. To date, five *haus wins* have been completed, predominantly in the Hides area. The Socioeconomic team has held engagements at the completed *haus wins*, promoting their use as a communal meeting space and facilitating the Safety Awareness Program.

Plate 5.3 – Lake Mabuli *haus win*

Plate 5.4 – Facilitating the Safety Awareness Program at the Wellpad A *haus win*

The Project has refurbished the Para School with the construction of six additional ventilated improvement pits (composting toilets). Local community members were trained in the construction of these facilities to enable them to replicate them in their own homes. Two 5,000 litre rain tanks and taps were also installed.

5.3 Verification, monitoring, assessment and audit

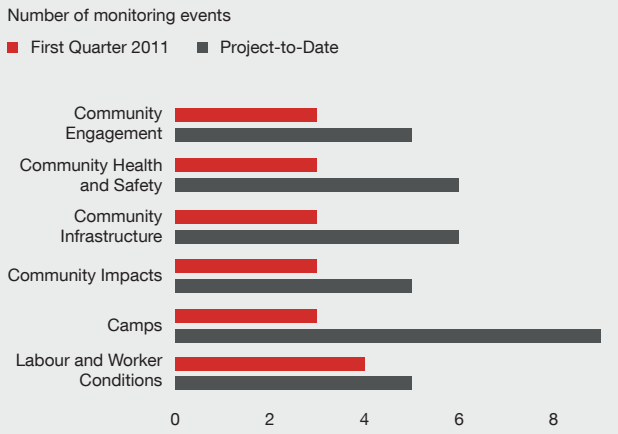
The Project has in place mitigation measures aimed at reducing the negative impacts of Project-related activities on local communities. These measures are outlined in the Project's six contractor-related social management plans.

Plate 5.5 – Completed ventilated improvement pits at Para School

These plans also aim to ensure fair and equitable working and living conditions for workers during the construction phase. The six plans cover Community Engagement, Community Health and Safety, Community Infrastructure, Community Impacts, Camps, and Labour and Worker Conditions.

The Socioeconomic team conducted 19 monitoring exercises against these plans during this quarter, as shown in Figure 5.2. A total of 36 monitoring events have been conducted across the Project-to-date.

Figure 5.2 – Summary of monitoring events against relevant social management plans



Conformance with social management plans is tracked using three reporting tools: non-conformances, field observations, and positive field observations.

Non-conformances are situations or events that are not consistent with social management plan requirements. Examples could include the absence of a camp grievance procedure or the absence of minimum health requirements such as food quality or bed spacing.

Field observations are potential non-conformances, where a situation or event could eventually become inconsistent with social management plan requirements. In this instance, corrective actions are implemented to prevent a field observation escalating to a non-conformance.

Positive field observations are observations of innovative or excellent performance against social management plan requirements.

Figure 5.3 outlines the non-conformances and field observations reported during this quarter.

The three main non-conformance areas are: managing third party grievances (community engagement), terminations and policies and procedures (labor and worker conditions), and induction or training content (camp management). The Project's Socioeconomic team is working with contractors to resolve and close-out non-conformances and field observations. The closure status of non-conformances and field observations from this quarter is shown in Figure 5.4.

Figure 5.3 – Non-conformance and field observation summary

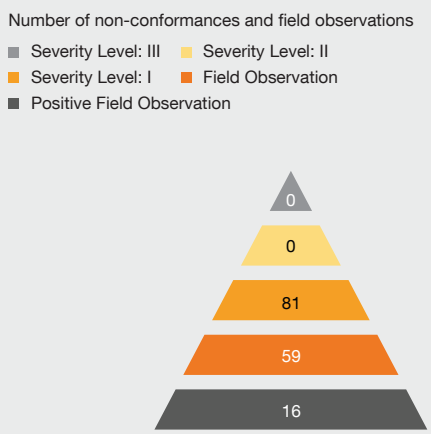
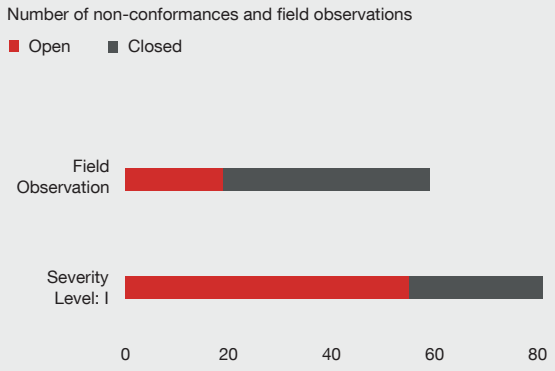


Figure 5.4 – Project non-conformance and field observation closure status



5.4 Community health

The Project's integrated Community Health Program addresses potential health impacts that may arise from contractor and community interaction. The Program components include health-related initiatives based on the environmental health areas framework originally developed by the International Petroleum Industry Environmental Conservation Association and further expanded by the International Finance Corporation in their published Guidance Notes to the Performance Standards that include Community Health, Safety and Security.

5.4.1 Integrated Health and Demographic Surveillance System

The Partnership for Health, a formalized agreement between the Project and the Papua New Guinea Institute of Medical Research (IMR), supports the development of a formal Integrated Health and Demographic Surveillance System (iHDSS) to monitor LNG plant site communities, Hides area villages and two matched control sites.

During this quarter, a comprehensive census and household registration undertaken at Papa, Lea Lea and Boera registered more than 8,000 individuals. The Porebada census and household registration is planned for April 2011, with more than 8,000 registrations expected.

In the Hides area, the IMR and the Evangelical Church of Papua New Guinea reached agreement regarding housing for iHDSS program workers, and construction will begin in the second quarter 2011. In addition, IMR's financial staff were trained in budget versus expenditure reconciliation.

5.4.2 National Infectious Diseases Diagnostic and Research Laboratory

As part of the Project's Strategic Community Investments, detailed design drawings were finalized for the National Infectious Disease Diagnostic and Research Laboratory, in conjunction with the University of Papua New Guinea, School of Medicine and Health Sciences and the IMR.

The Laboratory will be a critical component of the overall iHDSS effort, providing accurate and rapid diagnosis of surveillance samples collected as part of the overall monitoring program. In addition, the Laboratory will provide rapid and timely diagnosis of emerging infectious disease epidemics such as cholera and pneumonia, which can potentially disrupt the Project's construction and possibly future operations.

The Laboratory will be located at the School of Medicine and Health Sciences' main campus, and the School will approve its final site. Final costs are being estimated.

5.4.3 Health services infrastructure and capacity

Relationships with local health services were enhanced during this quarter. The Project's Community Health team, along with Population Services International and Marie Stopes Papua New Guinea, participated in Hiri District's annual health planning workshop to coordinate Project supported activities with Government health services.

Plate 5.6 – Hiri District Health team

Population Services International and Marie Stopes Papua New Guinea continue expanding their program of collaboration with local health services to conduct both 'Fit Meri (women)' and 'Fit Man' clinics. Funded by the Project, these programs are educating people in all four LNG plant site villages about family planning and sexual and reproductive health issues.

5.4.4 Support to non-government organizations

Population Services International, the coordinating organization for implementing the Project's non-government organization administered community health programs, achieved numerous initiatives in this quarter including the introduction of a Health Scholarship Program as outlined below.

Health scholarships

As part of the commitment to helping build the skills of Papua New Guinean nationals, the Project launched a health education scholarship in partnership with the non-government organization, Population Services International and Divine Word University. The first health education scholarships were awarded to 24 students from the Southern Highlands, Gulf Province and Central Province enrolled in health programs at the University. The Scholarship Program is based upon successful academic performance and completion of the year of study funded. Students must also demonstrate a willingness and commitment to serve in the Project areas of the Southern Highlands (Hides area), Gulf (Kikori area) and Central (LNG plant site area) provinces after graduation.

Plate 5.7 – The first students to receive health scholarships

Sexually Transmitted Infections prevention

Population Services International and Trans Wonderland Limited, a leading local trucking firm that is a Lanco, which provides trucking services to the Project on the Highlands Highway, signed a collaborative memorandum to adopt positive health behaviors among truck drivers along the Highlands Highway.

The memorandum focuses on the prevention of sexually transmitted infections, including Human Immunodeficiency Virus, among truck drivers and their partners living and working along the Northern Logistics Route. Health promotion activities and training sessions are conducted in line with National Department of Health guidelines and are being funded by the Project.

Plate 5.8 – Signing of the collaborative memorandum between Population Services International and Trans Wonderland Limited

5.4.5 Contractor conformance

The Community Health team continued on-site assessments this quarter as part of its program to track contractor performance against community health commitments.

5.5 Community safety

The Project's Safety Awareness Program is underway across the full Project Impact Area, focusing on two main components – traffic and road safety and construction site safety. This quarter was the first time the Program targeted schools and communities along the pipeline such as the Lower Faso area. Topics covered by the Program include: gas pipeline construction; heavy construction machines; heavy traffic; how to use roads before, during and after construction; and identifying and understanding road and traffic signs.

The Program predominantly targets school children and focuses on road awareness by using visual aids, role-play, interactive games, songs and prepared teacher lesson plans, with students encouraged to share this information with their families at home. Safety messages are further filtered through the broader community by distributing supporting safety materials.

The Onshore Pipeline contractor is playing an active role in implementing the Safety Awareness Program by conducting safety awareness sessions in local villages along the pipeline route. The sessions aim to educate children about road safety, construction site dangers and observation techniques. The contractor is reinforcing these messages through a series of posters, as shown in Figure 5.5.

Figure 5.5 – Community education safety posters developed by the Onshore Pipeline contractor

At Hides, the Safety Awareness Program continued at schools along the road between Halimbu Junction, Hides and Komo, and a Rapid Implementation Project developed in the previous quarter to build a pedestrian footpath from Lake Mabuli to Para School was approved. Traffic controllers were also placed along the road from Tumbi Quarry to Komo, to better control the flow of traffic in the area to avoid safety risks.

At the end of the quarter, a workshop was held to align Project teams' community safety activities. The workshop focused on vehicle/pedestrian safety and key access control, and identified action items that each contractor will address to ensure practices are continuously improved.

Contractors presented their current safety activities to enable best practice to be shared across the Project area. These included:

- A 'road safety initiative' using community drama and socioeconomic team visits to discuss safety actions with communities.
- Use of speed radar guns and in-vehicle monitors to control and track vehicle speeds.
- Widening roads and fencing pedestrian walking paths as well as cutting grass along the walking paths to increase pedestrian visibility.
- Use of traffic 'spotters' stationed on corners and intersections. Spotters undergo an induction process and have a different colored uniform to make them more visible.
- Ensuring dust control measures are in place.
- Ensuring markets are a safe distance away from roads.
- Implementing observation and intervention cards for vehicles so that incorrect actions can be noted and rectified.

5.6 Community investment

The Project continues to promote economic growth and create a positive sustainable impact through its community investments. The following sections outline the many community initiatives that were introduced during this quarter.

Plate 5.9 – Traffic and road safety awareness at Papa Elementary School

Plate 5.10 – Teaching students safe road behaviors

5.6.1 Community Investment and Contributions Committee

The Project's Community Investment and Contributions Committee and Working Group remains active, providing internal coordination, strategic oversight and approval of Project-funded community support activities. The Community Investment and Contributions Committee considered six concepts and six proposals against the following criteria: impact, sustainability, strategic value, design and management, value for money, and risk. The six concepts are being developed into fully scoped, budgeted and scheduled formal project proposals for the Community Investment and Contributions Committee's consideration. Meanwhile the six approved proposals are being implemented in communities.

Rapid Implementation Projects

Rapid Implementation Projects are small community projects each valued up to 14,600 Kina. They are designed to build good relationships with communities through small grants of materials, small community works projects or payments to villagers for community works performed by them such as grass cutting and minor road maintenance.

In the first quarter, ten Rapid Implementation Projects were approved, bringing the total to 20 projects approved out of 44 projects proposed by Socioeconomic field teams. Of the 44 Rapid Implementation Project proposals received to date, 21 are located in the Upstream North area, 14 in the Upstream South area and nine in the LNG plant site area.

Plate 5.11 – Det Bridge before and after resurfacing

Examples of approved Rapid Implementation Projects include support for schools, health centers, and sporting groups as well as road maintenance and repair work. One of the projects completed during this quarter involved the resurfacing of the Det Bridge, which is located on the Ring Road in the Nembi Valley, in the Upstream North area.

5.6.2 Community Development Support Plan

The Community Development Support Plan has three focus areas: Strengthening Social Resilience, Local Economic Development, and Community Capacity Building and Partnerships.

Strengthening Social Resilience

Two key initiatives have been implemented, namely the 'Toea' children's book series and the distribution of school packs to schools in the Project Impact Area. The 'Toea' series follows the adventures of a young character who travels to different areas within Papua New Guinea and develops a cultural understanding of the people. The books have been endorsed by the National Education Department and aim to provide quality reading materials to elementary school-aged children, while educating them about the different areas and cultures within the Project Impact Area. Project-specific books are also being developed, focusing on health and safety.

The first two books of the 'Toea' series are being distributed to all 82 elementary schools in the Project Impact Area to complement school reading materials.

All 182 elementary, primary and high schools in the Project Impact Area have received both a teacher's pack and a sports pack. Each sports pack included five different sports balls, a ball pump, a volleyball net, and a whistle. The teachers packs each included: marker sets, blackboard erasers, staplers, boxes of staples, pen packs, packs of white and colored chalk, and two dictionaries.

In addition to these packs, the Project provided over 22,500 school children with a stationery pack, which included a minimum of 12 items, so they could begin the school year with the stationery they required.

Plate 5.12 – Distribution of 'Toea' books at Ororo Primary School

Plate 5.13 – Student from Habare Primary School receiving a school pack

Plate 5.14 – Excited students and teachers at Tari Primary School during school pack presentation

There were three different types of stationery packs distributed, these included 6,300 elementary school packs, 13,500 primary school packs, and 2,700 high school packs.

Coinciding with the distribution of the school packs was the launch of the Kastom Stori/Sene Gori Competition – a story writing and drawing competition, which will be judged in July 2011. The competition aims to encourage school-aged children to learn from their elders about Papua New Guinean traditions and culture.

The Project continues working with schools, generating school development plans under the Support to Functioning Schools Program. These plans prioritize the needs of schools and inform the Project of where best to direct support for local schools.

Local Economic Development

Agriculture is a major component of the livelihoods of Papua New Guinea's rural communities. The Project is developing agriculture-based ventures to support economic development in these communities with four projects underway in the Hides, Omati and LNG plant site Project areas.

In Hides, the Project supports local communities with two projects: growing fresh produce and broilers (meat chickens) for home consumption, and helping increase existing production for the local market to meet growing demand for both products. To achieve this, the Project has worked with more than 600 women from the Komo and Hides Women's Associations, and opportunities for selling to Project camps are being explored through established channels.

Similarly, the Project has helped women in the Kikori area to form a company called Delta Green Field Marketing Limited to expand their supply to Project camps through organizational capacity building, agricultural training and the construction of a nursery to supply seedlings to over 500 women in the six villages of Omati, Baina, Kaiam, Turama, Kibeni and Gibidai.

At the LNG plant site, the prevailing agricultural conditions are conducive to producing fruit and nut trees, so the Project has teamed with Cashew International Limited to support cashew production in the area. This involves ten trees being provided to each household to encourage the establishment of cashew orchards. The harvested nuts will bring much needed income to households in December and January each year when school fees are a heavy burden on many household budgets.

Other potential opportunities being investigated to support Project impacted communities include vanilla, spices, honey farming, aquaculture, and mariculture (a specialized branch of aquaculture).

Plate 5.15 – Cashew saplings for distribution to households

Community Capacity Building and Partnerships

The Project continues working with village development committees to complete community mapping and school profiling. Village development committees from the four LNG plant site villages began leadership and planning workshops during this quarter and this will continue into the second quarter 2011.

In the Kikori area, a four-day workshop was held with the 24 members of the Barging Route Waterways Memorandum of Understanding Committee to formulate their Development Plan, Executive Committee Charter and set a criterion to guide their selection and identification of community development projects.

In the Kutubu area, guidance has been provided to 19 of the ward committees that make up the Lake Kutubu Local Level Government to formalize the identification of their respective wards. During this quarter, all 19 ward committees were established. Joint efforts were also carried out with non-government organizations, District Government and other partners working in the area for organizational and program development for the Kutubu Foe Women's Group and the Kutubu/Moran youth sports groups.

5.6.3 Strategic Community Investments

In addition to the Health Scholarship Program delivered in partnership with Population Services International and educational institutions such as the Divine Word University, a second scholarship program was established. Fully funded by the Project, and in collaboration with the IMR and the University of Papua New Guinea, the Health Sciences Scholarship and Fellowship Fund will annually assist 17 students with internships as part of their Honors and Masters studies.

Plate 5.16 – Lea Lea footbridge prior to repairs

In February, the Project approved the replacement of the rainwater catchment and storage system at Kikori Hospital, which is a key regional health facility servicing a community of approximately 30,000 people. The hospital requires urgent repairs to its gutters and tanks as well as access to clean water. This need increased in emphasis given the recent outbreak of cholera in the area. The Project will use a local Lanco to repair or replace roofs, guttering, pipes, pumps and water storage tanks. The repair work has been planned in a way that will minimize disruption to hospital operations.

Under the Project's Strategic Community Investment Program, emergency repairs to the Lea Lea footbridge were conducted during the quarter. Workers from local villages carried out the work, which included installing new supporting poles to prevent the collapse of the footbridge. Since then, the Project approved the total replacement of the footbridge and is sourcing treated timber from Bulolo (60 kilometres from Lae) and stainless steel fasteners from Australia. The existing bridge will be used as a scaffold for construction of the new bridge. Once completed, the new bridge is expected to have a life-span of over 20 years because of the improved design and use of long-life materials. Villagers from the local community will undertake the bridge building with safety and quality control support by the Project.

Another initiative, in March, involved the Project sponsoring the Law and Justice Secretariat's national symposium on the status of alcohol abuse in Papua New Guinea, convening Government, civil society, health professionals and the private sector.

Additional community projects during the quarter included:

- A meeting platform for Porebada Village.
- Refurbishment of the City Mission, which provides facilities for homeless youth and abused women and Cheshire disAbility Services PNG, which provides facilities for people with disabilities.
- Construction of an infectious diseases training and diagnostic laboratory.
- Refurbishment of the Kikori Police Station.

Detailed designs, budgets and schedules are also being developed for a further 11 community projects under consideration. Figure 5.6 indicates the locations of Rapid Implementation Projects and Strategic Community Investment projects that have either been completed, are being implemented or are being developed as detailed proposals.

Figure 5.6 – Location of 'active' Rapid Implementation Projects and Strategic Community Investment

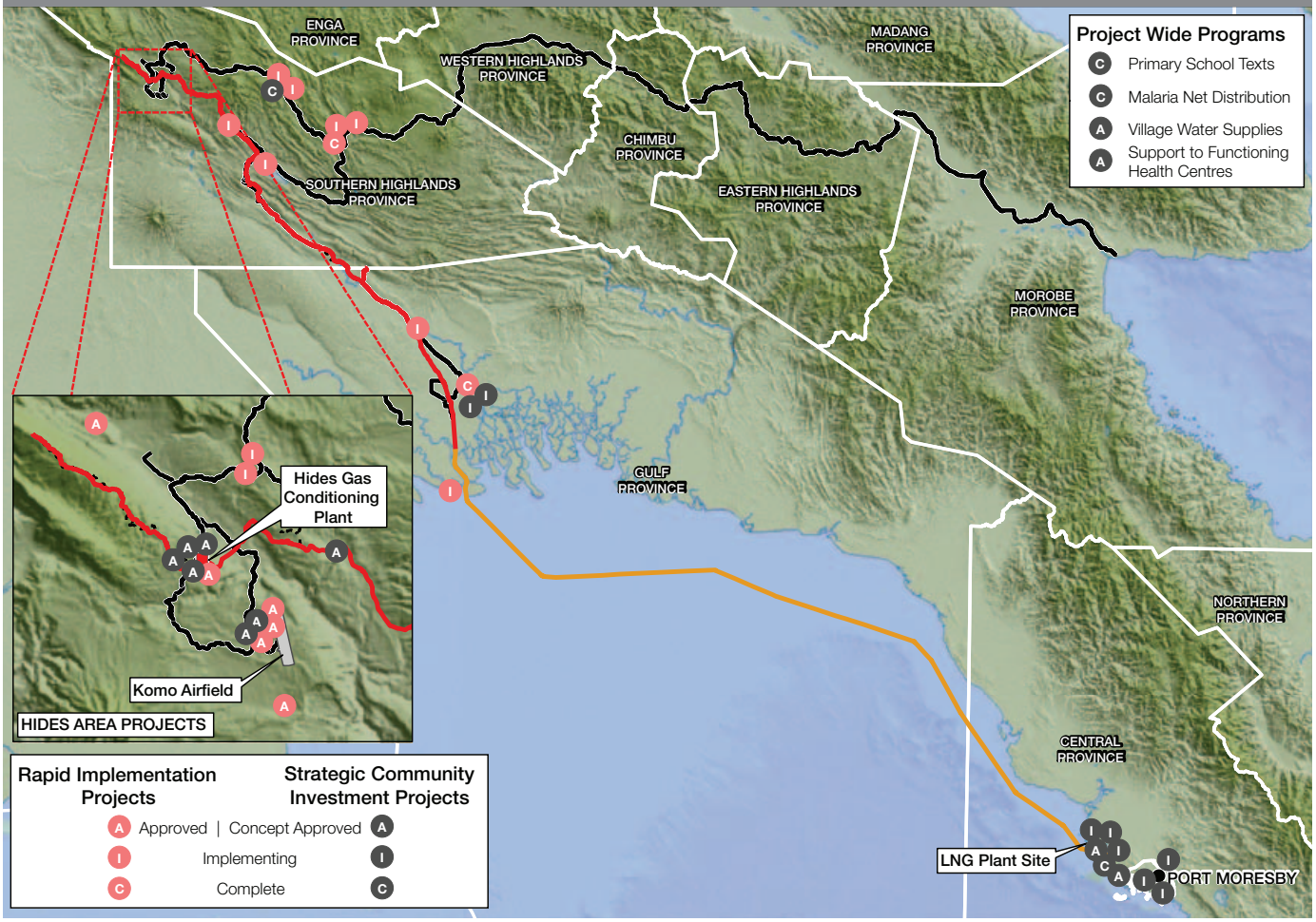


Plate 5.17 – Cartoons painted on the wall of the village children's schoolyard at Caritas Technical Secondary School

5.6.4 Volunteer programs

In a pleasing development, a wall painted by Project workers and their families at Caritas Technical Secondary School in Port Moresby during International Volunteers Day in December 2010 became the perfect backdrop to the work of a local artist. Caritas Technical Secondary School primarily caters for high school girls but also provides literacy teaching for almost 200 local village children aged between three and six years. After Project volunteers painted a long grey wall a vibrant green to create a more stimulating learning environment for young children, Caritas nuns arranged for a local artist to paint cartoons on it. The result is an exciting cartoon landscape, which is delighting the students. The Project is organizing a donation, which will allow the school to buy sufficient paint for two school buildings containing eight classrooms in total.

6 Compensation and Resettlement

The Project's first priority is avoiding physical or economic resettlement wherever possible. Where resettlement is necessary, the Project works closely with communities in accordance with international best practice, as defined by International Finance Corporation performance standards on social and environmental sustainability and the laws of Papua New Guinea.

6.1 Compensation

The Socioeconomic team has negotiated and executed most of the In-Principle Compensation Agreements required for land access across the Project. To date, 82 In-Principle Compensation Agreements have been signed by clan representatives and Project management.

During this quarter, nine new In-Principle Compensation Agreements were signed for land required for Upstream Infrastructure works. Negotiations also began for quarry sites required by the Project in the Hides area.

A letter of understanding was signed with the Department of Petroleum and Energy regarding Project use of the Omati River Estuary for pipe laying. This letter provides guidance and future plans of action for the Project. Because there are no defined compensation rates for the use of waterways, the letter commits the Project to pay fair compensation to impacted clans. Understandings were also reached on identified shipping locations for offloading line pipe for transfer to the pipe lay vessels. In-Principle Compensation Agreements are planned for execution during the second quarter 2011 with impacted Omati River clans.

Meanwhile, work began on the payment of statutory compensation required under the *Oil and Gas Act 1998* and as outlined in the In-Principle Compensation Agreements. Statutory compensation for initial damages (for example, trees and bushes), surface damages (such as soil), and deprivation payments (including loss of employment) are paid to clans given that land ownership is by clan, not individuals. The Socioeconomic team met with 11 different clans in the Komo Airfield area to identify clan agents for receipt of the funds on behalf of the clan. As clans identify agents and resolve outstanding land disputes, compensation is paid. Compensation payments will begin for the Komo Airfield during the second quarter 2011 with the HGCP and other land areas following later this year.

The Socioeconomic team continues to assess and compensate individuals for economic losses caused by the Project. This quarter, compensation assessments focused on the pipeline ROW from Gobe to Kopi. Additionally, assessments were conducted around quarry sites in Hides and other areas.

Development of the compensation module for the Project Information Management System is complete. Training on this module for Socioeconomic team members in the field is underway.

Plate 6.1 – Meeting in Komo with the Undupi Telia and Undupi Halabura clans to finalize Clan Agency Agreement and Statutory Compensation

Exploring the potential of marita – an indigenous fruit of Papua New Guinea

Marita *Pandanus conoideus*, is a red or yellow cylindrical fruit, which can grow up to a metre long. Along with banana and pawpaw, it is one of the most commonly grown fruits in Papua New Guinea, featuring in the diets of people from the highlands through to the coast. Marita is prepared for eating by boiling, roasting or cooking in a stone oven. Its pulp and seeds are then mashed with water to create a thick, rich, red sauce, which is used as a flavoring for other foods including green vegetables, banana, and sweet potato.

As part of livelihood restoration activities, the Project is teaching women who are affected by resettlement about ways of processing marita to produce oils that may be used in beauty products such as body lotions in addition to traditional purposes. The training aims to build on the women's familiarity with the fruit and create opportunities for livelihood improvement, for example, through the sale of products.

Marita *Pandanus conoideus* fruit

6.2 Resettlement

The Project's approach to resettlement aims to give physically and economically displaced people the opportunity to, at a minimum, restore their livelihoods and standards of living. A dedicated Project team is working diligently to achieve this goal. Resettlement Action Plans are developed where physical and economic displacement occurs. In cases where only economic displacement occurs, a Community Resource Plan is developed.

Large construction projects can directly lead to an influx of people who perceive that there may be economic and employment opportunities and access to improved community services or family security. As a result of this, one issue gaining prominence is a rise in speculative developments, including houses and gardens, that are appearing after a census is completed in a Project Impact Area. The Socioeconomic team is communicating with communities about the cut-off dates after which new structures are ineligible for compensation.

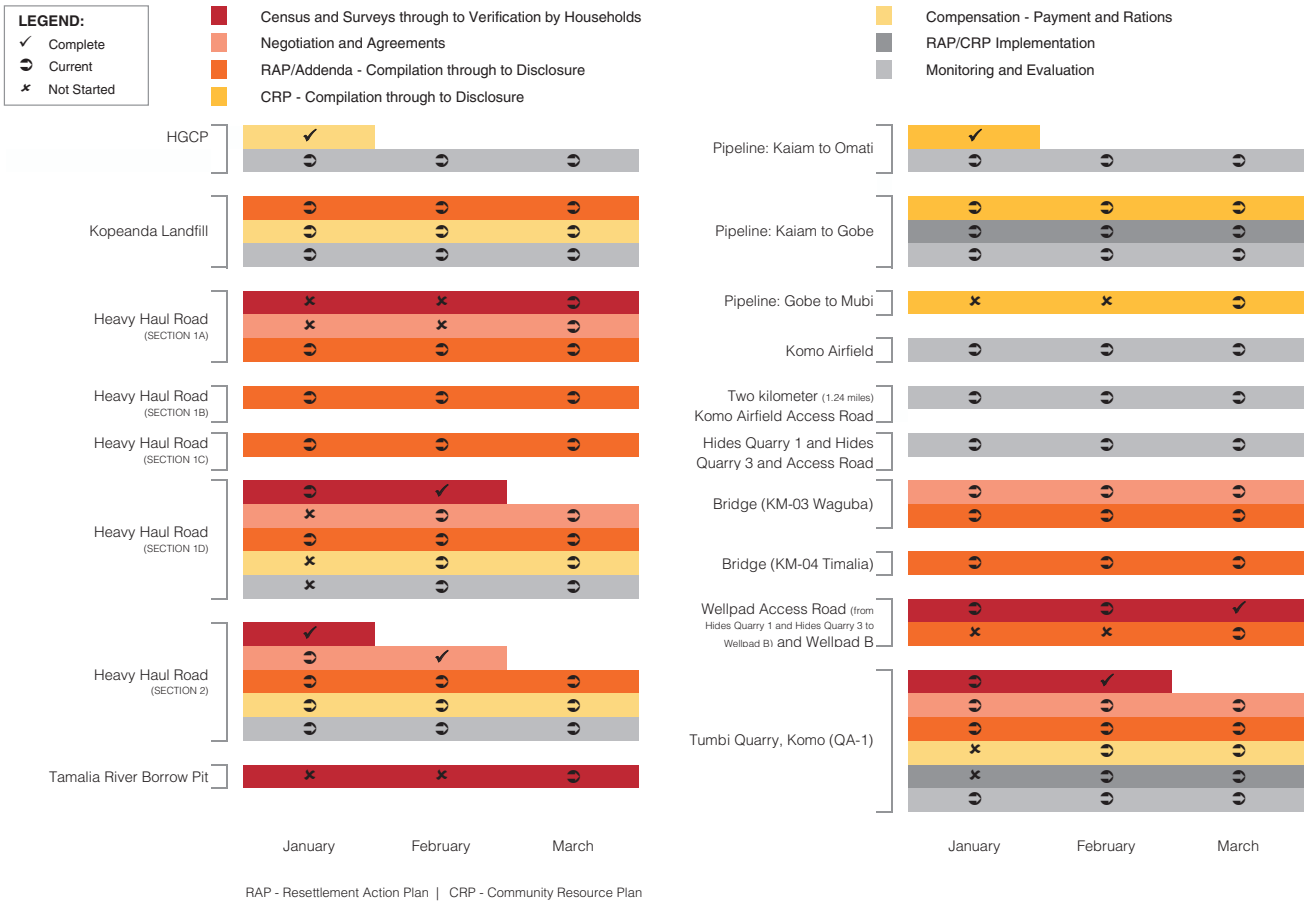
Significant activity occurred in the quarter due to land access requirements for different contractors. During March, a visit by the IESC presented an opportunity to discuss progress and present outstanding Resettlement Action Plans to the IESC. A key topic of discussion during the IESC visit was the need for more integrated scheduling between Project requirements and resettlement resources.

Plate 6.2 – IESC discussing resettlement

6.2.1 Milestones and progress

Resettlement activities, related to either physical or economic displacement, continued during the quarter, with particular emphasis on the Heavy Haul Road, Kopeanda Landfill site, Wellpad Access Road, Komo Airfield, HGCP, Hides Quarry 1 and Hides Quarry 3 and the southern portions of the pipeline. Refer to Figure 2.1 for the location of the Heavy Haul Road and its sections. An overview of the status of key resettlement activities is provided in Figure 6.1.

Figure 6.1 – Status of key resettlement activities



In addition, the following milestones were also achieved:

- Land access along Section 1D and Section 2 of the Heavy Haul Road as well as the Tumbi Quarry, Komo (QA1) site was obtained.
- Replacement water sites for Hides resettlers were constructed.
- IESC comments on HGCP, Heavy Haul Road, Kopeanda Landfill, and Hides Quarry 1 and Hides Quarry 3 Resettlement Action Plans were addressed to ensure compliance.

6.2.2 Highlights, challenges and achievements, lessons learned

The following activities took place during this quarter.

Komo Airfield: Activities focused on establishing access around the site, monitoring resettlement impacts and livelihood restoration.

The first post-resettlement monitoring survey was completed with all resettled households, as well as a control group, providing insight into the impacts of resettlement on affected households. This survey monitors key demographic and socioeconomic changes compared to the original 2009 baseline survey, and investigates affected households' use of compensation monies received. Results of the survey are being finalized for analysis of resettlement impacts.

Livelihood restoration activities included:

- Monitoring new gardens to evaluate establishment. All resettled households have established new food gardens and there are no indications that resettlers are experiencing food shortages.
- Establishing a demonstration garden plot on Government land at Komo Station, which included planting a range of crops and cultivars (pathogen-resistant sweet potato, beans, peanuts, corn and pumpkin) to demonstrate alternative and improved crops and small animal production units.
- A non-land-based program focused on providing training courses, particularly for women. Courses have targeted the Komo Catholic Women's Group and the Hipire Women's Association and included:
  - Baking (bread, buns, scones and cakes).
  - Fruit processing (juice).
  - Marita processing (puree, sauce, and body lotion).
  - Lard processing (cooking oil and body oil with marita).

HGCP: Resettlement was completed for all households at the HGCP, except one, whose outstanding concerns relate to a compensation claim against the Department of Petroleum and Energy. The Project's Government Interface team is working with the Department to address this situation. Ongoing activities at the HGCP have focused on livelihood restoration, monitoring, and construction of resettlement houses as well as replacement water sites.

Plate 6.3 – Komo Airfield demonstration garden plot

Livelihood restoration activities included monitoring new gardens to evaluate their establishment. Regular surveys are also conducted of sample households and will continue until ration supplies cease (nine months after resettlement has taken place).

Two resettlement houses were completed with a third nearing completion. The Project recruited six new carpenters and plumbers to speed up the delivery of replacement houses.

Meanwhile, five replacement water sites in the Hides area were constructed and another three are underway.

Heavy Haul Road: Resettlement activities continue along the Heavy Haul Road. Representative committees were established and meetings held for some sections of the road to address potential community impacts and proposed compensation packages. Initial negotiations involving affected households began in late March. In a section of the road where payments were completed, land access was given to contractors in early January. Livelihood restoration activities began, with housing and trade store agreements signed. In the Obai Large Cut area, north of the Timalia Bridge, six households were helped to transfer part of their compensation payments into a joint account for a new business venture. They have since purchased a 10 tonne truck that can be leased to area contractors.

Kopeanda Landfill: Following significant progress resettling all affected households in the fourth quarter 2010, activities in the first quarter involved completing outstanding account and agricultural compensation payments and finalizing compensation with one trade storeowner. In addition to the 33 households initially targeted for physical resettlement, a further four households at the edge of the buffer zone were identified and agreements signed. Payment for these households will be completed in subsequent quarters. Community planning regarding the construction of an access track around the landfill site is also underway.

Hides Quarries: Outstanding payments were made to four additional households identified during the previous quarter. Community planning continues to identify suitable replacement water sites accessible for households along the quarry access road. Livelihood restoration activities have focused on monitoring replacement gardens.

Tumbi Quarry, Komo (QA1): Resettlement requirements at QA1 increased from the 13 households initially estimated to a total of 18 requiring physical displacement. Housing agreements have been signed with all these households and initial payments completed. The houses involved were dismantled during this quarter.

Plate 6.4 – House being dismantled

Partial land access was granted to the contractor to commence construction of an access road through the site in March.

Pipeline camps and components: The first Community Resource Plan covering the Kaiam to Gobe section, which was completed in mid-December 2010 and submitted to the IESC prior to their visit in March. A second Community Resource Plan for the Gobe to Mubi area was submitted at the end of March.

Timalia River Borrow Pit: In the fourth quarter 2010, this site was identified as requiring possible resettlement. During this quarter, attempts were made to refine land access requirements and avoid or minimize resettlement, however, it has been confirmed that some physical resettlement will be required. Census and survey activities in this area were completed by the end of March with data processing and analysis for incorporation into a Resettlement Action Plan planned for the second quarter 2011.

7 Workforce

The Project workforce includes all employees, trainees and interns who are contracted or directly employed or seconded by Esso Highlands Limited as well as all employees who are either contracted or directly employed by the Engineering, Procurement and Construction (EPC) contractors, in Papua New Guinea.

7.1 Development

In accordance with the National Content Plan, the Project is increasing Papua New Guinean employment opportunities and building national worker skills.

By the end of March, more than 7,000 people were employed on Project activities in Papua New Guinea, and of those, over 5,300 were Papua New Guinean citizens, refer to Figure 7.1. Papua New Guinean citizens represent 75 percent of the Project workforce and more than 4,350 workers have been sourced through Lancos.

Since December 2010, the Project workforce has grown by nearly 12 percent to cater for rapidly increased construction activity at the LNG plant site as well as onshore pipeline and infrastructure works. Further workforce growth is expected in the coming quarters as early work has begun for the construction of the HGCP.

The Project continues to recruit Papua New Guinean citizens in roles such as administration, procurement, logistics, ground transport and security as well as in government affairs, human resources and accounting.

Workforce development and training are scaling up in line with the Project's rapidly growing workforce. Workforce training is integral to the Project's success and covers contractor provided training, Esso Highlands Limited training, the Operations and Maintenance Trainee Program, the Graduate Training Development Program, Intern Training, Port Moresby Construction Training Facility courses and subcontractor training.

Plate 7.1 – Papua New Guinean engineering graduate working as a Subsurface Engineer

Developing skills of Papua New Guinean engineering graduates

Papua New Guinean engineers Jenny Firmin-Pisimi and Moses Samo are training with the Project's Drilling team based in Melbourne. They both graduated in Mechanical Engineering from the University of Technology in Lae.

Jenny graduated in 2001 and then went on to do her Masters of Science in Petroleum Engineering at Heriot Watt University in Edinburgh under a British Chevening Scholarship. Moses graduated in 2005 and went to work for Schlumberger in Jakarta as a wireline engineer, and then for a project management company in Port Moresby.

"We have been studying every aspect of drilling operations in preparation for the PNG LNG Project drilling program," said Jenny.

Both Jenny and Moses have been impressed by the Project's approach to operations.

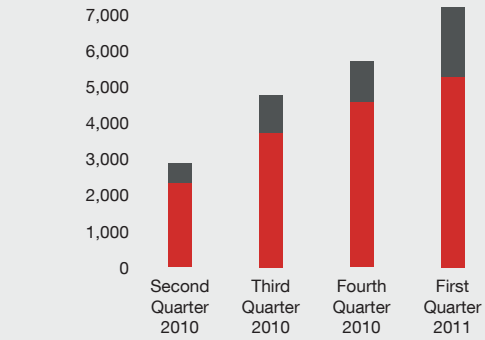
"This is very different to what I have been used to in the past," said Jenny. "The Project is very particular about how things are done, particularly safety – safety is right up front. It has certainly changed me regarding safety at home."

Moses agreed: "It's a very different work culture to what I'm used to. You could say they are almost paranoid about safety, but I find it extremely good because you know they have all the bases covered. This is going to be very valuable when we get out into the field."

Both Jenny and Moses are looking forward to the Project drilling program beginning. "We are excited and really keen to be involved with spudding the first well and seeing the Project advance," said Moses.

Papua New Guinean engineers Jenny Firmin-Pisimi and Moses Samo

Figure 7.1 – Project workforce



As part of the Esso Highland Limited graduate recruitment program, introduced in the fourth quarter 2010, six Papua New Guinean engineering graduates completed an intensive induction program held in Port Moresby in February. These graduate engineers are presently in Melbourne, Australia undertaking an 18-month development program covering areas such as pipeline, subsurface, corrosion, machinery and facilities surveillance engineering.

Recruits for the second intake of the Project's Graduate Training Development Program have been selected. Nine graduates, comprising two females and seven males, joined the Project in late February following induction activities in Port Moresby. All were allocated roles in line with their academic qualifications, which extend from engineering into areas such as procurement. Two of these graduates are being mentored at the HGCP and another graduate will join the HGCP mentoring program during the second quarter 2011.

Of the 22 graduates from the first intake of the Project's Graduate Training Development Program, four were appointed to permanent engineering positions with Esso Highlands Limited and 16 are working in other Project areas.

7.2 Workforce training

The Port Moresby Construction Training Facility officially opened in November 2010 with more than 820 graduates of whom 34 percent are female. Training curriculums are continuing to evolve to meet the construction requirements of the LNG plant site.

The Port Moresby Construction Training Facility has helped build relationships between the four LNG plant site villages, as students spend time together studying over several weeks, gaining a greater understanding and acceptance of each other. In addition, safety training provided at the Port Moresby Construction Training Facility has reached the villages with students bringing elements of safe conduct into daily life, such as appropriate handling of cooking and gardening utensils.

Plate 7.2 – Presentation by former Australian rugby league test captain, Mal Meninga

In addition to training, the Port Moresby Construction Training Facility hosts visits by important guests, giving students a chance to interact with them. For example, in March, former Australian rugby league test captain, Mal Meninga, presented the weekly safety topic and assisted with a scheduled building evacuation before presenting signed rugby balls to people recognized as safety champions by their managers.

Meanwhile, at the Juni Construction Training Facility, construction work reached its final stages. This facility will initially provide accommodation for workers in the Hides area prior to being handed over to the HGCP and Hides Wellpads contractor for training purposes.

7.2.1 Construction training

To date, the Project and its contractors have prepared more than 5,000 Papua New Guinean citizens for construction support roles through more than 80 courses and 1,500 training sessions.

Project provided training

The Project delivers training that is accredited to the internationally recognized Australian Quality Training Framework. It covers a range of construction-related skills including civil works, building, mechanical/piping, electrical and instrumentation, scaffolding, painting, insulation, and heavy vehicle driving. Every course includes a significant component of safety training, for which trainees can receive accredited certification.

During the first quarter, a six module Effective Communication Program, including a mentoring program, was introduced for administrative staff. The Project also provides Papua New Guinean Cultural Awareness Training and a comprehensive Induction Program for all new workers. Healthy enrolments continue in computer-based training on various desktop applications such as Microsoft Excel, Word and PowerPoint. An additional 'Succeeding in Esso Highland Limited Training Program' is due to commence in the second quarter 2011.

Preparations have also begun for a new learning management system, which will enable the Project to more effectively track and report training.

Contractor provided training

Most contractor provided training has a safety and health awareness focus. In addition to induction and safety awareness, contractors are providing a malaria and tuberculosis awareness and prevention program along with hazardous substance awareness and handling training.

7.2.2 Operations and Maintenance training

In late March, Operations and Maintenance trainees completed the mathematics and computing component of their Foundation Skills Program at the Production Operations Training Centre in Port Moresby.

The trainees will complete an intensive physics and chemistry curriculum over the next three months before starting Basic Skills Training (Introduction to the Oil and Gas Industry) in mid-2011.

All trainees who meet the academic and behavioral expectations of this Program will spend a year in Canada completing Advanced Skills Training. This will enable them to return to Papua New Guinea to be part of the start-up and commissioning activities at either the HGCP or the LNG Plant facilities. Ultimately, they will work on the newly constructed facilities with the opportunity to have long-term careers with the Project.

The trainees have shown great initiative in a number of areas including contributing to the development of a new program to help build leadership and public speaking skills. The program involves elections each quarter to select new leaders in various areas such as safety, academia, social, sport and accommodation. They have also designated class leaders and safety wardens with specific roles and responsibilities.

Next quarter, recruitment will begin for the second intake of Operations and Maintenance trainees who will commence training at the Production Operations Training Centre in January 2012.

Applicants who missed out on the first intake of trainee positions in 2010 may re-apply for this next intake. The Project has already provided 47 internships for promising applicants who just missed qualifying for last year's trainee intake. These interns began working with the Project during the fourth quarter 2010 to gain greater experience in supporting areas such as dispatch/logistics, medicine and occupational health, local business development, land and community affairs and human resources.

Women In Energy Network representative

Production Operations Training Centre trainee, Olive Isikiel has been selected to represent the Operations and Maintenance trainees on the Esso Highlands Limited's Women In Energy Network.

"I am delighted to be offered this opportunity to represent the interests of my fellow Operations and Maintenance Trainees in EHL's <Esso Highlands Limited> Women In Energy Network" Olive said.

Olive Isikiel, Esso Highlands Limited's Women In Energy Network representative

Plate 7.3 – Classroom studies at the Production Operations Training Centre

7.3 Health management

Following a review of the Project's Health Program in January, the Health team is implementing some continuous improvement processes including one related to the collection of health-related information from contractors. The new reporting system will track contractors' performance in Health Program implementation and help identify trends in disease/ health conditions for early intervention.

7.3.1 Pre-mobilization health support

The Health team continued to support Project pre-mobilization during the quarter by reviewing and approving contractors' health plans. Health team members were involved in a health risk assessment of one contractor's operations and provided guidance to two contractors preparing site-specific health management plans. As contractors move into the mobilization phase, such pre-mobilization health support will decrease.

7.3.2 Post-mobilization health support

A field assessment of health programs was completed for one EPC contractor. The assessment included a review of pre-employment medical processes, malaria and tuberculosis programs implementation, industrial hygiene programs assessment, and a camp hygiene and sanitation services assessment, including food and water services. The Health team is continuing to work with the contractor to implement initiatives for improvement in some programs.

In response to the increase in tuberculosis cases in the Upstream areas, a review of the tuberculosis screening process has commenced. The Health team will continue to work with contractors and medical service providers on the prevention and control of vector borne and communicable diseases as well as on case management processes. Contractors are implementing a full review of all personnel pre-employment medical records and re-screening workers as needed.

Plate 7.4 – Water tank inspection

7.3.3 Camp inspections

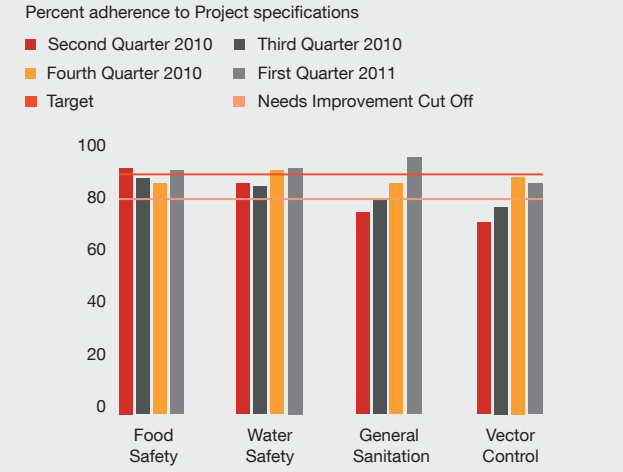
Prior to the mobilization of the Onshore Pipeline contractor into a 750 person camp in the Upstream area, health advisors conducted full camp pre-commission health assessments. These covered camp health and hygiene, vector control, food, water, medical services and medical emergency responses, and industrial hygiene.

The Health team reached the 90 percent target of all planned camp activities. Refer to Figure 7.2.

Figure 7.2 – Key planned versus completed post-mobilization health activities

In addition, the Health team assessed eight operating camps during the quarter. All health requirements were satisfactorily met, as shown in Figure 7.3. In three public health categories, the target was exceeded.

Figure 7.3 – Camps adherence to Project specifications by public health category

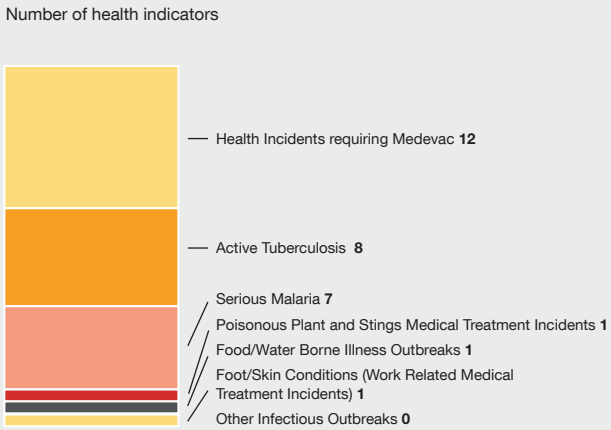


7.3.4 Lagging indicators

Lagging indicators inform the Project about the effectiveness of the implementation of various health programs. Health indicators for this quarter are presented in Figure 7.4.

In the first quarter, there were 12 health incidents that required medevacs. The Project is implementing several programs to improve the wellbeing of workers as lifestyle factors may have contributed to some of these medical conditions. Specific worker health programs include the Flu Vax promotion and the 'Body is a Temple' concept to reduce smoking and promote healthy eating habits. Project health advisors are also including contractor compliance with food specifications in audit schedules to maintain high nutrition standards.

Figure 7.4 – Comparison of health indicators



Foot and skin conditions

A significant improvement in foot and skin conditions has been achieved through foot inspection programs across Upstream worksites. These weekly inspections ensure early diagnosis of foot conditions. During this quarter, only one case was referred to a clinic for medical treatment. The Projects Foot Hygiene Training Program, 'Gutpela Lek', has also provided skills to workers in identifying early signs of foot infection and knowledge of remedial actions.

Food and water borne illness and outbreaks

During this quarter there was one recorded food borne illness outbreak involving eight workers at a Category 2[1] site. This number is significantly less than the 71 recorded cases resulting from the outbreak in the previous quarter, and is all the more significant, as food borne illness outbreaks are usually more common in the hot and humid conditions of summer.

Regular inspections and audits of kitchens by both health advisors and contractor health managers, along with the reinforcement of food safety messages, have contributed to this positive outcome. Improvements in food safety practices and food handling procedures have been noticed in most kitchens.

Malaria

There were seven new cases of malaria during this quarter. Four cases occurred in workers based in Port Moresby, two in workers at Upstream based Project sites and one at Motukea Island. All seven workers responded promptly to treatment and were back at work within a few days.

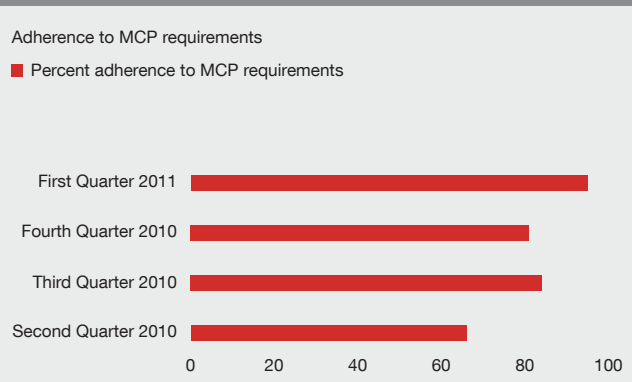
The Project is implementing additional measures to reduce the incidence of malaria cases. These include raising awareness with health stand-downs Project-wide to reinforce malaria prevention messages for all workers. Other measures include additional training sessions and workshops supported by education materials to raise awareness of malaria prevention measures among workers.

Project management also issued a communication to all personnel emphasizing the importance of following all areas of the Malaria Control Program (MCP) including bite prevention steps, use of appropriate clothing and insect repellants, chemoprophylaxis for non-immune personnel, and the importance of early diagnosis and treatment

7.3.5 Malaria Control Program and Malaria Chemoprophylaxis Compliance Program

Overall, compliance of contractors with MCP requirements is about 95 percent. Many malaria awareness training sessions were conducted at worksites during the quarter, as shown in Figure 7.5.

Figure 7. 5 – MCP field assessment adherence to Project requirements



However, results indicate that increasing compliance with MCP requirements did not decrease the number of malaria cases in this quarter. Therefore, the Health team is reviewing the MCP assessment program with the intention of refining the MCP assessment tool so malaria risks at Project worksites are identified more effectively.

[1] Category 1 – Sites established and managed by the Project or contractor. Category 2 – Third party facility completely utilized by the Project or contractor.

The visitor Malaria Chemoprophylaxis Compliance Program, a critical component of the MCP, is also under review, with a contractor guideline being developed for visitors to camps.

Distribution of mosquito nets to Papua New Guinean national workers is occurring in the Upstream areas to protect them and their families from mosquito bites. The first mosquito nets were distributed this quarter.

7.3.6 Tuberculosis control programs

An increase in the number of tuberculosis cases occurred during the quarter. The highest incidence was found in Papua New Guinean citizens, followed by expatriates from Asian countries. This particular disease pattern is not unexpected as the prevalence of latent tuberculosis in the general population of Papua New Guinea is approximately 33 percent. When active cases were identified, case management was undertaken in accordance with the Project's Infections Disease Outbreak Management Program. As a result, there was no indication of disease transmission at Project worksites.

To improve tuberculosis pre-employment screening, the Health team is working with contractors to resolve any difficulties with diagnostic facilities. It is anticipated that improved screening facilities will be in place in the second quarter 2011.

Additional measures to reduce tuberculosis include annual screening of all workers and implementing a specific surveillance program for latent tuberculosis cases.

World Tuberculosis Day, celebrated on March 24, also provided an opportunity for the Project to give a new impetus to the implementation of tuberculosis control programs. For further information, refer to *Case Study One – Staying Fit and Well: Preventing Tuberculosis.*

7.4 Safety management

The Project had a fatality this quarter when an Onshore Pipeline contractor crew member, who was clearing the pipeline ROW, died from injuries sustained in a tree felling accident near Gobe. We extend our deepest sympathies to the family and friends of the crew member. Relevant authorities were immediately notified and an investigation into this incident was undertaken by the Project.

In a separate incident, several subcontractors traveling in a contractor's helicopter sustained injuries in the Southern Highlands Province. They received appropriate medical care and Papua New Guinean authorities are investigating the incident.

The Project's Total Recordable Incident Rate is shown in Figure 7.6. Given the increasing Project work hours, shown in Figure 7.7, and recent events, safety will remain a key focus for both Project management and contractors.

A notable safety initiative conducted during the quarter was a safety leadership workshop with EPC contractors to reflect on the achievements of 2010, share 2011 SSHE plans and progress reports, and recognize outstanding safety achievements.

At the workshop, the Upstream Infrastructure contractor received the Annual Project Executive SSHE Award. The contractor, which has achieved five million work hours Lost Time Incident free, was recognized for excellence in worker involvement in safety, effective subcontractor management and collaboration and teamwork.

The Award recognizes contractors that demonstrate leadership and commitment to SSHE, show collaboration, teamwork and worker involvement for SSHE, provide SSHE competency training, conduct incident prevention training and demonstrate effective subcontractor management. Additional criteria include identifying improvement initiatives and innovation, sharing SSHE lessons learned and best practices, and demonstrating emergency preparedness and response.

Figure 7.6 – Trend analysis year-to-date

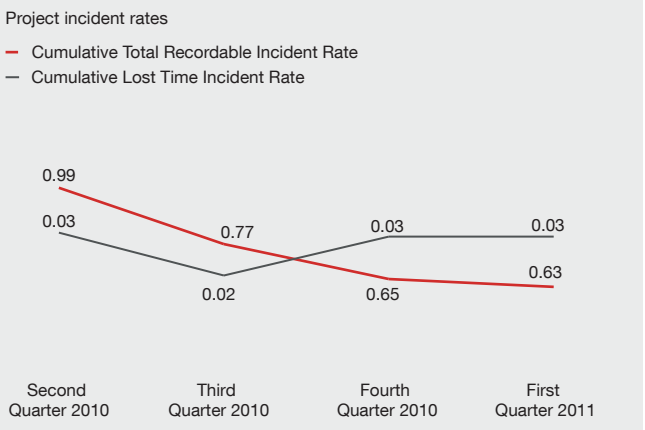
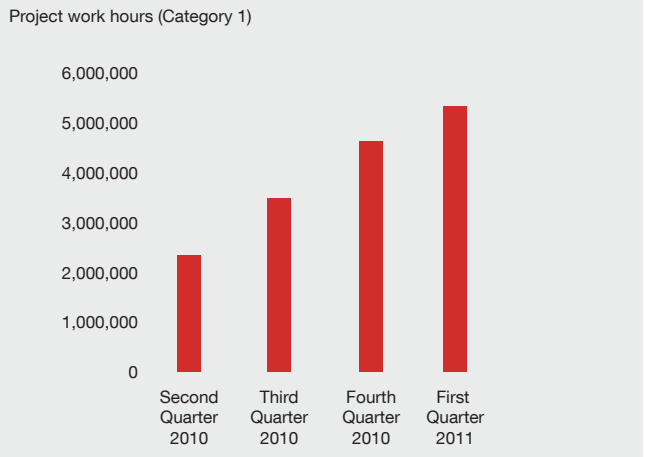


Figure 7.7 – Project work hours



NOTE: Project-to-date work hours totalled 19,667,490.

Plate 7.5 – Annual Project Executive SSHE Award celebration

Plate 7.6 – Contractors and field engineers monitoring the site at Tamadigi

7.5 Worker welfare and conditions

A high standard of worker accommodation and on-site working conditions are crucial for the safety, health and motivation of workers. Two of the Project Social Management Plans, Labour and Worker Conditions and Camp Management, outline mitigation measures and standards that ensure worker welfare conditions are met.

Four monitoring events around labor and working conditions conducted during this quarter highlighted some areas needing attention:

- Human resources policies and procedures.
- Worker induction.
- Effective management of pay and conditions of employment by Lancos.
- Papua New Guinean labor legislation.

7.5.1 Camps

Camp standards and quality of camp life was the subject of three internal monitoring events (as well as a self-assessment questionnaire completed by Project teams). Where gaps in implementation of relevant standards and Project requirements were identified, remedial action plans were put in place. The Project also appointed a team to investigate the best way to ensure equal, safe and comfortable female accommodation, seeking input from both expatriate and local female workers.

In the Upstream South area, site inspections at the proposed Onshore Pipeline contractor camp at Tamadigi monitored progress as the bush camp that previously occupied the site was demobilized. The Socioeconomic team is working with the contractor to ensure that the site is properly remediated, before construction of the main camp commences, in accordance with the Project Camp Management Plan.

Case Study One

STAYING FIT AND WELL: Preventing Tuberculosis

The Project has completed its annual tuberculosis, often called TB, screening program culminating with activities in recognition of World TB Day held on March 24.

The theme of World TB Day 2011 was 'On the move against TB: Transforming the fight towards elimination'. In support, the Project launched a 'Stay Fit and Well, Prevent TB' campaign involving workforce awareness and monitoring, and a treatment referral program. The workforce tuberculosis screening program has also been extended to the families of Esso Highlands Limited employees.

Tuberculosis is an infectious airborne disease that is both preventable and curable. Each year, 16,000 Papua New Guinean citizens are diagnosed with the disease and of those, 3,800 die. About one third of the World's population is infected with the bacteria that cause tuberculosis.

As part of the Project's work in helping to eliminate tuberculosis in the broader community, educational materials showing tuberculosis symptoms, diagnosis, prevention and treatment were distributed to health centers in communities within the Project Impact Area.

The Project will also expand research into tuberculosis diagnosis in partnership with Papua New Guinean medical institutions.

Educational materials distributed to raise awareness

Workforce tuberculosis screening program

What is TB?

Tuberculosis or TB, caused by *Mycobacterium tuberculosis* bacteria, which are easily transmitted through the air when someone infected with the disease coughs, laughs, shouts, sings, spits or sneezes. Anyone near the sick person can breathe tuberculosis germs into their lungs. Tuberculosis symptoms include: unexplained loss of appetite, weight loss despite a good appetite, a cough lasting for more than three weeks, coughing up blood, chest and back pains, shortness of breath, and night sweats.

TB is diagnosed using x-rays, sputum analysis, blood tests and skin tests, and early detection is vital so that the disease can be treated with antibiotic medication.

8 Conformance

The Project has procedures in place to verify, monitor, assess and audit its environmental performance and to identify areas for improvement. Requirements are outlined in the ESMP, which can be found at www.pnglng.com/commitment.

Plate 8.1 – Field environmental lead performing a quality check

8.1 Verification

The Project has a full-time verification presence at all worksites. All field observations and non-conformances identified during the quarter were reported in accordance with designated severity levels and tracked until closure.

The Project's Field Environmental team is close to fully staffed, including a field lead, area leads (for Pipeline North, Pipeline South and the LNG plant site), field environmental advisors, a dedicated archaeologist, an environmental trainee, and environmental construction advisors.

8.2 Monitoring

The ESMP and Environmental Monitoring Plan have been redistributed to all contractors for incorporation into their individual environmental management systems. Monitoring was undertaken throughout the quarter with results outlined in the following sections.

8.3 Assessments and audits

The IESC conducted a third site visit during the quarter, spending 17 days visiting most active worksites and meeting with Project workers and members of affected communities to monitor conformance with the Project's environmental and social commitments. The final report of the IESC's findings will be published on the Project website, www.pnglng.com, when completed. In the first quarter, the IESC released a report from its second site visit conducted in October 2010. The report is available on the Project website in the environmental and social reports section.

Contractors also undertake independent audits of their activities. The Onshore Pipeline contractor completed an internal quality, health, safety, and environment audit in March. The findings were not available at the time of publishing this Report but early indications suggest positive feedback.

8.4 Incidents, non-conformances and corrective action

8.4.1 Incident summary

Project-wide, 135 environmental incidents were reported in this quarter, including spills, unauthorized land use, damage to infrastructure, and violations of permits or regulations. These incidents are classified by severity level as shown in Figure 8.1.

Corrective actions were assigned to all reported incidents.

An important component of effective environmental management is ascertaining the causal factors for incidents. Figure 8.2 illustrates the factors causing incidents for this quarter.

Figure 8.1 – Environmental incident summary

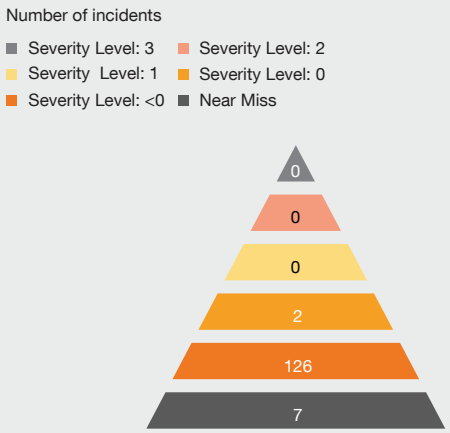
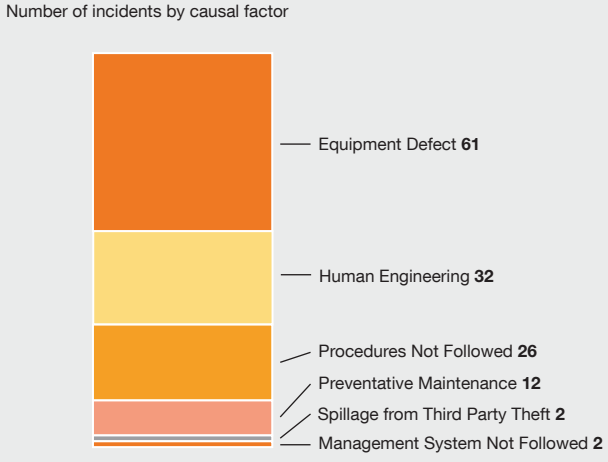


Figure 8.2 – Environmental incident and near miss causal factors



The two Level 0 incidents shown in Figure 8.1 concerned a fuel spill and a deviation from surveyed land boundaries. The fuel spill occurred at the LNG plant site when a hose disconnected from a bowser and 646 litres of fuel was spilled to ground. Approximately 300 litres of this was recovered, and the remaining soil was excavated and removed to a contained area for on-site remediation. The deviation from surveyed Project boundaries occurred at Hides Quarry 3 when an access road was cleared outside the work area specified in the pre-construction survey. To prevent such incidents reoccurring, learnings were highlighted and shared in SSHE Alerts issued to Project worksites.

8.4.2 Non-conformance and field observation performance

Non-conformances and field observations usually result from inconsistencies between works in the field and the commitments in environmental management plans, for example, improper waste management, improper storage of fuels or lack of adequate silt fencing. Positive field observations are also made when works are found to be meeting or exceeding the requirements of environmental management plans or where positive initiative has been taken.

Non-conformances and field observations may be raised through a number of channels, including verification inspections, audits or adhoc inspections. Examining incidents can help determine if a non-conformance has occurred. The primary difference between a field observation and non-conformance is that a non-conformance is of greater significance and requires a formal communication, the extent of which is determined by the severity level.

During this quarter, 13 positive field observations were made. Generally, positive field observations were recorded with regard to the proactive implementation of spill prevention and response as well as continued efforts in erosion and sediment control. A full summary of all non-conformances and field observations reported during this quarter is outlined in Figure 8.3.

For all field observations, general recommendations and improvement measures were discussed with the relevant contractors to help prevent possible escalation to a non-conformance. Corrective actions were implemented for all reported non-conformances and the 30-day close-out target period has continued to improve close-out rates. Closure status for non-conformances and field observations reported in this quarter are shown in Figure 8.4.

Figure 8.3 – Environmental non-conformance and field observation summary

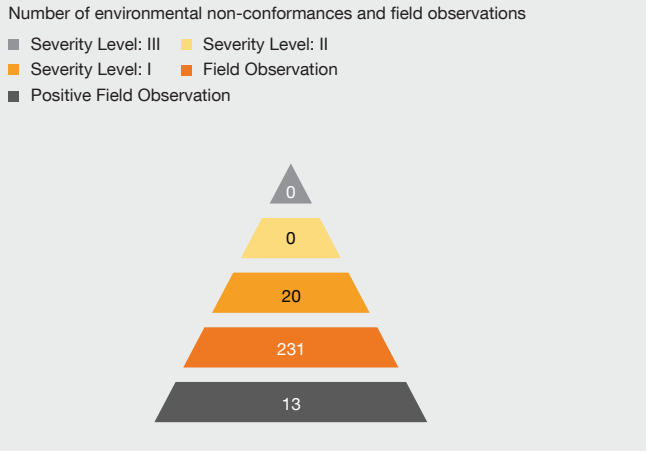
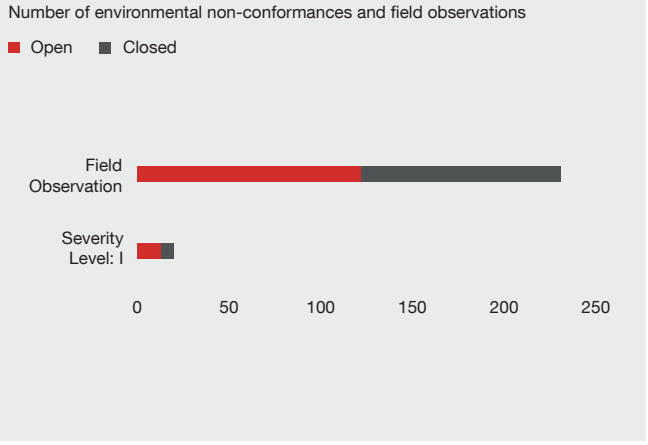


Figure 8.4 – Project non-conformance and field observation closure status



The Project is required to provide a summary of Level II non-conformances and above. No Level II or Level III non-conformances were recorded during this quarter.

As construction activity increases, the number of non-conformances and field observations has also increased. However, the proportional rate of incidents to work hours has remained relatively constant, suggesting a steady level of environmental conformance.

9 Pollution Prevention and Abatement

Installing waste management facilities and preventing spills were a focus for the Project in the first quarter.

9.1 Air emissions

The primary emission sources from construction activities continues to be flue gas from camp waste incinerators, dust from worksites and exhaust emissions from stationary and mobile plant equipment.

The Project controls air emissions by monitoring average incinerator combustion temperatures to confirm that incinerators are operating within their design specifications' ideal temperature range and conducting regular monthly maintenance checks on vehicles and equipment. During this quarter, all Project incinerators maintained correct temperatures.

The majority of material incinerated is domestic waste with less than three percent restricted waste. The latter is largely hydrocarbon contaminated material creating fuel for a hotter burn. Additional incinerators were commissioned in the quarter for the Komo Pioneer Camp and the onshore pipeline camps.

Efforts to minimize dust emissions during dry periods continue. Mitigation measures include controlling speed on unsealed Project roads, maintaining designated traffic access routes, and dust suppression by water trucks.

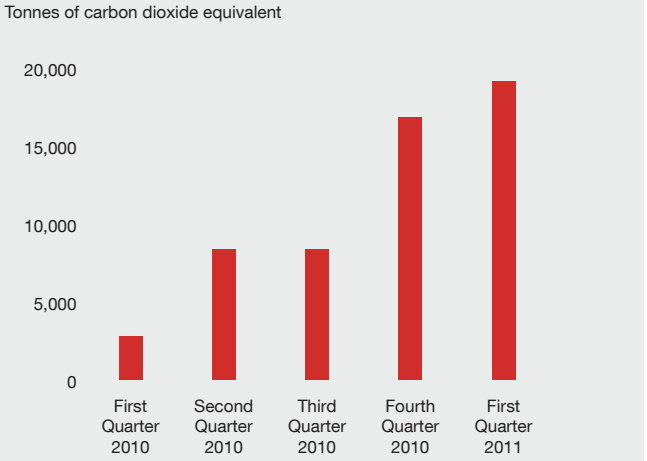
Greenhouse gas emissions increased slightly during the quarter, mirroring the change in worksite activity from the use of heavy equipment for clearing and earthworks, to transport and construction activities.

The Project's diesel use was 6,861 kilolitres equating to a greenhouse gas emissions value of 18,432 tonnes of carbon dioxide equivalent. A small amount of petrol was used for chainsaws and boat engines, contributing 43 tonnes of carbon dioxide equivalent.

Greenhouse gas emissions were calculated based on direct fuel use for both stationary (such as generators and incinerators) and mobile equipment (such as heavy earth moving equipment and transport vehicles). Figure 9.1 presents the calculated greenhouse gas emissions by quarter since the first quarter 2010.

Atmospheric air monitoring was conducted at the LNG plant site in March, with three designated sites monitored for sulfur dioxide and nitrogen dioxide. All sites were well below the criteria levels adopted for the Project. The monitoring locations and results are shown in the Table 9.1.

Figure 9.1 – Greenhouse gas emissions per quarter



NOTE: Emissions calculations are based on the Australian Government Department of Climate Change and Energy Efficiency, National Greenhouse Accounts Factors, July, 2010.

Table 9.1 – Sulfur dioxide and nitrogen dioxide monitoring results

Location	Parameters	Criteria µg/m³	Results µg/m³
Point A (Roundabout Gate 3)	Sulfur dioxide	< 500	< 20
	Nitrogen dioxide	< 200	< 1
Point B (Roundabout Gate 2)	Sulfur dioxide	< 500	< 20
	Nitrogen dioxide	< 200	< 1
Point C (Roundabout Gate 1)	Sulfur dioxide	< 500	< 20
	Nitrogen dioxide	< 200	< 1

9.2 Noise and vibration

Ensuring that noise and vibration from Project activities is within acceptable levels, limits the impact on surrounding communities. Acceptable levels are determined by assessing the existing background noise and the surrounding receivers such as local residents and sensitive fauna, including bats.

Noise monitoring equipment was sourced in the quarter and a detailed noise monitoring verification program is being developed.

During this quarter, there was one community grievance regarding vibration from passing trucks and this is being addressed.

9.3 Waste management

A Project-wide waste management review identified key waste generation and management milestones and activities as well as corresponding challenges. Specific outcomes of this review include:

- Reduced reliance on other organizations for waste support and increased self-sufficiency.
- Increased alignment to a waste hierarchy and corresponding reduction in the Project waste footprint.

- Increased capacity and preparedness to manage the impacts of delays to delivery of key waste management infrastructure.
- Increased engagement with Papua New Guinean companies as potential providers of waste management services to the Project.
- Confirmation of the overall capacity to manage predicted Project construction and operational waste streams and volumes.

By maintaining a holistic approach to waste management, the Project aims to work through issues, develop solutions and share lessons learned. Despite the progress described above, there are still some areas where more attention is needed to ensure the Project's performance objectives for waste management continue to be achieved. Two examples are the installation and management of key waste infrastructure (notably the Hides Waste Management Facility) and the maintenance of safe and secure waste management segregation and storage facilities.

Waste types and volumes are recorded across the Project. Solid waste by type for those contractors with active sites is illustrated in Figure 9.2.

Waste materials generated this quarter were predominantly general construction debris, paper and cardboard, plastics and insulation, scrap metal and wood.

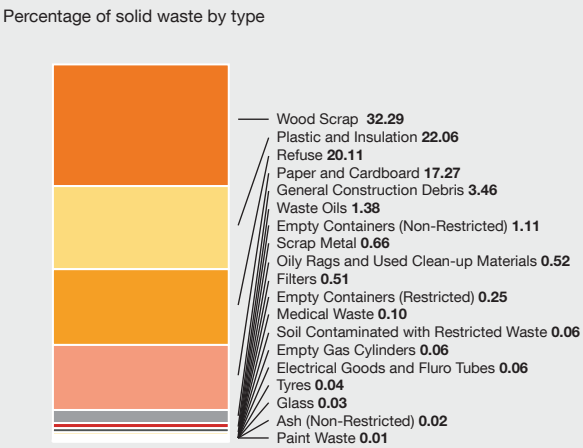
Figure 9.3 illustrates disposal methods for solid wastes during this quarter.

Construction of waste management facilities and installation of equipment continued. In addition, dedicated waste supervisors were appointed and trained for the Kopi Camp 1 waste management area. Training was also provided during the quarter in hazardous waste management and segregation along with general waste management.

Generally, the quantity of waste generated across the Project has increased as workers move into camps and construction activities increase, particularly for the Onshore Pipeline and HGCP and Hides Wellpads contractors. The HGCP site is storing segregated waste pending the arrival and installation of two high temperature incinerators. To assist with planning for construction waste infrastructure, a review of current and future practices was undertaken by the HGCP contractor to ensure future storage, handling and treatment capacity could meet demand.

At the LNG plant site, the incinerator at the Pioneer Camp and the interim waste storage area continued operation with the latter to be converted into a hazardous waste storage area. The design for the engineered sanitary landfill was completed and tender packages for operations and maintenance works of the landfill and interim waste storage area have been issued.

Figure 9.2 – Solid waste by type[2]



NOTE: The following waste types have a value of 0%: Clearing and Grubbing Waste, Sludge, Ash (Restricted), Miscellaneous Restricted, Spent Batteries, Used, Spent, Expired and Contaminated Solvents, Chemicals and Additives.

Figure 9.3 – Waste by disposal method

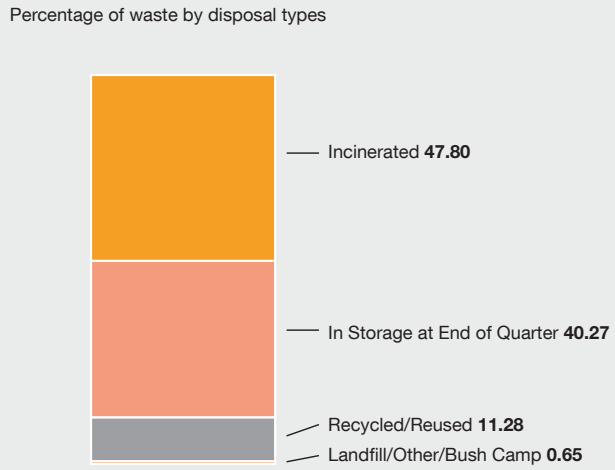


Plate 9.1 – Waste management area under construction at Kopi Camp 1

[2] Wastewater and sludge have not been included this quarter as systems are still being developed to capture volumes across all sites.

Wastewater treatment plants continue to be installed in new camps, for example, at Kopi Camp 1 and Komo Airfield Main Camp. Those previously installed at camps were monitored to meet revised Monitoring Plan requirements. Logistical difficulties were encountered with holding times to achieve accurate results in some parameters such as biochemical oxygen demand. Efforts to improve this include multiple sampling and discussions with logistics management. After some difficulties reported in the fourth quarter 2010, the Komo Airfield Pioneer Camp wastewater treatment plant is functioning effectively following advice from a wastewater treatment specialist.

9.4 Hazardous materials

The Project aims to avoid using hazardous chemicals and materials subject to international bans or phase-outs and to prevent the uncontrolled release of hazardous materials during transportation, handling, storage or use. A list of banned chemicals and substances is communicated to all contractor procurement teams who then confirm these chemicals are not included in purchases.

During this quarter, the HGCP and Hides Wellpads contractor generated a hazardous materials register for the Pioneer Camp and ensured a consolidated list of Material Safety Data Sheets were on-site for all materials. A dedicated hazardous goods storage container was also procured and installed. The HGCP and Hides Wellpads contractor undertook spill risk assessments for all materials planned to be brought to the site including personal protective equipment and spill response equipment.

No materials subject to bans or phase-outs were reported to be on any site during this quarter.

9.5 Spill prevention and response

Minimizing both the number and volume of spills, and effectively cleaning up any spills that do occur, is a priority for the Project and its contractors.

An examination of causal factors of spills shows the primary cause is less than adequate adherence to procedure, followed by equipment damage and a lack of adherence to preventative maintenance.

The Project initiated external reviews on several contractor sites, concentrating on preventative maintenance procedures and operator spill prevention practices. Recommendations from those reviews have resulted in new field based training packages targeting operator understanding of procedures.

During the quarter, contractors completed various spill awareness and response training, leak inspections of machinery, assessments of working conditions and environs and established teams capable of responding to a site level spill incident. Spill risk assessments were also undertaken for newly active sites including two at the HGCP (construction and installation spills and construction camp spills) with actions implemented in response to the findings.

Plate 9.2 – Spill kits provided to fuel trucks

Plate 9.3 – Environmental officer training a fuel dispensing truck driver on spill response

The Upstream Infrastructure contractor updated observation and intervention cards to include spill prevention, effectively integrating spill prevention into existing hazard management systems. Spill stand-downs were undertaken for selected worksites in the field. During the stand-downs, all fuel transfer activities and secondary containment requirements for fixed and mobile equipment were discussed within workgroups, together with Project and contractor expectations, equipment and methods of spill response.

While on-site workgroups are expected to provide prompt response capability for small spills, third party service providers may assist in responding to larger spills. During this quarter, both the Telecommunications and HGCP and Hides Wellpads contractors formulated contingency response arrangements and requested tenders for emergency response support in the event of a larger spill.

9.6 Dredging and trenching

Dredging at the Omati River will create a shallow access channel to permit offshore pipeline construction. Trenching is required within Caution Bay to bury and protect the pipeline from shipping traffic. The resultant spoil from dredging and trenching operations will be carefully managed to minimize environmental impacts such as turbidity.

In the fourth quarter 2010, the Project conducted a background marine survey to determine the physical and chemical composition of the material to be dredged. No existing elevated contaminant concentrations beyond expected background values were identified.

Plate 9.4 – Survey vessel, Miss Rankin

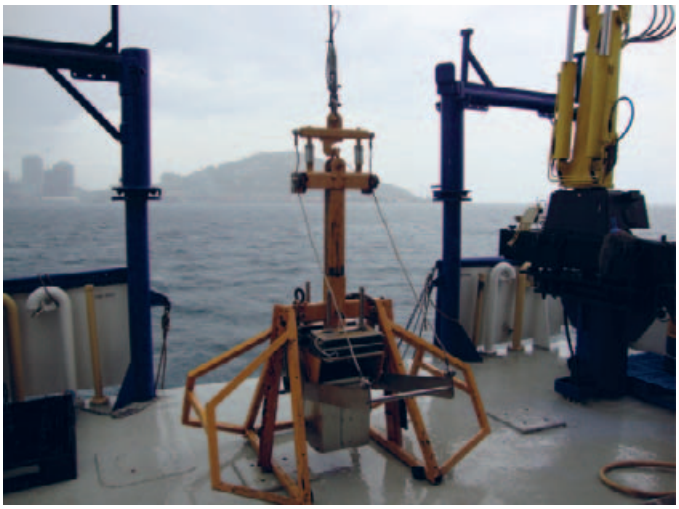


Plate 9.5 – Box core sediment sampler

10 Biodiversity

The Project places a high value on protecting Papua New Guinea's biodiversity, implementing a range of measures to minimize impacts to it.

10.1 Ecological management

The Onshore Pipeline contractor ran toolbox talks this quarter to emphasize the no hunting, no fishing and no collection of valued flora policies.

Pre-construction surveys identified significant species such as the Magnificent Bird-of-Paradise *Cicinnurus magnificus*, Raggiana Bird-of-Paradise *Paradisaea raggiana*, Pesquets Parrot *Psittrichas fulgidus*, Southern Cassowary *Casuarius casuarius*, Blyth's Hornbill *Rhyticeros plicatus*, Palm Cockatoo *Probosciger aterrimus*, Sulphur-crested *Cockatoo Cacatua galerita*, Freshwater Crocodile *Crocodylus novaeguineae*, Long Beaked Echidna *Zaglossus* sp. and the Lowland's Tree Kangaroo *Dendrolagus spadix* at Mubi Quarry. Existing mitigation measures were deemed adequate for all species identified. For further information on the birds of the Project area, refer to *Case Study Two – Spectacular Birds of Papua New Guinea*.

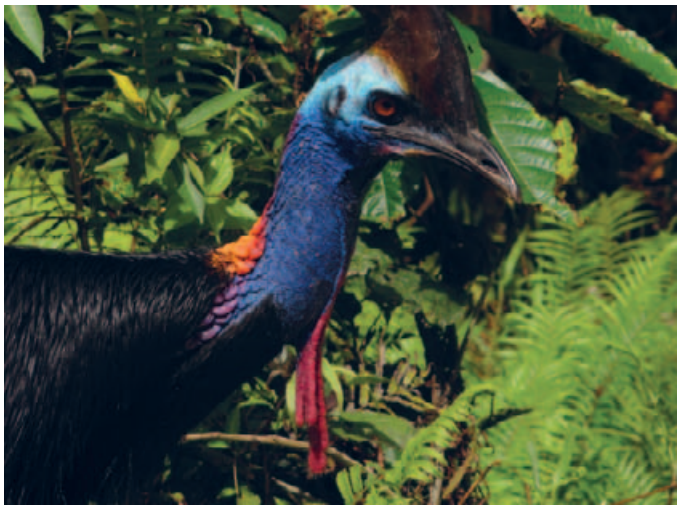


Plate 10.1 – Southern Cassowary *Casuarius casuarius*

Plate 10.2 – Freshwater Crocodile *Crocodylus novaeguineae*

There was also activity in the quarter centered on bats. Monitoring during ROW grading to check for disturbance to bats in a cave near construction activities found that this habitat had not been affected. On the Mubi to Kantobo Road and in the proposed Hides Quarry, caves considered suitable to support large colonies of bats were discovered, even though bats were not present at the time of the survey. A route re-alignment is being developed for the Mubi to Kantobo Road and the Hides Quarry was relocated to another limestone pinnacle north of the initial site to avoid the caves. Blasting controls will also be implemented in the vicinity of the caves (refer to *Section 9.2 Noise and vibration*).

The Project has a zero tolerance policy on hunting or harassing animals. This is communicated to all employees prior to the commencement of work and through ongoing toolbox talks. The importance of this education was illustrated in March at Hides Quarry 3 when one worker noticed another capturing an unidentified species of cuscus for food. The worker took the initiative to explain the Project hunting ban and then released the animal the same day. A subsequent toolbox talk emphasized the no hunting, no fishing and no collection of valued flora policies and the worker who released the animal was congratulated in front of his peers.

Other activities included monitoring of two Sandalwood *Santalum macgregorii* trees outside the border of the LNG plant site with no detrimental effects from Project activities observed.

A week-long marine survey was undertaken to sample the benthic community in the Omati River and offshore prawn trawl grounds. The benthic community is animals typically associated with soft estuarine and coastal sediments. The findings of the survey were consistent with the assessment of the Project Environmental Impact Statement, which describes the river resources that are central to subsistence fishing, as being predominantly located in habitats close to riverbanks and side creeks and not in the mid-stream areas. An environmental monitoring plan for marine fauna is under development and incorporates the findings of this survey.

Plate 10.3 – The Hides Quarry 3 worker holding the rescued cuscus

Plate 10.4 – Pig-nosed Turtle *Carettochelys insculpta*

As part of a traffic and resource use survey undertaken for the Omati River, information was collected from villagers on their observations of species in the river. Survey results indicated knowledge of two species in the estuary, the Irrawaddy (snub-nosed) Dolphin *Orcaella brevirostris* and Pig-nosed Turtle *Carettochelys insculpta*, both listed as 'Vulnerable' by the International Union for Conservation of Nature.

During installation of the Project offshore pipeline, low vessel speeds (1 to 2 knots) and short range, conventional sonar will minimize the effects on these species and other large marine fauna such as whales and whale sharks.

Protecting large marine animals

The success of the Project Biodiversity Strategy relies on protecting marine fauna and the Project will implement rigorous marine fauna observation procedures to:

- **Minimize the risk of collisions with marine fauna passing close to construction and pipe lay vessels.**
- **Initiate defined mitigation measures when marine fauna are close to Project vessels.**

As part of the marine fauna observation procedures, all observations and encounters with marine mammals and turtles are documented in an observation log. In the event of any close approach (within 500 metres) by marine fauna, vessel crew will be alerted and response actions implemented to avoid injury to any such fauna, as much as practicable. Response actions vary depending on the distance of the animal from the vessel.

The Offshore Pipeline contractor is responsible for implementing these procedures and the Project will train vessel officers in their application prior to pipeline construction.

No adverse impacts are expected on large marine fauna during pipeline installation.

10.2 Quarantine management

In line with the Project's commitment to minimizing any quarantine risk prior to importation, reports detailing cargo movements continue to be provided to the NAQIA ahead of the required 90-day notice period. This enables identification of any higher risk shipments, the effective deployment of agency resources and sufficient lead-time to undertake any specific NAQIA direction prior to departure from the port of origin.

Contractors planning to mobilize in the second half of 2011 are preparing for, or have begun, engaging with the NAQIA on specific cargo movements such as pipe lay vessels and associated equipment for working on the offshore pipeline.

To facilitate a consistent approach, and assist the NAQIA wherever possible, contractors importing goods are sharing information about successful methods used to achieve compliance, particularly in unique situations such as the clearance of coated pipe while at sea.

Constant performance evaluation continues to be undertaken via monthly stakeholder engagement meetings that include the NAQIA, Papua New Guinea Customs, Papua New Guinea Ports, Project Logistics Coordinators, and the Project Material Logistics Group as well as through reviews of performance indicators supplied by contractors.

10.3 Weed, plant pathogen and pest management

Weed inspections continue in the Project Impact Area. Examples of weeds found during this quarter include Elephant Grass *Pennisetum purpureum*, Japanese Sunflower *Tithonia diversifolia* and Giant Cane *Arundo donax* along the Heavy Haul Road and Big Lip Rope *Merremia peltata*, Bamboo Piper *Piper aduncum, Mikania micrantha,* and *Ludwigia hyssopifolia* along the onshore pipeline ROW. Weed control included spraying around the helipad at Kantobo, along the Heavy Haul Road and at the LNG plant site Pioneer Camp and perimeter fence. Manual methods such as hand pulling and digging out along the onshore pipeline ROW and some access roads, were also used. In response to the rapid colonization of stripped soil by Big Lip Rope *Merremia peltata* plantlets along the ROW and in the immediate vicinity, the Onshore Pipeline contractor revised their workforce and equipment requirements to allow adequate control. In addition, signs were erected on the ROW to denote access points to Weed Management Zones.

Dieback, which can be caused by the fungal pathogen Cinnamon fungus *Phytophthora cinnamomi*, results in canopy defoliation and death in trees. The Project is establishing an in-house laboratory at the Moro B Camp to analyze samples for signs of the fungus. The laboratory will be operated by the Onshore Pipeline contractor for a period of approximately six months. During this time, samples collected by other contractors will also be analyzed at the laboratory.

Plate 10.5 – Weed Management Zone signage identifying the presence of Big Lip Rope *Merremia peltata* near the Kopi Scraper Station Camp

10.4 Induced access

Significant progress has been made regarding the Project's Induced Access Management Program. This Program aims to control access to new Project roads and reduce the occurrence of potentially damaging non-Project activities.

Construction access to the pipeline ROW and associated induced access considerations are undergoing a detailed review. Induced access has been included as a specific consideration of pre-construction surveys related to the onshore pipeline and mitigations are included in survey reports.

The Project-wide Induced Access Register, which records details of all new Project roads (including access control requirements), was further developed during this quarter in order to provide a greater level of detail about each access.

In addition to construction phase induced access, the Project has reviewed post-construction (or long-term) induced access control requirements. Requirements include removing Project infrastructure (such as culverts) once it is no longer required and installing access control measures such as security guards and physical barriers where appropriate.

10.5 Reinstatement

Management of topsoil continues to be a prime factor in the preservation of the bank of seeds and other reproductive plant material in the stored soil. Adequate topsoil management enables natural regeneration from such plant material contained in the soil.

Quarry 266 was reinstated during the quarter. This quarry was a pre-existing borrow pit along the Kikori to Omati Temporary ROW Access Road used to supply fill material for the Kopi Scraper Station Camp, access road and explosives storage area. A mild overall slope was created to allow for drainage and previously stripped topsoil was spread, graded and tracked by a low pressure bulldozer to break it up.

Plate 10.6 – Quarry 266 during use and after reinstatement

Brush removed from the site and stored during material extraction was spread over the topsoil to help stabilize the surface with the results shown in Plate 10.6.

10.6 Biodiversity Strategy

Following public disclosure of the Biodiversity Strategy in December 2010, the Project commenced formal consultation with key stakeholders, building upon informal consultation undertaken during 2010.

During this quarter, consultation meetings were held with a series of international and national non-government organizations including Conservation International, the Papua New Guinea Institute of Biological Resources, Mama Graun, the Institute for Applied Ecology (University of Canberra), Tenkile Conservation Alliance, the Nature Conservancy, Woodlands Park Zoo, the Research and Conservation Foundation of Papua New Guinea, the Papua New Guinea Conservation Forum, and the Wildlife Conservation Society. The Project also met with the Papua New Guinean Department of Environment and Conservation.

These consultations were constructive, resulting in positive feedback for the Biodiversity Strategy, valuable information about conservation models, and the identification of potential partners for an Offset Delivery Plan.

The Offset Delivery Plan is a major milestone for the Project Environmental and Social Milestone Schedule. It will define in detail the approach that the Project will take to execute offset projects to account for residual biodiversity impacts. The Project is also working with a potential partner to design programs in the Lake Kutubu Wildlife Management Area that will promote and enhance the conservation aims of this protected area.

Case Study Two

SPECTACULAR BIRDS OF PAPUA NEW GUINEA

Among the many amazing sights and experiences in Papua New Guinea are the country's birds. Despite being only about the size of California in land area, Papua New Guinea is well recognized for its rich diversity of bird life, with about 800 species of birds found in the country. Particularly notable is the level of endemism, or uniqueness, of the bird population. Approximately 300 bird species occur only in Papua New Guinea, New Guinea and its collection of islands. In contrast, the continental United States has a comparable number of bird species, but fewer than ten being endemic.

New Guinea and its islands support most of the World's species of Bird-of-Paradise, Bowerbird, Cassowary and Owlet-nightjar species. Beautiful birds abound including the Rainbow Bee-eater *Merops orantus* as shown here.

Rainbow Bee-eater *Merops orantus*

Birds-of-Paradise

Birds-of-Paradise are distinct not only due to their range of plumage colors but also for their mating display. While females have duller plumage for camouflage, males have vibrant, sometimes iridescent colors (as with the Brown Sicklebill *Epimachus meyeri*), and bear a variety of appendages. These include: tail streamers up to one metre in length as seen on the Ribbon-tailed Astrapia *Astrapia mayeri*; controllable head wires; opening and closing tail wires; 'arm-pit' fans; erectile nasal tufts and crown feathers such as the Crested Bird-of-Paradise *Cnemophilus macgregorii*; and even opening and closing feather hats.

Males perform displays to females at sites (leks) in trees or on the forest floor. Displays are performed with a group of other males present, anywhere from four to 20 adult and immature males, to determine which male will be 'head' of the lek and mate with the female. Such displays are impressive.

Raggiana Bird-of-Paradise *Paradisaea raggiana*

The Raggiana Bird-of-Paradise is the national symbol of Papua New Guinea. Its image is on the nation's flag and currency and it is the familiar logo of the national airline of Papua New Guinea, Air Niugini, the national daily newspaper, the PNG LNG Project, and even a popular beer brewed and sold in Papua New Guinea.

Right: Raggiana Bird-of-Paradise featured on the Papua New Guinean flag

Case Study Two

SPECTACULAR BIRDS OF PAPUA NEW GUINEA

For example, the Blue Bird-of-Paradise hangs upside-down from a branch with its splendid blue feathers and tail plumes spread over his head.

Twenty species of Bird-of-Paradise listed on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species occur in Papua New Guinea and its offshore islands. All of these species are protected under Papua New Guinean legislation. Twelve of these have habitat ranges within the Upstream areas of the Project, which makes seeing these birds during construction activities reasonably likely. The Project has developed a Bird-of-Paradise Management Guideline to help minimize the impacts of construction on these species. The Guideline provides instructions on how to manage Bird-of-Paradise individuals and leks, should an encounter occur.

The Crested Bird-of-Paradise *Cnemophilus macgregorii*

Huli people with plumes and hornbill casques

Brown Sicklebill *Epimachus meyeri*

Many Birds-of-Paradise are still actively targeted by local hunters for plumes that are used for deeply historical and culturally significant ceremonial purposes. Hunting for plumes occurs across Papua New Guinea, including within the Project area, and can result in significant population declines or disappearance from areas of human settlement.

The principal opportunity for reducing adverse impacts on Birds-of-Paradise from Project construction activities is during initial land clearance and upon chance encounters. The main method of protecting the species is minimizing vegetation clearance and protecting display sites. To assist with this, pre-construction surveys check for signs of Birds-of-Paradise. Project workers are prohibited from disturbing Bird-of-Paradise feeding and display trees as well as hunting these birds. If a Bird-of-Paradise display area is found during vegetation clearing, activities immediately cease and the site supervisor and Project environmental advisor are notified.

Ribbon-tailed Astrapia *Astrapia mayeri*

Case Study Two

SPECTACULAR BIRDS OF PAPUA NEW GUINEA

Cassowary

Another striking Papua New Guinean resident is the cassowary. These terrestrial, flightless birds have coarse, glossy black plumage as adults, a tall helmet (known as a casque) and a bright blue neck with red folds of skin hanging from the base (called wattles). Interestingly, the red color of the wattle becomes paler or darker according to the mood of the bird. At 1.8 metres they are tall birds, and females weigh in the order of 60 kilograms. The Southern Cassowary is the third largest and second heaviest bird in the World (emu and ostrich being larger and ostrich being the heavier). Cassowaries are also athletic. Their powerful legs enable them to run at speeds of up to 50 kilometres per hour, they can jump up to 1.5 metres and are also expert swimmers.

There are two species of Cassowary recorded in the Project area: the Dwarf Cassowary *Casuarius bennetti* (listed as Near Threatened by the IUCN), and the Southern Cassowary *Casuarius casuarius* (listed as Vulnerable by the IUCN). Whilst not recorded during surveys, a third species, the Northern Cassowary *C. unappendiculatus* (listed as Vulnerable by the IUCN), has a habitat range within the Upstream area of the Project.

Southern Crowned Pigeon *Goura scheepmakeri*

Buff-faced Pygmy Parrot *Micropsitta pusio*

Dwarf Cassowary *Casuarius bennetti*

Cassowaries are a keystone species in Papua New Guinean forests, playing an integral role in the maintenance of the forest ecosystem. One of their most important functions is dispersing rainforest seeds. Cassowaries eat up to 150 different fruit species and as these take some time to digest, their seeds can be deposited some distance away from the source plant. Estimates indicate that as many as 100 plant species are almost solely dependent upon the cassowary for seed dispersal.

The Dwarf Cassowary is a favored target of local hunters throughout most of the Project Impact Area and hunting, through increased public access to the Project Impact Area, is a risk. A Species Management Guideline has been developed for cassowaries. Specific measures include slowing or stopping vehicles if a cassowary is seen on a road. Cassowary surveys are also completed in all areas to be disturbed prior to commencement of works, and sites where animals may become trapped, for example, pits, sumps and pipeline trenches, are inspected daily.

A Poisonous Bird

Papua New Guinea is also the home of the Hooded Pitohui *Pitohui dichrous*, the World's only poisonous bird. Its diet includes a beetle with toxins that manifest in the feathers of this unique bird. Presumably this renders the Hooded Pitohui exempt from the diet of all but the most careful predators.

Large and Small

The World's largest pigeon, the incredible Southern Crowned *Pigeon Goura* scheepmakeri (listed as Vulnerable by the IUCN) looks like it has its own tiara. It is a ground-dwelling bird species of the Project area that, being a relatively fat bird, is often hunted. With a size of 8.4 centimetres, the Buff-faced Pygmy Parrot *Micropsitta pusio* is the World's smallest parrot. A poorly studied species, the name derives from the buff color of the cheeks, face, and crown.

11 Resource Management

The Project recognizes the ongoing social, economic and cultural value of natural resources, and takes care to sustainably manage resources such as water, timber, quarry materials and soils.

11.1 Water management

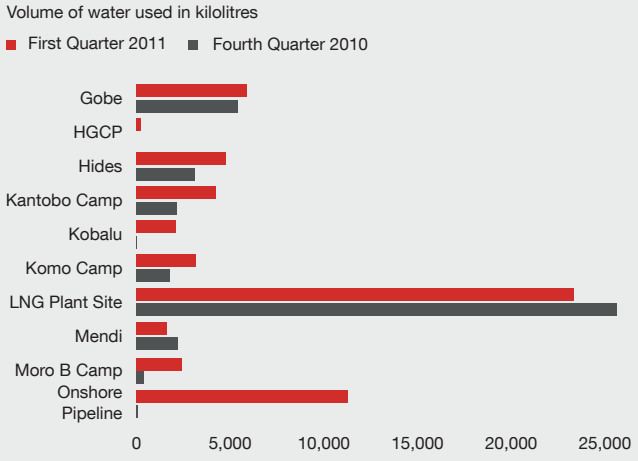
11.1.1 Usage

The Project procures fresh water in addition to water abstracted from surface and groundwater sources. During this quarter, Project water use amounted to just over 59,000 kilolitres. This compares with just over 40,000 kilolitres for the fourth quarter 2010, reflecting seasonal variation and the increase in construction activity. Water abstraction volumes were within the annual limits set by the Project Environment Permit.

The Onshore Pipeline contractor undertook awareness training for water consumption and good environmental practices for laundry operations including minimizing water and measuring detergents.

The volume of water use by location is shown in Figure 11.1.

Figure 11.1 – Water use in the fourth quarter 2010 and first quarter 2011



NOTE: Volumes under 50 kilolitres are not presented in this figure.

11.1.2 Quality

Planning, improving and implementing effective water quality monitoring from wastewater discharge locations continues.

In late 2010, the Upstream Infrastructure contractor appointed a designated wastewater specialist to ensure that water quality monitoring was completed at all Upstream Project sites. In-situ monitoring undertaken on a weekly (or as required) basis is allowing prompt maintenance of wastewater treatment systems if parameters vary from those required. The in-situ monitoring is cross-checked through monthly laboratory testing that provides more detailed data on water quality.

Plate 11.1 – Water quality testing near Kantobo Village using an aquameter

The LNG plant site wastewater discharge was laboratory tested this quarter. All parameter results were well below Project criteria levels with the exception of one biochemical oxygen demand sample with elevated levels. In response, additional sampling was undertaken soon after test results were received and the biochemical oxygen demand level was again well under the criteria.

The HGCP and Hides Wellpads contractor has procured portable water monitoring equipment for infield testing of physicochemical parameters including temperature, dissolved oxygen, turbidity, conductivity/salinity, and pH. The monitors will be used when the HGCP water monitoring program commences in the second quarter 2011.

A marine sampling monitoring program designed to characterize the water quality and sedimentation conditions within Caution Bay during construction of the LNG facilities was undertaken in January. The results will be compared against the baseline marine environmental conditions that were collected during the Project Environmental Impact Statement and pre-construction sampling campaigns.

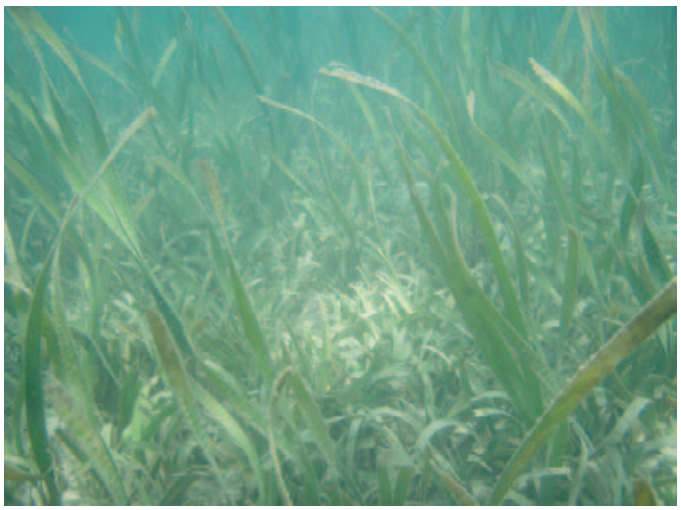


Plate 11.2 – Sea grass in Caution Bay

The marine sampling monitoring program includes analysis of total suspended solids and turbidity as a measure of sedimentation and a full suite of water quality analyses. The total suspended solids and turbidity values recorded are within the limits prescribed in the Project Environmental Monitoring Plan, with the exception of cobalt and dissolved oxygen. These inconsistencies occurred across all sites and the cause is uncertain. A more detailed investigation of cobalt and dissolved oxygen concentrations is recommended should concentrations be inconsistent with criteria in future surveys.

11.2 Raw materials

Most quarry material used for Project activities is sourced from existing third party (operating or previously abandoned) quarries. In accordance with the Raw Materials Management Plan, existing quarries will continue to be used in preference to new quarries.

Using aggregate from the construction of the pipeline ROW corridor and from existing or abandoned quarries minimizes Project impacts with respect to sourcing aggregate. In addition, the Project aims to work the quarries within the existing footprint wherever possible.

At the end of this quarter, 19 quarries were in use as outlined in Table 11.1.

Table 11.1 – Quarries in use and extracted volumes during the first quarter 2011

Area/quarry name	Volumes extracted (m^3)
Gobe (5 quarries)	44,030
Hides (3 quarries)	149,325
Kantobo (1 quarry)	47,702
Komo (1 quarry)	13,070
Onshore Pipeline (6 quarries)	349,425
Highlands Highway (3 quarries)	330,218

Plate 11.3 – Excavation works at the onshore pipeline quarry at Kilometre Point 274

To date, only small volumes of timber were required by the Upstream Infrastructure contractor, principally for walkways in camps. This is typically about five to 20 cubic metres per camp. The Onshore Pipeline contractor has purchased timber for manufacturing pipeline skids (blocks of wood to protect the pipe from corrosion and coating damage) and supporting the 'bog mats' used to cross areas of soft soil. Where possible, timber milled for manufacturing pipeline skids is sourced from trees felled along the ROW. Up to the end of the first quarter 2011, 160 cubic metres of timber was purchased from local Lanco suppliers.

Other timber needs during this quarter were met by using timber cleared from the Project footprint or reusing packing timbers. At the Komo Airfield, timber cleared from Project worksites is provided to the local community.

Meanwhile, topsoil is actively managed and preserved for future reinstatement. Refer to *Section 10.5 Reinstatement* for further details.

11.3 Erosion and sediment control

Papua New Guinea's terrain, climatic conditions and the inherent nature of its soil combine to make erosion and sediment control a significant challenge. For example, as described in *Case Study Three – Driving the Future for the Highlands Highway*, prior to recent upgrades, the Highlands Highway was closed eight days a month, on average, due to washouts and landslides.

The Project is managing erosion and sediment control issues through constant monitoring and vigilance, particularly following frequent or heavy rain. In particular, the inspection and assessment of erosion and sediment control devices is incorporated into contractors' verification assessments and forms part of toolbox talks and environmental awareness training.

In the fourth quarter 2010, the Upstream Infrastructure contractor appointed a designated team to review and maintain erosion and sediment control measures along the creeks and drains on the Gobe to Mubi River Road. This approach was so successful that the concept was transferred to other Project areas with dedicated teams trained and resourced specifically for erosion and sediment control. The Onshore Pipeline contractor has also conducted training of the grading crew in watercourse protection and erosion and sediment control.

During this quarter, the Upstream Infrastructure contractor focused on temporary erosion and sediment controls on the southern side of the HGCP. Project and contractor environmental teams worked together with on-site civil engineers to identify suitable erosion and sediment control measures, including lined drains and settling ponds, for the steep terrain.

Plate 11.4 – Lined drain near the HGCP

11.4 Acid sulfate soils

'Acid sulfate soils' are soils or sediments that contain elevated levels of metal sulfides that can oxidize and generate sulfuric acid when exposed to air. Oxidation of soils can occur when the ground is disturbed through site excavation and the acidification of soils. Surface water and groundwater may adversely affect aquatic communities, agricultural practices and engineering works.

Acid sulfate soils are typically found in marine or estuarine settings. Management plans are being developed and fieldwork undertaken to test the soils in Project areas including the Omati Swamp and Caution Bay.

The Project recently sampled soil at the Omati River Landfall site for the onshore pipeline and at four other sites on the ROW. The results of this preliminary investigation indicate that the potential for acidity increases with sediment depth. Two Project construction activities have the potential to disturb these acid sulfate soils:

- Minor trenching works (0.7 to 1.0 metre) for onshore pipeline construction at the Omati River Landfall. To mitigate potential impacts, an Acid Sulfate Soils Right of Way Construction Management Plan was developed in the first quarter 2011. Mitigation measures include keeping the spoil stockpiles wet to prevent oxidation, in conjunction with a vigorous monitoring program designed to monitor changes in pH levels in the water collected within the drainage ditches and stockpiles.
- Deeper, more extensive trenching associated with the installation of the pipeline within the Omati River Delta. At the end of the quarter, the Onshore Pipeline contractor was close to finalizing a management plan to cover these more extensive trenching works.

Case Study Three

DRIVING THE FUTURE FOR THE HIGHLANDS HIGHWAY

Taking a highway closure rate from eight days a month to less than one day a month is no small feat. However, this is exactly what the Papua New Guinean Works Department has achieved with the Project's support on Papua New Guinea's strategic logistics route, the Highlands Highway.

The Highlands Highway (also known in the Project as the Northern Logistics Route) is Papua New Guinea's mainland highway, connecting several major cities. The Highway is vital for the movement of people and goods between the Highlands region and the coast, including materials and people for the Project.

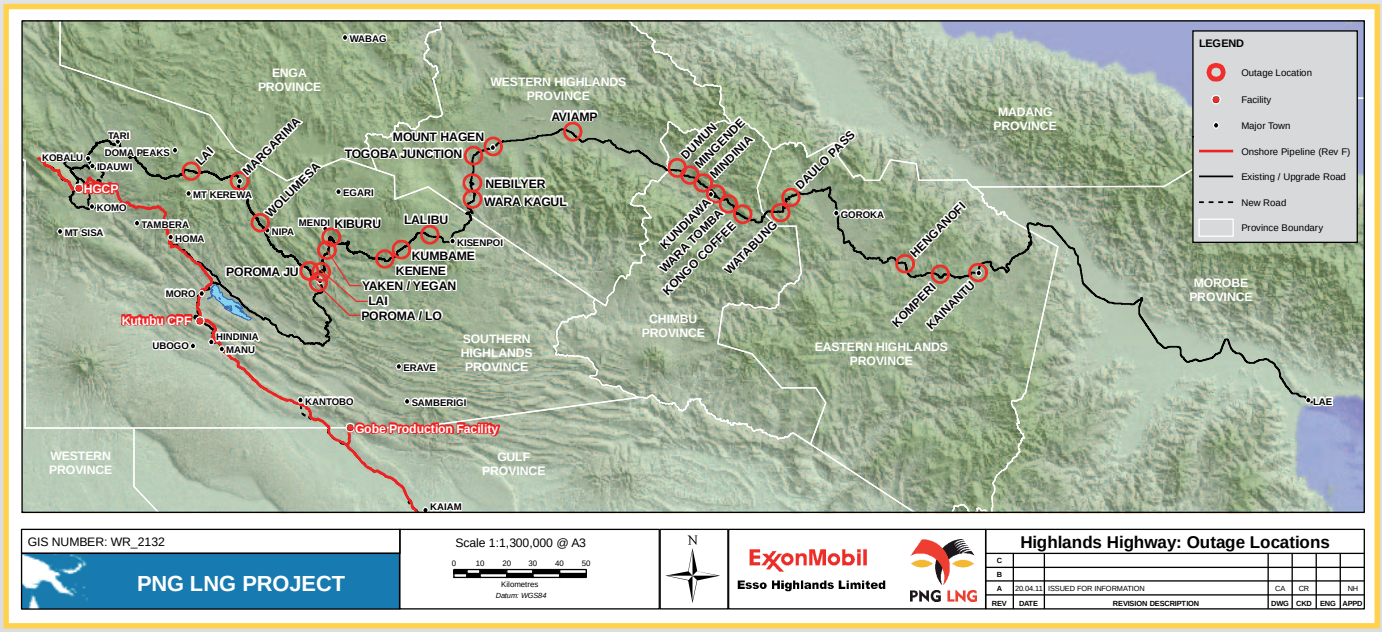
For most of its length, the Highway is a two-lane road hindered by potholes and landslips, which have traditionally given it a closure rate of about 25 percent (approximately eight days per month) from November to April. The reason for this is that the road is subject to frequent washouts and landslides. For example, in April 2008, a section of the Highway passing through Simbu Province was impassable at three separate points over different periods. The most serious was when a 150 metre section was destroyed at Gera Village, cutting upper highlands provinces from all road transport.

Given the importance of the Highlands Highway to Papua New Guinea's socioeconomic development, the Project is working with the Papua New Guinean Government to support critical maintenance and repairs and provide a detailed engineering study on the future of the Highway.

The study's intent is to develop a framework and specific technical plans the Government may use to manage overall road repair, upgrade and maintenance work, as well as enable them to make funding requests from external agencies to help support work on the Highway.

The study was completed during this quarter, resulting in a report that revealed five major sections of the Highway require near-term repairs. They are: Kassam Pass, Daulo Pass, the Chimbu/Eastern Highlands border, the Western Highlands Province/Southern Highlands Province border, and Southern Highlands Province near Mendi.

The Project has already funded more than 26 million Kina (US$10 million) of critical repairs along the Highway, including repairs to more than 20 bridges, the construction of a new bridge at Lai River near Mendi, and road culvert and pavement works.



Highlands Highway outages over the last four years

Case Study Three

DRIVING THE FUTURE FOR THE HIGHLANDS HIGHWAY

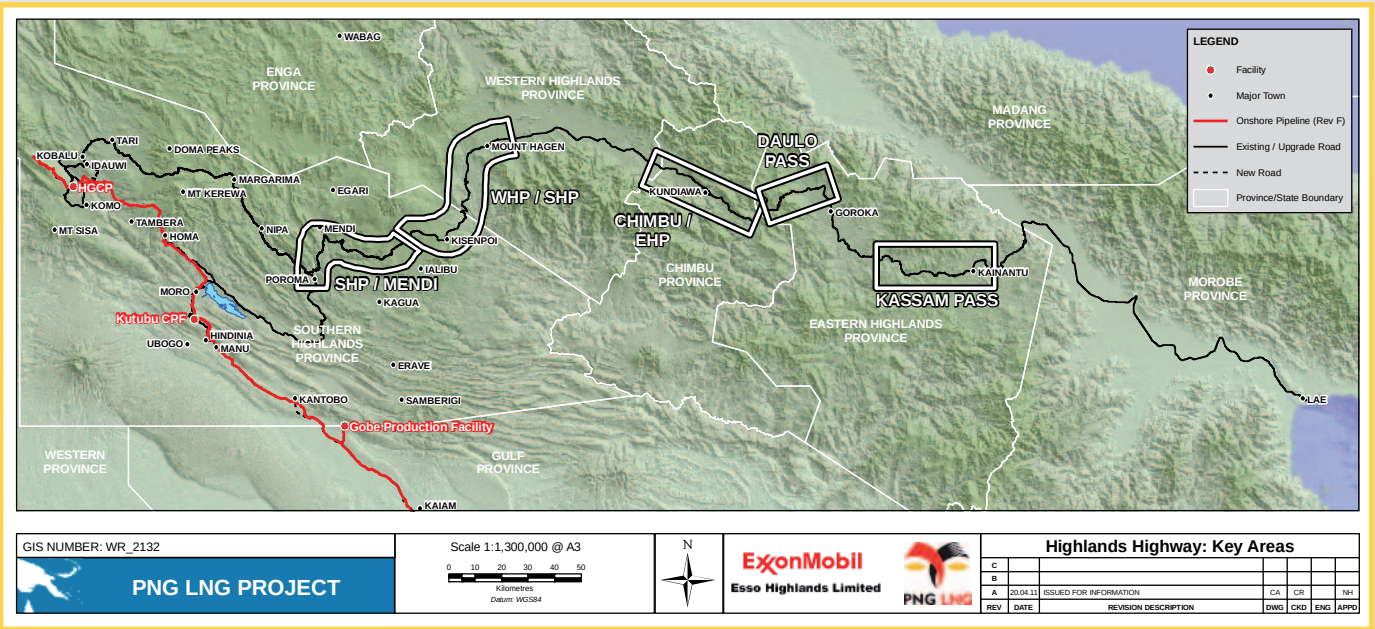
Road resheeting activities through Chimbu Province

Embankment stabilization works near Watabung

Bridge abutment reinforcement at Darmena Creek Bridge

Highlands Highway critical repairs

In the short-term, these Project-led repairs have contributed to a significant reduction in Highway closures, but a longer-term planning horizon is needed to maintain this. The Project has provided a copy of the final report to the Papua New Guinean Government to assist them with implementing near-term works (initially five years) planning and cost estimate, along with a medium-term development strategy to help realize Papua New Guinea's broader Vision 2050 Plan for economic corridor roads and national highways.



Snapshot of key work areas – near-term works

12 Cultural Heritage

Working in accordance with the relevant Government of Papua New Guinea regulations, including the *National Cultural Property (Preservation) Act 1965* and the *National Museum and Art Gallery Act 1992*, the Project aims to protect the rich cultural heritage values associated with the Project area. The Project also adheres to International Finance Corporation Performance Standard 8 (Cultural Heritage), respects the cultural heritage of Papua New Guinea and has established a Cultural Heritage Management Plan guiding contractor activities, which potentially impact local culture by disturbing archeological resources. The Plan is overseen by the Project's archeologist with support from contractor archeologists and in liaison with the Papua New Guinea National Museum and Art Gallery.

The Cultural Heritage Management Plan describes procedures for pre-construction surveys and the protocol for managing chance finds of heritage value. This may include artifacts such as stone tools, implements or pots, bones, construction material or other items. It also includes sites or areas with cultural significance such as burial grounds, historical warfare grounds and women's or men's houses.

12.1 Pre-construction surveys

Based on the results of the onshore pipeline pre-construction surveys conducted during this quarter, measures have been undertaken at a number of sites to ensure protection of cultural heritage. These are detailed in Table 12.1. Until mid-February, onshore pipeline pre-construction surveys identified 68 sites requiring avoidance or protection including 13 spirit sites, eight spirit trees, 13 oral tradition sites, an abandoned village, and 15 caves.

Table 12.1 – Cultural heritage sites managed during the first quarter 2011

Location	Site description
Sites that were demarcated and monitored regularly to ensure no damage	
Kilometre Point 203 and 200	A *'korpu'* rock shelter.
Kilometre Point 223	A former burial site located just off the ROW.
Kilometre Point 242	An oral tradition site called *'yowame'*, which is a pool the snake spirit *'Daro'* used when he was running away from the village that he stole coconut from.
Kilometre Point 281	An oral tradition site that is the home/sleeping place of snake spirit *'Gouobo'*.
Sites for which compensation was paid	
Kilometre Point 242	An oral tradition site which is the route the snake spirit *'Daro'* undertakes. Since the ROW bisects the site, avoidance is not possible and compensation was paid to the landowner.
Kilometre Point 281	An oral tradition site known as the *'Gouobo'* snake spirit site. Compensation for this site was agreed and paid to landowners as avoidance was not possible.

To ensure ongoing protection of these sites, the contractor's archaeologist provides regular training sessions to site personnel, tree clearing personnel, earthmoving equipment operators and earthworks supervisors.

Plate 12.1 – *'Korpu'* rock shelter at Kilometre Point 203

In these talks, workers are reminded of the steps required of them in terms of known cultural heritage sites as well as the Chance Finds Protocol.

12.2 Incidents of disturbance to known cultural heritage sites

No cultural heritage sites have been disturbed without permission and robust pre-construction surveys and community consultation have been the keys to successfully avoiding disturbance to known sites. For example, during this quarter, due to the occurrence of a known site of cultural heritage significance, local landowners were requested to attend a route selection survey for an electrical cable running from a new generator at Kopi to the telecommunications facility at the top of Mount Hee. The proposed alignment was discussed on-site with the landowners and an agreement documented and implemented whereby 'no go' areas were marked by tape.

12.3 Chance finds

In accordance with the Chance Finds Protocol, and to assist the extensive earthworks monitoring underway on the Project, 47 contractor workers attended competency training for Cultural Heritage and Chance Finds. This training equips workers with information prior to site preparation works commencing and emphasizes the importance of spotting activities to identify potential cultural heritage materials before disturbance occurs.

In the first quarter 2011, there were three chance finds during onshore construction works, two of which were inside the ROW. A standard stone club head was found during tree felling activities. Such club heads were in use and manufactured any time from about 5,000 years ago up until the 1960s. In many of the Highlands areas, club heads were subsequently used as ritual objects and as such they have been traded-in from elsewhere or discovered while digging gardens.

Plate 12.2 – Stone club head identified at Kilometre Point 241

Plate 12.3 – Worker holding the club head identified in January

Also on the ROW, an oral tradition site that had not been identified during the pre-construction survey was shown to the Project by the landowners following vegetation clearance. The site represents the home of a male spirit snake, called 'Waki', which governs the land of the Amouwi clan. The other chance find occurred when skeletal remains were unearthed near the marine jetty at the LNG plant site.

Work was stopped at the site and, following a site visit and sampling, an archaeologist from the Papua New Guinea National Museum and Art Gallery concluded that the skeletal remains were not of human origin and the find was of very low significance, so work continued.

In addition, there were eight chance finds at the Komo Airfield worksite, comprising seven stone waisted blade tools and one stone pestle (the mortar was missing). None of these were determined by archeologists to be considered of significance as such finds are common in the area.

Oral tradition sites identified in pre-construction surveys

Healing pools and healing streams exist in the surveyed areas, which vary with the rains. One healing pool called *'Baiwara'araumarisa'* or *'Baiwara'araumahaii'*, was found in a location approximately 30 metres south of the pipeline ROW survey area. The site marks the agreed Akuturubi/ Amarunawano clan boundary and it also represents a language boundary between the Lower Foi (Akuturubi) and Fasu (Amarunawano) people. This language boundary explains why there are two versions of the site name: the name ending in '-mahaii' is that used by the Akuturubi speakers, whereas that ending in '-marisa' is the Amarunawano speakers' name for the site. Both groups of people recognize and use this particular healing pool.

The landscape is also marked by several spirit trees, which are associated with oral traditions. For example, the spirit tree known as *'Ira Parawi'* is a species of Fig *Ficus* spp. This kind of spirit tree is believed to be home to a female spirit who inhabits the top of the tree. Mothers with newborn children must avoid this tree or risk the child being stolen by the spirit. Another such tree is the *'Ira-Sisi'*. This is a generic name in the lower Foi language, referring to a large strangler fig tree believed to be inhabited by a malevolent female spirit or *'Sosaka'*.

13 Stakeholder Engagement

Ongoing stakeholder engagement activities demonstrate the priority the Project and its contractors place on developing lasting, constructive relationships with communities built on trust, mutual understanding and a spirit of collaboration.

13.1 Government

The Project's Management team continues meeting regularly with Papua New Guinean Government Ministers, while the Government Interface team meets with Government agencies, keeping them informed on the Project's status and coordinating activities to keep the Project on schedule.

13.1.1 People processes

Several procedural changes made by the Papua New Guinean Government in the fourth quarter 2010 are enabling the Project to more readily mobilize labor and meet schedule commitments.

For example, Reserved Occupation Exemptions (also referred to as Red Job Exemptions), have allowed contractors to fill positions with expatriate specialists, subject to certain conditions. Reserved Occupations are those that are generally reserved for Papua New Guinean citizens, however, exemptions have been considered by the Government due to a shortage of specialized skills or localized labor shortages in Papua New Guinea. To date, 447 exemptions have been approved by the Minister for Labour and Industrial Relations.

A key part of the approvals process requires contractors to provide training so that skills are transferred to Papua New Guinean citizens. The Project's Government Interface team is working with the Papua New Guinean Department of Labour and Industrial Relations to identify new job classifications (reflecting changed technological requirements) for workers since the Department's occupation list was last revised.

Meanwhile, the Visa Hub Processing Centre trial in Manila will be completed during April 2011, with plans to expand to other participating hubs such as Kuala Lumpur, Beijing, Sydney and Brisbane. These hubs will enable visa applicants to have visas affixed to their passports in hub countries before they depart for Papua New Guinea. The first contractor employees traveling under these authorities, as part of the trial, arrived in Papua New Guinea during the quarter.

The Government Interface team also reached agreement with the Institute of Engineers Papua New Guinea and contractors on a defined list of jobs requiring registration. The Institute of Engineers Papua New Guinea has agreed to keep this list constant for twelve months to help simplify the registration process for Project technicians.

13.1.2 Materials and tax

The Project continues importing substantial quantities of materials required to construct the LNG Plant, pipelines and other facilities.

Discussions continued with the Papua New Guinean Government to enhance the efficiency of processes related to the importation of materials.

From the beginning of this quarter, the Papua New Guinea Customs Service introduced an industry-wide fee for processing customs entries for all port users. Customs will also apply a Customs Entry Processing Fee (for sea-freighted material only) for express service. This express service is being trialed with the Project and allows the Project access to designated staff and longer counter service and electronic customs entry system processing hours. Revenues raised from these fees will enable the Papua New Guinea Customs Service to build capacity while maintaining service levels for peak loads and the service will be made available to other users in the future.

13.1.3 Infrastructure and Government support

The Project continues working with Government agencies such as the Department of Works, to efficiently mobilize materials and equipment for construction activities.

During this quarter, the Project presented the final report on the repair, maintenance and upgrade of the Highlands Highway to the Papua New Guinean Deputy Prime Minister and the National Planning Committee. For further information refer to *Case Study Three – Driving the Future for the Highlands Highway*.

Plate 13.1 – Official presentation of the Highlands Highway repair and maintenance upgrade report

To effectively manage the movement of labor in the lead-up to the peak construction phase, the Government Interface team initiated discussions with the National Airports Corporation and Papua New Guinea based airline operators. As a result, a committee has been formed comprising Esso Highlands Limited representatives, Project contractors, Customs, Immigration and Quarantine department representatives, National Airports Corporation representatives and airline operators who are meeting weekly to discuss and manage any emerging issues.

13.1.4 Advocacy

The Government Interface team is engaging with administrators from emerging provinces in the lead-up to the 2012 national election. The Hela Province, covering the northern part of the existing Southern Highlands Province, is to be established during the election. The Government Interface team continues to engage with the newly formed Hela Province Transitional Authority.

Jiwaka Province is also planned to be formed during the 2012 election. The Province will be developed from the eastern portion of the current Western Highlands Province. The Government Interface team has conducted workshops with the Jiwaka Province Transitional Authority.

The Government Interface team's 2011 Provincial and National advocacy plans are also being implemented. During the first quarter 2011, the Project held Provincial Government Interface workshops in six provinces across the Project Impact Area and Highlands Highway. The workshops included Project representatives and almost 100 administrators from the provincial administrations. Enterprise Centre representatives also attended and provided an overview of their activities.

These meetings update administrators about the Project's status and provide basic information about LNG. They also provide an opportunity for the Project to address any concerns raised by provincial administrators.

Similar briefings and consultations were also held with key Government departments including the Prime Minister's Department, the Department of Works, Department of Labour and Industrial Relations, and Department of Foreign Affairs, Trade and Immigration. Each meeting addressed upcoming Project matters that may impact their respective departments.

In addition, volume two of *'Yumi Toktok GI'* was published. This publication, whose title translates to 'You and Me talk about Government Interface', is intended to provide Government administrators with an easy reference about the Project. It has been well received by both Provincial and Local Level Governments.

13.1.5 Benefits assurance delivery

The Government Interface team provides support to the Department of Petroleum and Energy and the Department of Commerce and Industry, along with other Government agencies, relating to benefits distribution and other commitments defined in the Benefits Sharing Agreements.

The Government experienced delays meeting 2010 targets for the payment of Business Development Grants (or seed capital) to Lancos. During this quarter, Government officials traveled to the Hides area to make payments of six million Kina (US$2.33 million) in Business Development Grants.

To date, 91 million Kina (US$35.4 million) of the 120 million Kina (US$46.7 million) seed capital commitment has been paid. Court injunctions prevent the payment of most of the remaining Grants, however, a mediation process has commenced with the affected parties.

During this quarter, planning was undertaken for the deployment in the second quarter 2011 of Government officials in the field to engage with local landowners. The Project is providing logistical support until the Government establishes a permanent presence.

13.2 Communities

Guided by the Company Stakeholder Engagement Plan and the Community Engagement Management Plan, both the Project and its contractors engage with Papua New Guinean communities to build and maintain positive relationships. Stakeholder and community engagement is led through the Project's Socioeconomic team.

13.2.1 Engagement activities

The focus of community engagement has shifted from providing general information about the Project to assessing the information needs of communities and tailoring programs as needed.

Plate 13.2 – Government interface workshop

Plate 13.3 – Women's engagement on general project information

Figure 13.1 – First edition of the PNG LNG Plant Site newsletter

Communities continue to express appreciation for Project teams who visit remote villages to consult with them, share information and work with them towards community development objectives. Dialogue with communities is underway almost every day in every part of the Project Impact Area.

Hides and Komo

In addition to the Safety Awareness Program refresher engagements, outlined in *Section 5.5 Community safety*, other key engagements in this region include Wellpad Spineline Committee meetings and consultations about speculative developments. The number of formal open-house style engagements is decreasing given the Socioeconomic team is actively working to respond immediately to community concerns. For the Hides and Komo areas, a total of 13 formal community engagements were undertaken during the quarter, with 136 people registering their attendance.

Wellpad Spineline Clan Committee: The Wellpad Spineline Clan Committee consists of leaders from each of the 13 clans identified as having an interest in Project activities, along with Project representatives. The Committee was formed in November 2010 to provide a forum for two-way dialogue between the Project and the community about the spineline.

Committee meetings held this quarter focused on clarifying the Project's use of the Juni Construction Training Facility as well as the Project policy on speculative developments. The meetings provided the Socioeconomic team with an opportunity to explain that the Juni Construction Training Facility will serve a dual purpose, providing accommodation for workers in the Hides area prior to being handed over to the HGCP and Hides Wellpads contractor for training purposes.

Speculative developments: Speculative development of houses and gardens was a significant resettlement concern this quarter. The Project has produced a series of cut-off dates after which new structures and gardens will not be considered for compensation.

The Socioeconomic team is working with communities around the Kopeanda Landfill and the Wellpad Access Road to communicate this message and the cut-off dates. The team will focus on conveying this message to communities around the Heavy Haul Road and quarries in the second quarter 2011.

Pipeline (North and South)

The Socioeconomic team's focus along the pipeline this quarter included training Village Liaison Officers. Village Liaison Officers are the first point of contact to communities seeking information about the Project, so this training is important to ensure managed communications to Project impacted communities. Topics covered during the Village Liaison Officer training included community development, resolving grievances, environmental information, and general Project information.

Pipeline consultations with communities continued from Goare at the southern tip of the Delta to Homa towards the Hides area, covering more than 250 kilometres of the pipeline route. Two teams are conducting these engagements. The Pipeline North team continues to focus on communities between Kantobo and Hides, while the Pipeline South team meets with communities between Goare and Gobe. For Pipeline North and South areas, a total of 23 community engagements were undertaken during this quarter, with a total of 1,622 people registering their attendance.

General Project information engagements: The Socioeconomic team is also providing general Project information to communities that have not been previously engaged or have requested more detail about the Project. Many engagements are through focus groups with community and clan leaders. Topics discussed have included the gas pipeline construction, ROW and centerline survey, assessment payments, and recruitment of labor.

These focus groups have proved valuable, helping to clarify misconceptions about land clearing and compensation. They have also helped to minimize frustration among community members during the Project's surveying and land clearing activities in these areas.

LNG plant site

During this quarter, LNG plant site engagements numbered 27 across the four LNG plant site villages (Papa, Lea Lea, Porebada and Boera) with 2,970 people registering their attendance. These engagements focused on communicating detailed information about the impact of Project activity on local communities, particularly with regard to offshore construction, which has begun.

The results of research conducted during the fourth quarter 2010 into preferred communication methods for LNG plant site communities was put into action in this quarter. With the nature of many of the engagements changing within the four LNG plant site villages, the Socioeconomic team investigated the potential for readily accessible information sources such as radio, a regular newsletter and the use of community notice boards for flagging upcoming construction activities.

Given the significant percentage of people across the LNG plant site region employed at the LNG Plant in Port Moresby, or elsewhere on Project-related activities, a bi-monthly newsletter was launched in February (refer to Figure 13.1) to communicate accurate Project information across these local communities.

The PNG LNG Plant Site newsletter is developed in partnership with contractors and derives article topics from local interests, concerns raised in community meetings and upcoming contractor schedules. A total of 1,600 newsletters were distributed to churches, schools and community organizations across the four LNG plant site villages. The newsletter received positive community feedback via email and through the inserted feedback form (shown in Figure 13.2). Due to community interest, the print run will increase to 2,500 for the April 2011 edition.

In addition to the newsletter, notice boards are being used to announce upcoming meetings and construction activities, while community meetings continue across the four LNG plant site villages with the Hiri Local Level Government Councillors of each village (including the Councillor for Kido). These meetings aim to consult communities on the potential social impacts of onshore, offshore and near-shore construction activities.

Issues identification

Figure 13.3 shows the most recent concerns raised by Project stakeholders.

The Project remains highly responsive to community issues, monitoring them on a weekly basis to address high priority concerns that arise on-the-ground.

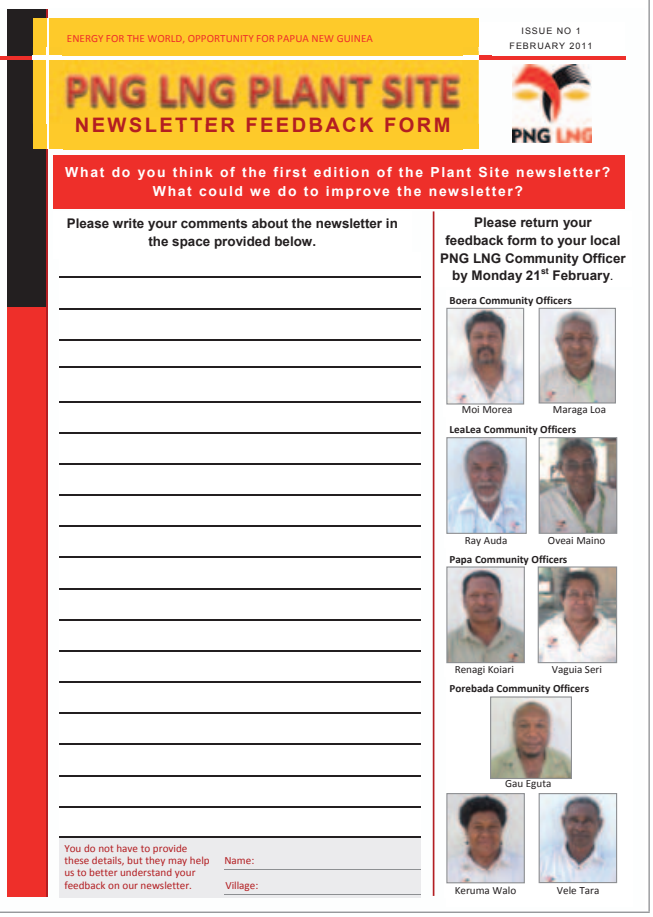
13.2.2 Media

The Project's fourth PNG LNG Quarterly Environmental and Social Report covering activity during October to December 2010 was published on the Project website (www.pnglng.com) as well as in hard copy for distribution to a wide network of stakeholders.

Additionally, the Executive Summary was distributed in Tok Pisin and English through a suite of national papers including the *Post Courier, The National, Wontok,* and *Independence Magazine*.

This quarter, the first 'stories from the field' were published. These articles include human interest stories highlighting Papua New Guinean people and communities impacted by the Project. Regular installations of such stories will continue to be distributed to a wide range of stakeholders and included in national newspapers.

Figure 13.2 – PNG LNG Plant Site newsletter feedback form


ENERGY FOR THE WORLD, OPPORTUNITY FOR PAPUA NEW GUINEA

ISSUE NO 1
FEBRUARY 2011

PNG LNG PLANT SITE
NEWSLETTER FEEDBACK FORM

PNG LNG

What do you think of the first edition of the Plant Site newsletter?
What could we do to improve the newsletter?

Please write your comments about the newsletter in the space provided below.

You do not have to provide these details, but they may help us to better understand your feedback on our newsletter.

Name:

Village:

Please return your feedback form to your local PNG LNG Community Officer by Monday 21st February.

Boera Community Officers

Moi Morea

Maraga Loa

LeaLea Community Officers

Ray Auda

Oveai Maino

Papa Community Officers

Renagi Koiari

Vaguia Seri

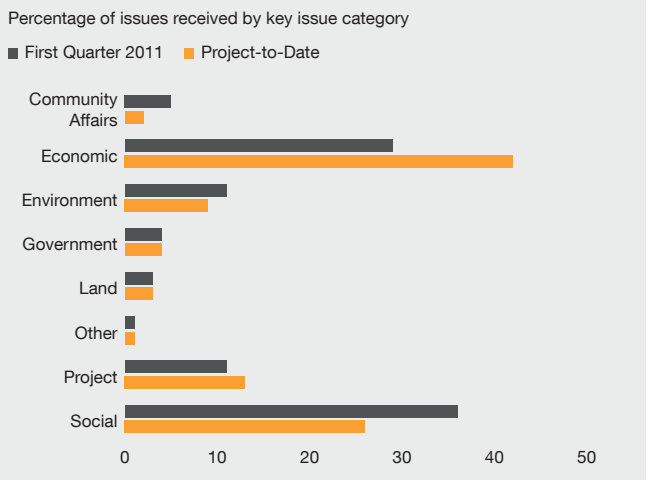
Porebada Community Officers

Gau Eguta

Keruma Walo

Vele Tara

Figure 13.3 – Comparison of issues received by key issue



14 Acronyms

EPC	Engineering, Procurement and Construction
ESMP	Environmental and Social Management Plan
HGCP	Hides Gas Conditioning Plant
IESC	Lender Group's Independent Environmental and Social Consultants
iHDSS	Integrated Health and Demographic Surveillance System
IMR	Papua New Guinea Institute of Medical Research
Lanco(s)	Landowner Company(Companies)
LNG	Liquefied Natural Gas
MCP	Malaria Control Program
NAQIA	Papua New Guinea National Agriculture Quarantine and Inspection Authority
PNG	Papua New Guinea
ROW	Right of Way
SSHE	Safety, Security, Health and Environment

APPENDIX 1 – Project Contractors and Work Scopes

Table A1.1 – Summary of contractors and work scopes

Contract	Description of work scope
Upstream Infrastructure Clough Curtain Brothers Joint Venture	• Infrastructure upgrades in support of main construction activities in the Gulf Province and Southern Highlands Province. • Camps for Esso Highlands Limited and to support construction activities. • Construction of a landfill site at Hides. • Bulk earthworks for the HGCP and wellpads.
LNG Plant Early Works Curtain Brothers Papua New Guinea Limited	• Upgrade of existing road from Motukea Island to LNG plant site. • New Bypass Road (re-routing of existing public road, which transects with the LNG plant site).
Telecommunications TransTel Engineering	• Installation of a telecommunications system to support construction and operations.
Offshore Pipeline Saipem	• Construction and installation of the offshore pipeline from Omati River landfall to LNG plant landfall site. • Pipeline tie-in at Omati River landfall and shore crossing at the LNG plant landfall site.
LNG Plant and Marine Facilities Chiyoda and JGC Corporation	• LNG facility engineering and construction, including LNG process trains, condensate storage tanks, LNG storage tanks, utilities, permanent accommodations, heliport, and telecommunications. • Marine facilities including the jetty and LNG/condensate export berths.
Hides Gas Conditioning Plant and Hides Wellpads CBI Clough Joint Venture	• Engineering and construction of the HGCP processing facilities and associated wellpads, including permanent accommodations and maintenance facilities.
Onshore Pipeline SpieCapag	• Installation of the onshore gas and condensate pipelines, and associated valve and metering stations. • Installation of the pipelines for the Hides gathering system including flowlines, spineline, utility lines, and associated power and telecommunications cables.
Komo Airfield McConnell Dowell and Consolidated Contractor Group Offshore	• Airfield and supporting infrastructure.
Associated Gas Development	• Upgrades and modifications to Kutubu Central Processing Facility and Gobe Production Facility including gas dehydration, metering, and condensate handling.
Nabors Drilling International Limited	• Drill and complete 12 new wells and execute two workovers.
Permanent Office and Housing Company (to be determined)	• Construction of office accommodation and housing to support the operation of the facilities.

PNG LNG

www.pnglng.com

Port Moresby - Project Headquarters
Esso Highlands Limited
Lawes Road, Munidubu Street
GPO Box 118
Konedobu, Port Moresby
Papua New Guinea

Email: miles.j.shaw@exxonmobil.com

ExxonMobil

PNG LNG is operated by a subsidiary of ExxonMobil in co-venture with:

OIL SEARCH LIMITED

NPCP | NATIONAL PETROLEUM COMPANY PNG

Santos
We have the energy.

JX Nippon Oil & Gas Exploration

MRDC

EDA OIL