

PNG LNG Quarterly  
Environmental and Social Report

Fourth Quarter  
**2012**



**PNG LNG**

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



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## PNG LNG

### About This Report

The Papua New Guinea Liquefied Natural Gas Quarterly Environmental and Social Report – Fourth Quarter 2012, reports on the Project's recent safety, construction, 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 on the Project website, [www.pnglng.com](http://www.pnglng.com). Printed copies are also available.

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# Supporting Papua New Guinea's future

"Our aim is to provide training and opportunities that will positively change and enhance the lives of Papua New Guinean workers."

Decie Autin, Project Executive, Esso Highlands Limited



As the Papua New Guinea Liquefied Natural Gas (PNG LNG) Project (the Project) ends its third year of construction, it continues to focus on building community benefits such as the creation of jobs, training, business opportunities and social advancement programs, with full consideration of the livelihoods and cultures of the local communities in the Project area.

During the past three years, the Project has worked diligently with all stakeholders to establish what might be termed a 'social license to operate' in Papua New Guinea and considers this a critical component to the business. This approach has enabled the Project to build relationships with communities within the Project area and, in particular, with Papua New Guinean citizens and Project workers residing in those communities.

While maintaining the Project schedule is a core commitment, so too is the process of how the Project achieves this commitment. The Project defines successful execution as ensuring the ongoing safety and security of the workforce and local communities, promoting environmental protection, and helping to build sustainable national capacity. The Project also aims to contribute to a stronger Papua New Guinean workforce, better equipped to approach the future because of their experience working with the Project.

This is the twelfth PNG LNG Quarterly Environmental and Social Report, which demonstrates how Esso Highlands Limited, as operator of the Project, is working in partnership with stakeholders to deliver on the Project's safety, health, environmental and social commitments. Esso Highlands Limited, a subsidiary of Exxon Mobil Corporation, is responsible for the Project's construction and operation and is developing the Project with co-venturers: Oil Search Limited, National Petroleum Company of PNG (Kroton) Limited, Santos Limited, JX Nippon Oil and Gas Exploration Corporation, Mineral Resources Development Company Limited and Petromin PNG Holdings Limited, and their affiliates.

## Construction

The Project and its contractors realized the safest quarter yet, recording 19.4 million work hours without a Lost Time Incident. During this quarter, the LNG Plant and Marine Facilities contractor completed welding on all 120 pipe rack modules for the LNG jetty. The inner tank rings on both LNG tanks were also completed.

Mechanical completion of the offshore pipeline marked a major milestone with the final weld achieved in December. At Komo Airfield, the first layer of asphalt was placed on 1.6 kilometres of the runway. The Material Logistics team finished the year strongly with a record number of 9,000 Project cargo loads moved from Lae to Tari during 2012.

**20+ million work hours  
at the LNG plant site without  
a Lost Time Incident**

Key construction highlights are outlined in Table 1.



Aerial view of the Hides Gas Conditioning Plant

**Table 1 – Contracts and construction highlights**

Contract	Contractor	Major activities during the fourth quarter 2012
Upstream Infrastructure (C1)	Clough and Curtin Brothers Joint Venture	Completed pioneering of the entire 22-kilometre Hides Wellpad Access Road including tree felling and brush clearing.
Offshore Pipeline (EPC2)	Saipem	Mechanical completion of the offshore pipeline achieved with the final weld in December.
LNG Plant and Marine Facilities (EPC3)	Chiyoda and JGC Joint Venture	The LNG Plant and Marine Facilities contractor has achieved over 20 million work hours to date without a Lost Time Incident. Welding on all 120 pipe rack modules and installation of the Marine Control Building completed on the LNG jetty. Completed inner tank rings on both LNG tanks.
Hides Gas Conditioning Plant and Hides Wellpads (EPC4)	CBI and Clough Joint Venture	Completed all camps. Completed foundations for the main pipe rack, compressors and power generators. Completed the installation and hydrotesting of the firewater system underground piping in the utilities area.
Onshore Pipeline (EPC5A)	SpieCapag	Over 215 kilometres of main line and spurline pipe welded, with 176 kilometres of pipeline hydrotested. Hydrotesting, dewatering and air-drying of piping at the Kopi Scraper Station completed.
Komo Airfield (EPC5B)	McConnell Dowell and Consolidated Contractor Group Joint Venture	Placed first layer of asphalt across half the length of the runway. Completed 800 metres of the final asphalt layer.
Associated Gas Development	Various	Start-up, testing and handover of the thermal oxidizer to the operations group.
Drilling	Nabors Drilling International Limited	Successfully drilled upper sections of first wells.

## Safety, health and security

A safety milestone was achieved this quarter, with over 800 workers graduating from the Project's Safety Champions initiative to date. The positive impact of the Safety Champions is generating additional interest from contractors who continue to nominate candidates for the initiative. For example, during this quarter both Project and contractor security teams began to participate in the initiative. The expansion of the Safety Champions into multiple languages and cultural groups is also proving successful.

In October, the Lender Group's Independent Environmental and Social Consultant conducted an independent review of the Health Management Program for both Project and community health initiatives. Results of this review show Program implementation has "exceeded good practice". The review also indicates the Project's occupational health program is leading the way with careful monitoring of leading and lagging indicators across: malaria control; tuberculosis control; food and water safety; vector control; hygiene and sanitation; clinical operations; and infectious disease outbreak management.

The Project progressed numerous community health initiatives, with the Prince of Wales and Duchess of Cornwall officially opening the renovated health clinic in Boera Village during this quarter. The clinic and a newly constructed medical staff house were the result of five months of work by a team of local volunteers supported by the Project and its contractors.

The National Infectious Disease Diagnostic and Research Laboratory was also officially opened during this quarter. The Laboratory is the culmination of an extensive effort by the Papua New Guinea Institute for Medical Research (IMR), the University of Papua New Guinea and the Project to develop high-quality laboratory facilities that provide a platform for young Papua New Guinean scientists to develop their skills in biomedical research and diagnostics.



**At the opening of the National Infectious Disease Diagnostic and Research Laboratory, from left to right: Professor Ken Sumbuk, Acting Vice Chancellor, University of Papua New Guinea; Pascoe Kase, Secretary of Health, Government of Papua New Guinea; Peter Graham, Managing Director, Esso Highlands Limited; Decie Autin, Project Executive, Esso Highlands Limited; and Professor Peter Siba, Director, IMR**

## Workforce development

The construction workforce continues to grow to meet the demands of construction activity, particularly at the Hides Gas Conditioning Plant and LNG plant site. By the end of 2012, the total Project workforce reached 21,220, which is a 47 percent increase compared to workforce numbers recorded at the end of 2011.

### 21,220 people make up the total Project workforce

The Project is maximizing construction phase employment opportunities for Papua New Guineans wherever possible, while also preparing workers for future opportunities both inside and outside of the Project.

To date, the Project has delivered more than 1.6 million hours of training, with over 678,500 hours delivered in 2012. Almost 140,000 hours of training was provided in this quarter alone. This has been achieved through over 6,800 courses offered across the Project since its inception. In 2012, the Project delivered over 3,650 courses, of which 828 were delivered during this quarter.

Among the trainees is the first intake of participants in the Operations and Maintenance training program, who returned to Papua New Guinea this quarter after successfully completing one year of Advanced Skills training in Nova Scotia, Canada. The group is now involved in on-the-job training to prepare for their future Project operations roles.



Graduates from the Project's first intake of Operations and Maintenance trainees at the graduation ceremony in Papua New Guinea

In 2013, the Project's workforce will start to decline as construction work is progressively completed, and the Project's demobilization activities are preparing people for this. The training and work experience that individuals have received through working on the Project will prove useful in finding other employment as well as developing their communities.

The Project is also working with the Papua New Guinean Government to find ways to mobilize skilled workers to Government projects as work scopes are completed for the Project.

## Growing Papua New Guinean businesses

Papua New Guinean businesses remain prominent in the provision of goods and services across all Project areas, with Landowner Companies (Lancos) being the primary focus of supplier development. The Project-related spend with Lancos this quarter was more than 220 million Kina (US\$104 million). Since the Project began, 1.47 billion Kina (US\$700 million) has been spent with Lancos. In addition to Lancos, other Papua New Guinean businesses in the Project area are engaged for support activities such as camp rental and equipment hire.

To date, the Project's total in-country spend has reached 6.65 billion Kina (US\$3.16 billion). Of this, the Project spent 813 million Kina (US\$387 million) in this quarter alone.

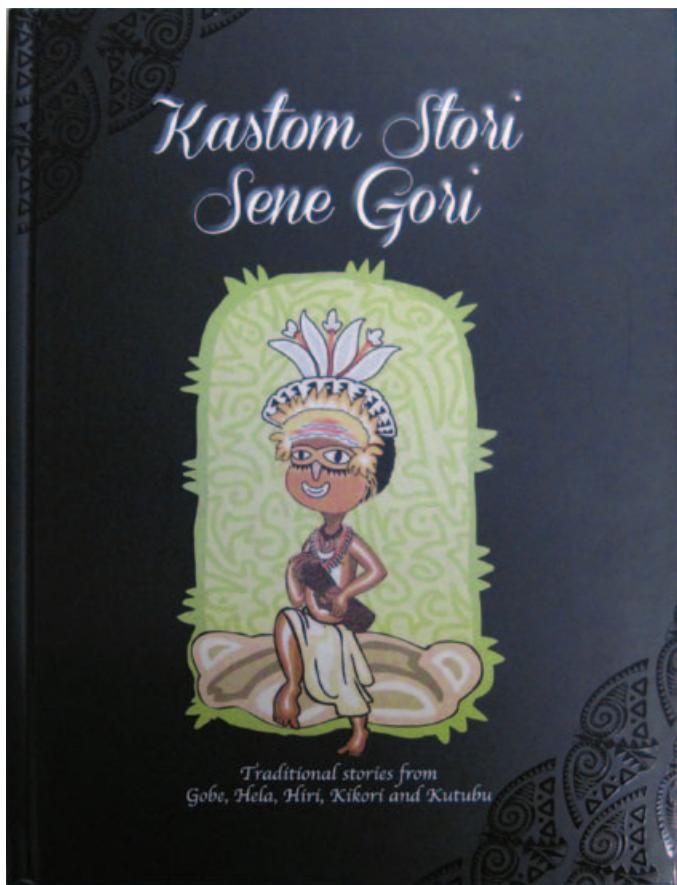
### 6.65 billion Kina spent in Papua New Guinea to date

The Enterprise Centre also continues to support the development of Papua New Guinean businesses. By the end of 2012, more than 14,600 Papua New Guinean entrepreneurs had been assisted through the Centre's workshops, use of workstations, business meetings and provision of information. The Centre had also delivered more than 6,700 training days and over 800 advisory and mentoring days to local businesses including Lancos.

## Social development

A key achievement this quarter was the release of a book titled *Kastom Stori Sene Gori* (traditional stories). The book represents a true partnership with communities, being the result of a story writing and drawing competition conducted with 26 schools in the Project impact area in 2011. The book features winning handwritten stories and illustrations by students that reflect the traditional tales of their villages.

Building from the success of the *Kastom Stori Sene Gori* competition and other initiatives for schools, including the popular Toea children's book series, the Project has developed a Support to Schools Plan for 2013. This includes identifying schools to work with and support in the areas of infrastructure development, improving the quality of education services, training for teachers and school boards, and enhancing extracurricular activities.



The *Kastom Stori Sene Gori* book

The Project and local communities have also celebrated the re-opening of the Lea Lea Bridge. The new bridge opened almost one year after the previous footbridge collapsed as a result of age combined with the structure being hit by general debris during king tides on Christmas Eve 2011. In addition, the first community retail store was opened outside of the LNG plant site construction fence. The store provides people from the four LNG plant site villages of Boera, Papa, Lea Lea and Porebada with employment and training opportunities and access to their first retail store located close to their villages.

Support programs continued this quarter for Papua New Guinean women. During the quarter, 127 women from the LNG plant site villages participated in a training program offered through the Women in Mining and Petroleum group. Training was conducted over four weeks and focused on nutrition, health and hygiene, sewing and basic business skills such as bookkeeping.

Personal Viability training continued in Komo, Habono (Hides) and the LNG plant site villages, bringing the total number of people trained-to-date to over 940.

Progress was also made on a community-led Agricultural Development Plan, which incorporates a support program to provide training on enhanced farming techniques, planting materials and tools. It also provides ongoing support to participants in the LNG plant site villages.



Project representatives, volunteers and members of the community at the Lea Lea Bridge opening ceremony

## Environmental performance

During this quarter, the Project recorded its lowest hydrocarbon spill rate since January 2010. The number of spills was nearly half that experienced in the fourth quarter 2011, with 58 spills occurring in this quarter compared to 102 last year.

The improvement in the spill rate is primarily the result of contractor diligence throughout 2012. For example, the Onshore Pipeline contractor held a successful unannounced spill drill in the Moro area where the communication chain of command, preparedness and response were commended. A Project-wide initiative was also employed to reduce the spill risk of stored hydrocarbon through bunding and lining of some container storage areas.

Another key achievement during this quarter was the completion of the waste process building at the Hides Waste Management Facility. By the end of this quarter, waste processing equipment including the weighbridge, tire debeader, industrial shredder and drum crusher were installed and prepared for mechanical completion and commissioning.

During this quarter, the Project began implementation of the Biodiversity Offset Delivery Plan by engaging with key stakeholders about protected area planning in the Kikori River Basin, progressing the implementation of Papua New Guinea's National Biodiversity Strategy and Action Plan, building the nation's conservation capacity, and enhancing the Lake Kutubu Wildlife Management Area.

## Stakeholder and community engagement

Papua New Guinea's National Road Safety Council has completed its Road Safety Awareness campaign for the Highlands Highway. Sponsored by the Project, the campaign was conducted from Goroka through to Hides and Komo in the Hela Province.

More than 50,000 people from communities along the Highway attended the Road Safety Awareness campaign, which was held at schools, community centers, market places and villages. Pedestrian and road safety awareness around construction sites was also the focus for many Project community engagement activities during this quarter.

Educational site tours continue at the LNG plant site, with around 290 visitors from schools, community organizations and Government participating in site tours during this quarter. These visits help educate school students and local communities about construction activities and reinforce health and safety messages. In addition to site tours, the Project supports school health and safety education programs.



**Redscar High School students receive an important lesson in safety at the LNG plant site**

Drama performances are also used in community meetings and worker toolbox talks to convey messages on topics including: money management; demobilization; the grievance process; hand safety; hygiene practices in the kitchen; and malaria awareness; as well as the repercussions of theft and possession of betelnut and other contraband items.

To date, the Project has conducted approximately 840 formal engagements with communities across Project areas. This is in addition to more than 1,260 people reached through informal engagements.

**~840 formal engagements conducted to date**

During 2012, more than 30 workshops were conducted with provincial and national government departments and foreign embassies as part of the Advocacy Workshop program. This included visiting dignitaries and foreign government leaders. Meetings were conducted in the provinces to provide an additional 455 national and provincial government representatives with an overview of the LNG plant site construction.

The Project's execution and rigorous, process-driven management approach, combined with input from co-venturers, and ongoing support of the Papua New Guinean Government and communities, will be a recipe for ongoing success for Papua New Guinea.

The PNG LNG Project demonstrates to the world – particularly the investment world – exactly what Papua New Guinea is capable of delivering. The joint success of this Project will be a strong foundation for a new era of development for this special, diverse and strategically located nation.



# 1 Introduction

With 70 percent of construction complete, the PNG LNG Project is on track for delivery of the first LNG cargo in 2014.

The Project's progress to date is outlined in this twelfth PNG LNG Quarterly Environmental and Social Report for the fourth quarter 2012. This Report is part of a series of quarterly reports providing updates on the Project's construction, health, safety, environmental and social management activities.

The US\$19 billion Project involves construction of gas production and processing facilities in Papua New Guinea's Southern Highlands, Hela and Western Provinces. It includes liquefaction and storage facilities located northwest of Port Moresby on the Gulf of Papua. When completed, these facilities will have a capacity of 6.9 million tonnes per year. More than 700 kilometres of pipelines are being constructed to connect the facilities. The Project is progressing in development phases and is on schedule for the first LNG deliveries to begin in 2014.

More than 250 billion cubic metres of gas are anticipated to be produced and sold during the life of the Project.

This will provide a long-term supply of LNG to customers in the Asia Pacific region including: the China Petroleum and Chemical Corporation (Sinopec); The Tokyo Electric Power Company Inc.; Osaka Gas Company Limited; and the Chinese Petroleum Corporation, Taiwan. The location and elements of the Project are shown in Figure 1.1. Appendix 1 provides information about how the contracts for Phase 1 of the Project are divided.

The complete PNG LNG Quarterly Environmental and Social Report series is publicly available through the Project's website.



Read the PNG LNG Quarterly Environmental and Social Report series at  
[www.pnglng.com](http://www.pnglng.com)

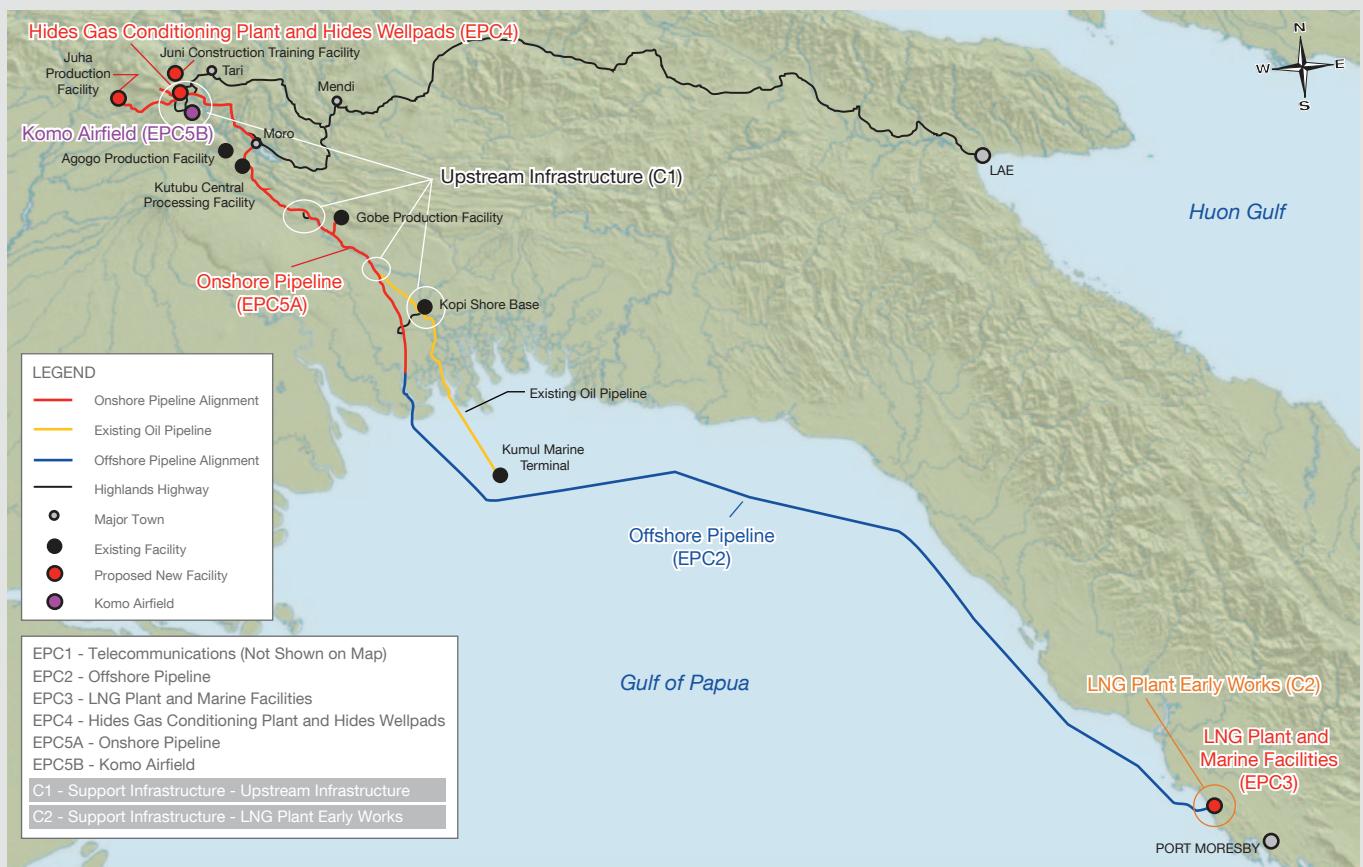
Printed copies of each quarterly report and translated summaries are also made available to Papua New Guinean citizens who may have limited access to the internet.



Construction work is on track for the 2014 start-up window

Plate 1.1 – Hides Gas Conditioning Plant utilities area

## Figure 1.1 – Project elements



## 2 Construction Overview

The Project and its contractors achieved the safest quarter yet, with 19.4 million work hours recorded without a Lost Time Incident.

During the fourth quarter, Esso Highlands Limited, operator of the PNG LNG Project, announced that the Project capacity has increased by 5 percent to 6.9 million tonnes per year from 6.6 million tonnes per year. The increase has been achieved through system-wide optimizations as well as some minor modifications.

The Project also announced that the estimated Project cost has increased from US\$15.7 billion to US\$19 billion (excluding Port Moresby administration facilities and shipping). Foreign exchange is the largest single contributor of the increase and to a lesser extent, delays from work stoppages due to community disruptions and land access

that have led to increased construction and drilling costs. Extraordinary logistics and weather challenges also increased costs. In particular, rainfall exceeded historic norms for most of the last two years.

Despite these challenges, the Project remains on track to achieve start-up in 2014, with numerous construction milestones accomplished this quarter. For example, the LNG Plant and Marine Facilities contractor completed welding on the 120 pipe rack modules along the 2.4-kilometre LNG jetty and installed all mooring dolphins and liquid loadings arms. The inner tank rings on both LNG tanks were also completed and the tanks prepared for hydrotesting.

The Material Logistics team also finished the year strongly, with a record number of 9,000 Project cargo loads moved from Lae to Tari during 2012.

### 2.1 Highlands area

Figure 2.1 – Highlands area Project activities

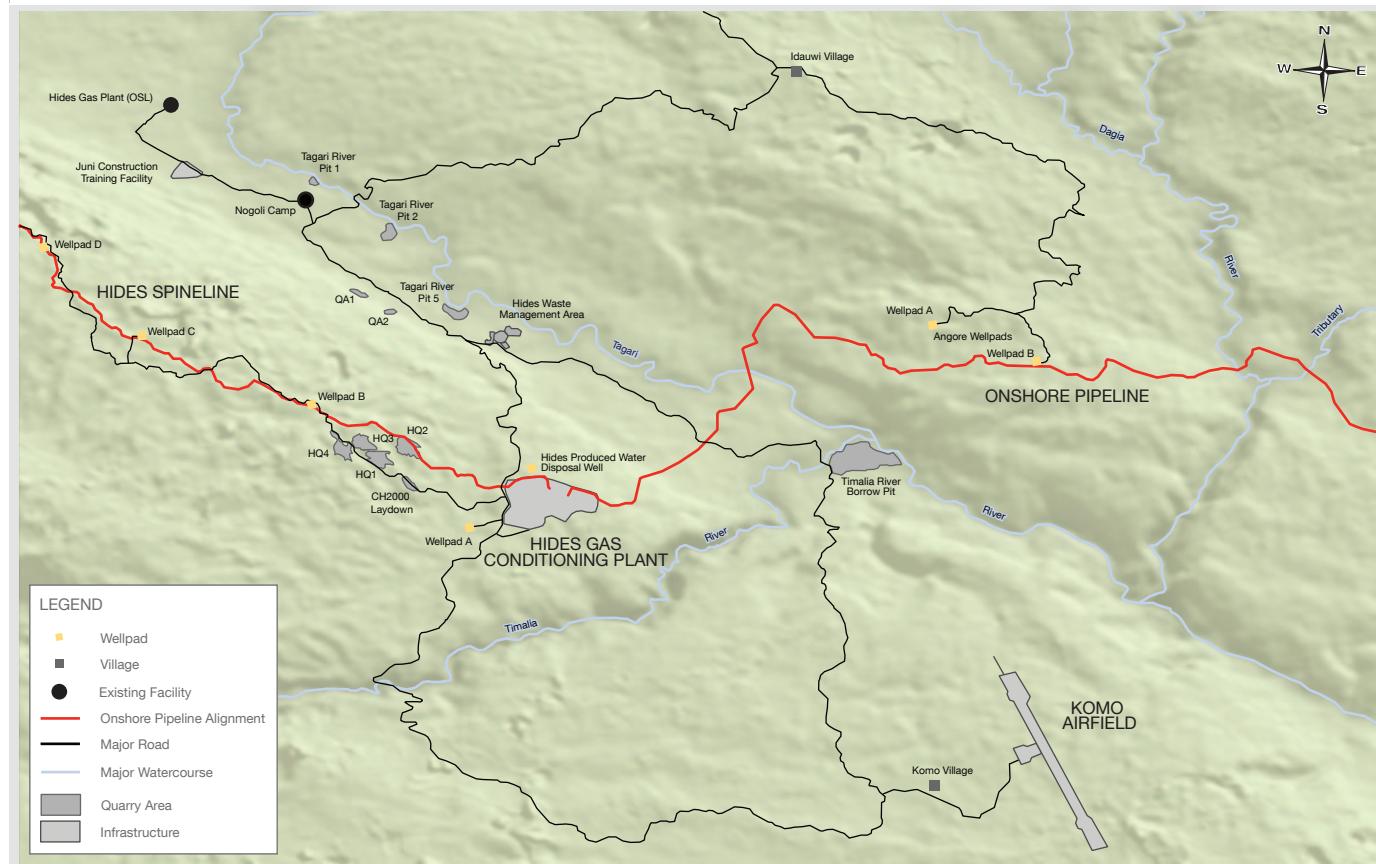




Plate 2.1 – Aerial view of the HGCP utilities area

An on-site technical route review of the Construction Logistics Route between the Komo Airfield and the HGCP was completed and delivery trial runs were initiated.

#### 2.1.3 Komo Airfield

Following delays to construction activity caused by record levels of rainfall in recent months, the Komo Airfield contractor achieved their greatest weekly volumes of earth moved and aggregate deliveries at the site during December. Subsequently, the runway earthworks were significantly progressed and the first layer of asphalt was placed across the entire runway width for 1.6 of the 3.2-kilometre total length. Eight hundred metres of the final asphalt layer was also installed.



Plate 2.2 – The final asphalt layer on a section of the runway

Aggregate production increased remarkably in the quarter, with implementation of a night shift at the Timalia River Borrow Pit.

#### 2.1.4 Drilling

Drilling operations continued on the two production wells at Hides Wellpad B. Drilling foam was successfully used for drilling of the surface hole on the first two wells. Foam is being used as the drilling fluid due to the fractured nature of the Dari limestone. Non-aqueous fluids will be used for the lower sections of the wells.



Plate 2.3 – Drilling operations at Wellpad B

## 2.2 Onshore Pipeline

Rainfall and flooding during the third quarter 2012 and early this quarter slowed onshore pipeline construction in some areas. To remain on schedule, the Onshore Pipeline contractor obtained additional earthmoving equipment from the Upstream Infrastructure contractor and subsequently opened a second Right of Way (ROW) spread from the HGCP working south. Pipeline construction activities will occur from both north and south directions and will eventually meet between Homa and the HGCP.



Plate 2.4 – Mainline welding at Kilometre Point 103

In areas not impacted by flooding, the Onshore Pipeline contractor progressed well with over 215 kilometres of mainline and spurline pipe welded and 176 kilometres of pipeline hydrotested. Pipework fabrication at the Gobe main line valve station was completed, along with hydrotesting of the Gobe Spurline. Hydrotesting, dewatering and air-drying of the piping at the Kopi Scraper Station was also completed and pipework installation commenced at the Kutubu metering station.

ROW preparation of the Hides Spine line was contracted to the Upstream Infrastructure contractor due to their experience with the Hides Wellpad Access Road.

### 2.3 Offshore Pipeline

A major milestone was achieved during this quarter with mechanical completion of the offshore pipeline marked by the final weld in December.

The Offshore Pipeline contractor continues to demobilize, with the LNG Plant (Caution Bay) landfall site handed over to the LNG Plant and Marine Facilities contractor.

### 2.4 LNG Plant and Marine Facilities

A notable achievement occurred during this quarter with the LNG Plant and Marine Facilities contractor completing over 20 million work hours without a Lost Time Incident. Meanwhile, construction works at the LNG plant site progressed steadily, with completion of welding on the 120 pipe rack modules along the 2.4-kilometre LNG jetty. Installation of all ten mooring dolphins and five liquid loading arms, as well as the heavy lift and installation of the Marine Control Building on the LNG jetty were also completed.



Plate 2.5 – The five liquid loading arms on the LNG jetty

Other key achievements included installation of both boil-off compressors and seven gas turbine generator stacks, and completion of all inner rings of the LNG tanks as well as the start of roof coating. Preparations are underway to hydrotest the LNG tanks.



Plate 2.6 – LNG plant site

### 2.5 Associated Gas Development

Installation of the new triethylene glycol unit at the Gobe Production Facility continued with access platform construction and steel works underway.

At the Kutubu Central Processing Facility, the start-up, testing and handover of the thermal oxidizer to the operations group marked an important milestone. Performance testing of the newly commissioned gas unit also commenced. Installation of the second triethylene glycol unit continued with insulation works and cable laying.

### 2.6 Development support execution, logistics and aviation

The Material Logistics team continued their strong performance, delivering 645 loads from Lae to Tari in October, which set a new monthly record for the Project. In 2012, the average loads shipped to Tari exceeded 500 loads per month, well above the 400 loads per month target. By year-end, the Material Logistics team surpassed 9,000 total loads delivered, leaving only 4,000 remaining.

### 2.7 Pre-construction surveys

Pre-construction surveys were conducted on additional supporting infrastructure and facilities such as quarries, laydown areas and access roads, for the onshore pipeline. The pipeline ROW on the Hides Spine line was also surveyed during this quarter. Additional surveys on the Hides Spine line will be required in the first quarter 2013 due to pipeline realignments identified through engineering surveys. At Komo Airfield, pre-construction surveys were undertaken on the east side of the runway where tree felling is planned, to allow appropriate slope angles to be constructed to meet aviation clearance requirements.

Pre-construction surveys in progress this quarter are illustrated in Figure 2.2.

Figure 2.2 – Pre-construction survey progress

Survey Site	Sensitivities Surveyed						Status						
	1	2	3	4	5	6							
<b>ONSHORE PIPELINE FACILITIES</b>													
Moro Campsite and Kamari Quarry	✓			✓	✓		➔						
Moro Camp 5 Additional Platforms				✓	✓		☒						
Onshore Pipeline ROW: Kilometre Point 0 - 5			✓	✓			☒						
Onshore Pipeline ROW: Kilometre Point 5 - 9.5			✓	✓			☒						
Onshore Pipeline ROW: Re-alignment Kilometre Point 65 - 67	✓		✓	✓			☒						
Kilometre Point 172 Access Road and Kilometre Point 158.5 Borrow Pit	✓			✓			➔						
Kilometre Point 192 Access Road, Valve Station and Vent Stack	✓		✓	✓			➔						
Homa/Paua Laydown and Quarry	✓		✓	✓			☒						
Homa Quarry 2	✓		✓	✓			➔						
Auwitangi Quarry 1 and Quarry 2 and Associated Access Road	✓		✓	✓			☒						
Homa Alternative Campsite/Laydown area	✓			✓			☒						
Kilometre Point 4.5 Campsite	✓			✓			➔						
Kilometre Point 24 Campsite	✓		✓	✓			➔						
Cathodic Protector 1 and Associated Infrastructure	✓		✓	✓			☒						
Cathodic Protector 2 and Associated Infrastructure	✓		✓	✓			☒						
Kutubu Mainline Valve Station and Associated Facilities	✓						☒						
Benaria Mainline Valve Station 1 and Quarry	✓				✓		☒						
Mainline Valve Station 2 (Kilometre Point 57) and 3 (Kilometre Point 66) and Additional Workspace	✓		✓	✓			☒						
Mubi River Horizontal Directional Drilling Platform	✓		✓	✓			➔						
Shoo-fly Access Road at Kilometre Point 137	✓		✓	✓			☒						
Kilometre Point 80 Access Road	✓		✓	✓			☒						
Neango to Dauli Access Road at Kilometre Point 18	✓		✓	✓			☒						
Angore Roads and Angore Wellpads	✓		✓	✓			☒						
Homa Ridge Access Road	✓		✓	✓			☒						
Access Road to Positive Side of Tagari River Crossing			✓	✓			☒						
Hegero Campsite	✓						☒						
Tubage Bush Camp Extension	✓			✓			☒						
Onshore Pipeline ROW: Re-alignment Kilometre Point 92 - 94	✓		✓	✓			☒						
Kaimari Pipe Laydown Area	✓			✓			☒						
Kilometre Point 72.5 Laydown Area		✓		✓			☒						
Kilometre Point 68 Quarry		✓		✓			☒						
Arakubi Quarry		✓		✓			☒						
Kekero and Hegero Laydown Areas			✓	✓			☒						
Homa Campsite and Laydown Area			✓	✓			☒						
Jaija Creek Laydown Area	✓			✓			☒						
Kilometre Point 81+250 Access Raod		✓		✓			☒						
Kilometre Point 85+350 Access Raod	✓	✓		✓			☒						
Kilometre Point 89 - 90 Horizontal Directional Drilling Platforms	✓	✓		✓			☒						
Paua Access Road to ROW Kilometre Point 65+560			✓	✓			☒						
Kilometre Point 69 Quarry	✓		✓	✓			☒						
<b>KOMO AIRFIELD</b>													
Truck Turning Facility (Komo-Hides Junction)						✓	➔						
<b>Environment Permit sensitivity definitions:</b>													
<b>1 - Protected Areas</b>	<b>4 - Sites or Habitats of Ecological Significance</b>												
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.	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 Bowerbird display trees or display grounds.												
	d) <i>Pandanus</i> swamp forest.												
	e) Antarctic Beech <i>Nothofagus</i> spp. forest.												
	f) Areas of Antarctic Beech <i>Nothofagus</i> spp. dieback.												
	g) <i>Pharotis imogene</i> (New Guinea Big-eared Bat) colonies.												
	h) Sandalwood <i>Santalum macgregorii</i> 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.												
<b>5 - Cultural Heritage Sensitivity</b>	Any site in which any cultural property as described in s. 20(1) of the National Cultural Property (Preservation) Act has been located.												
<b>6 - Social Sensitivity</b>	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 safety and health of workers and local communities, as well as the environment, remains a priority for the Project.

#### 3.1 Approach

The Project's commitment and approach to environmental and social management activities is shown in the Environmental and Social Management Plan (ESMP). Discipline-specific plans supporting the ESMP have been developed from the Project's Environmental Impact Statement. These plans, as shown in Figure 3.1, are publicly available on the Project website.



Explore the plans at  
[www.pnglng.com/commitment](http://www.pnglng.com/commitment)

In addition to environmental and social management plans, the Project has plans for managing Security, Health and Safety, along with a Regulatory Compliance Plan.

These documents all form part of a best practice culture across all Project activities and represent Esso Highlands Limited's commitment to sustainable economic growth for Papua New Guinea.

#### 3.2 Security

During this quarter the Security team developed safety advocacy plans with Papua New Guinea-based security service providers to help increase awareness about the health and safety requirements of security personnel.

As part of the increased focus on health and safety, both Project and contractor security workers participated in the Project's highly successful Safety Champions initiative.

One participant, a Project security service provider, has since hired a specialist occupational health and safety officer to manage their safety requirements for contracted guards.

The Project continues to support the involvement of security workers in the Safety Champions initiative.

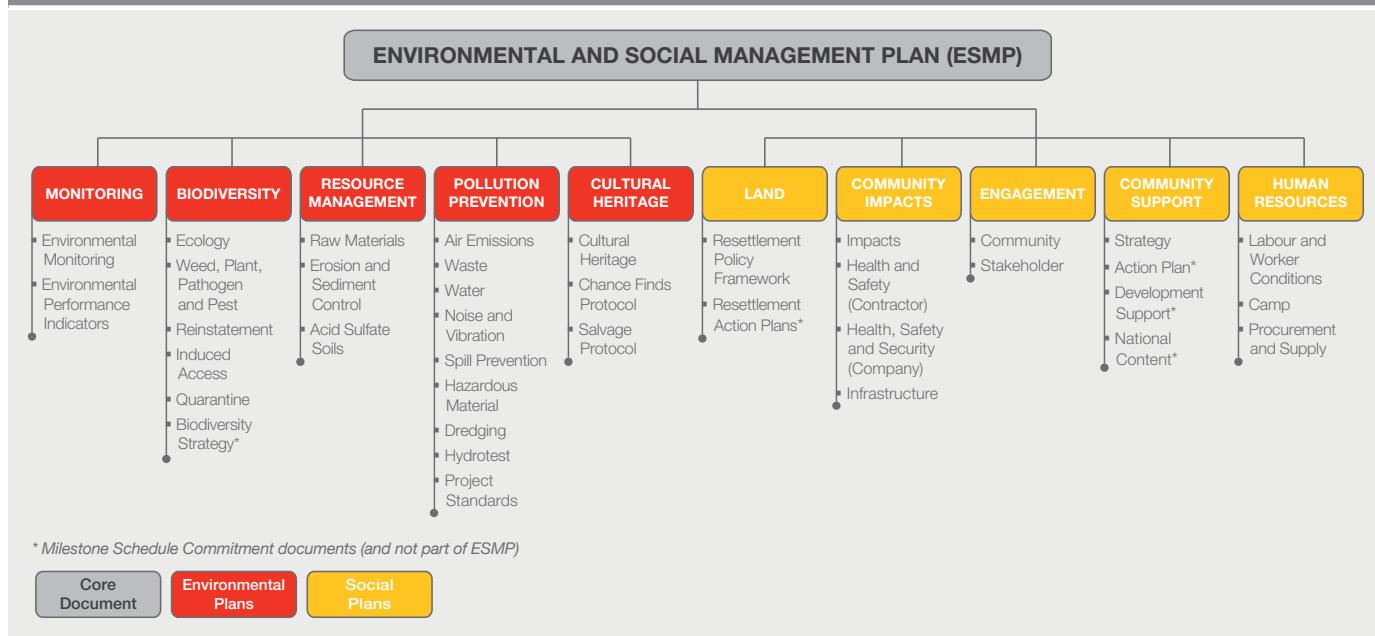
As a result of the Project's ongoing commitment to developing the skills and experience of Papua New Guinean security workers, two workers were provided with more senior opportunities within Esso Highlands Limited's security organization during this quarter. The two employees are now responsible for staff management, oversight of the Project management system and representing the Security team with senior Papua New Guinean Government representatives. They are also assisting with managing the Security team's transition from the construction phase into operations.

#### 3.3 Revenue management

In November, the Papua New Guinean Government released the 2013 National Budget. The Budget's theme is "Sharing the Wealth and Empowering our People". It projects total revenue and grants of approximately 10 billion Kina (US\$4.75 billion) and focuses on a more equitable distribution of economic benefits to Papua New Guinean citizens.

The 2013 Budget is the highest budget to date, with an increase of approximately 324 million Kina (US\$154 million) from the previous year. It targets greater expenditure on key medium-term development enablers, specifically health, education, law and order, and land. The Budget also focuses on "Nation Building" infrastructure investments over the next five years, as well as a significant growth in funding to provincial and sub-provincial levels of government. As in 2012, the 2013 Budget recognizes the importance of the PNG LNG Project to the country's economy.

Figure 3.1 – Environmental and social management plans



The Government reiterated its commitment to establishing a sovereign wealth fund to manage the revenue from the Project and other extractive industries. Meanwhile, groups such as Transparency International, a Project-sponsored organization, are continuing their efforts to promote openness, honesty and accountability in public and private dealings in Papua New Guinea.

### **3.4 Management of Change**

The Project raised no Class I or II Management of Change requests during this quarter.

Through its Management of Change procedure, the Project addresses situations in which changes to the Project Development Plan are needed. Before any proposed change, the Project's requirements with regard to safety, health, security, environmental and social management, operability and maintenance, regulatory and cost, and scheduling are considered. The classification of changes aligns with how they must be managed. Class I changes require Lender Group review prior to implementation, while Class II changes only require notification in the PNG LNG Quarterly Environmental and Social Report.

### **3.5 Environmental and Social Milestone Schedule**

The Lender Group's Independent Environmental and Social Consultant (IESC) commenced their review of the Project's Biodiversity Offset Delivery Plan during this quarter, with comments expected in the first quarter 2013.

With regard to the Project's Resettlement Action Plan commitments, site-specific Resettlement Action Plans are being developed as they are needed.

## 4 Procurement and Supply

The Project uses initiatives, such as the Enterprise Centre and the Business Development team, to help source local suppliers for goods and services, with the aim of building the capacity of businesses, including Lancos.

### 4.1 Supplier development

Papua New Guinean businesses remain prominent in the provision of goods and services across all Project areas, with Lancos being the primary focus of supplier development. The Project has reserved the key services of labor supply, catering, camp maintenance, security and the hire of vehicles for Lanco suppliers. Lancos are also engaged to provide wooden skids/pallets, boat hire, timber purchase, heavy equipment rental, truck hire, construction, machinery and spare parts. Even the supply of fresh produce, from local communities to camp kitchens, is facilitated by Lancos. These activities have contributed to a Project-related spend with Lancos this quarter of more than 220 million Kina (US\$104 million). Since the Project began, 1.47 billion Kina (US\$700 million) has been spent with Lancos, an increase from 1.25 billion Kina (US\$594 million) in the third quarter 2011 (not 1.29 billion Kina as previously reported). In addition to Lancos, other Papua New Guinean businesses in the Project area are engaged for support activities such as camp rental and equipment hire.

To date, the Project's total in-country spend has reached 6.65 billion Kina (US\$3.16 billion). Of this, the Project spent 813 million Kina (US\$387 million) in this quarter alone.

### 4.2 Enterprise Centre

To date, more than 14,600 Papua New Guinean entrepreneurs have been assisted through the Enterprise Centre's workshops, use of workstations, business meetings and provision of information. The Centre has also delivered more than 6,700 training days and over 800 advisory and mentoring days to Papua New Guinean businesses.

#### 4.2.1 Business assessments and training

During this quarter, the Enterprise Centre completed 18 business assessments and presented 29 finalized assessment reports to Papua New Guinean businesses. This included six assessments conducted on-site with businesses based in the Simbu and Western Highlands Province. To date, 246 businesses have been assessed, with 79 assessments conducted during 2012, as shown in Figure 4.1.

Demand for the Enterprise Centre's training services remained high this quarter. As shown in Figure 4.2, the Centre delivered the equivalent of 621 training days to Papua New Guinea businesses during this quarter.

During this quarter, the Centre trained its third and final group of International Standard Organization participants for 2012. A total of 23 participants completed the modules of Quality Management Systems, and Auditing Techniques and Skills. For the first time, the training included participants from regional businesses based outside of Port Moresby.

Figure 4.1 – Number of Enterprise Centre assessments for Lancos and non-Lancos

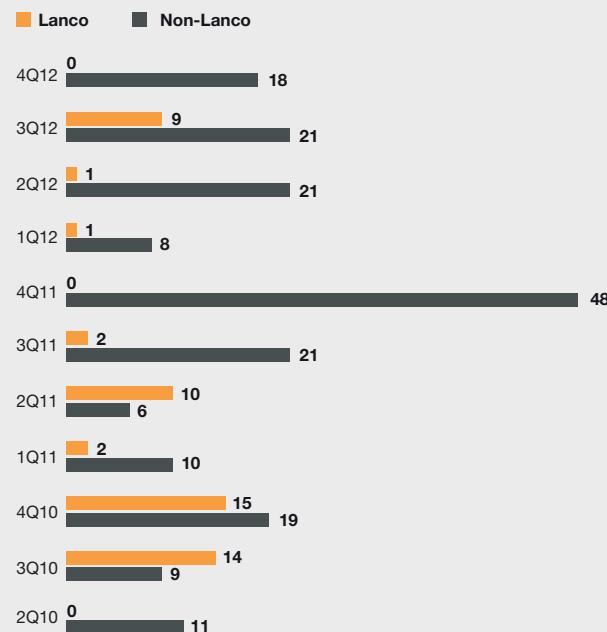
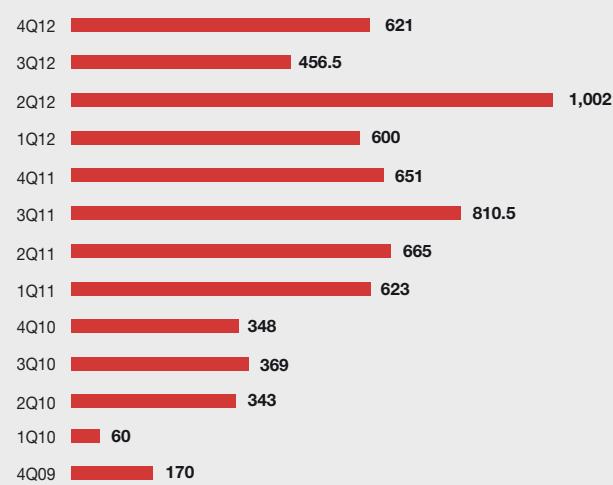


Figure 4.2 – Number of capacity building training days



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



**Plate 4.1 – Hanima Ange Eteyaki Limited was among many businesses to successfully complete training through the Enterprise Centre this quarter**

#### **4.2.2 Advisory services**

The Enterprise Centre provided 101 days of advisory services to Papua New Guinean businesses this quarter. These services addressed business gaps, development plans, proposals and training requirements. During 2012, 295 days of advisory services were provided.

The Centre is expanding its services to help Lancos and women's groups access finance from financial institutions and Government agencies in Papua New Guinea. As part of this approach, the Centre facilitated the National Fisheries Authority's Fisheries Project Development Fund workshop in December. This workshop targeted communities close to the LNG plant site and aimed to encourage fishing cooperatives to apply for Government funding. It also provided participants with information about the funding submission process.

More than 180 people from rural villages of the Central Province and within the National Capital District attended the workshop.

#### **4.2.3 PNG Supplier Database management**

The PNG Supplier Database has so far registered 1,300 Lancos and other landowner businesses, with more than 474 people using the online dashboard during this quarter.

As expected at this stage of the Project, the number of new business opportunities facilitated by the Enterprise Centre is reducing, with 49 business opportunities posted on the PNG Supplier Database in 2012, compared to 196 in 2011. This is occurring as business opportunities in the Project decrease with the completion of construction nearing, and current activity increasingly requires contractors with specific technical capabilities with limited availability in-country.

To date, 277 business opportunities have been posted on the PNG Supplier Database, with 777 suppliers contacted and 151 contracts awarded.

# 5 Communities

The Project continues to strengthen its relationships with communities to support the development of community health, safety and local business initiatives and build a lasting legacy of infrastructure that will deliver long-term benefits for residents within the Project impact area.

## 5.1 Structure and relations

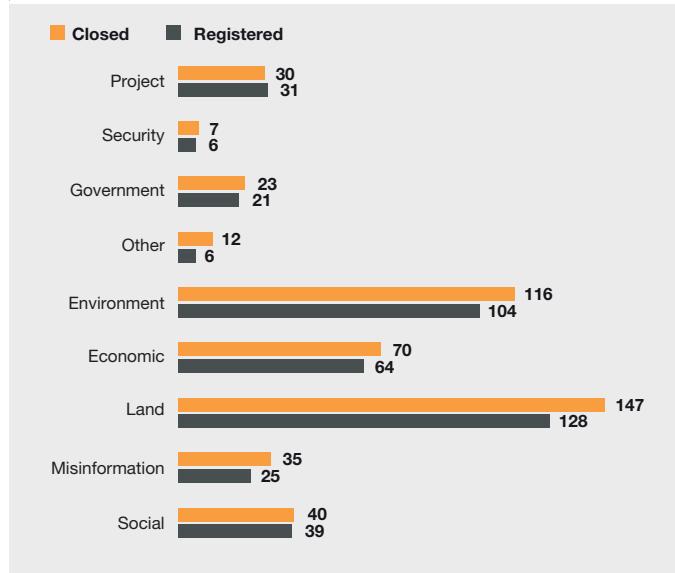
The Project uses community impact and engagement management plans to address its interactions with communities and potential impacts caused by construction activities. Figure 3.1 illustrates these plans.

### 5.1.1 Community grievance management

The Project's grievance management process is a core part of stakeholder engagement. It recognizes that the Project can impact people, so it works to build and strengthen community relationships by having a presence in the communities to help manage perceptions and expectations. The Project has implemented the grievance management process as part of a best practices approach.

During 2012, 424 grievances were registered with the Project, compared with 447 in 2011. In addition, 480 grievances (raised either in the past 12 months or earlier) were closed this year as shown in Figure 5.1. Most grievances registered during the year related to land, environment and economic concerns.

**Figure 5.1 – Number of grievances by category during the last 12 months**



For this quarter, the Project registered 61 grievances, a decrease of 44 percent compared to the previous quarter. The decrease reflects the demobilization of the Offshore Pipeline and Upstream Infrastructure contractors, the end of the national election period and the arrival of the festive season.

Of the grievances registered this quarter, over 34 percent related to land compensation. These included claims regarding land and structural assessments, and demands for assessments. This is consistent with reasons for land-related grievances for the full year 2012.

Environmental grievances comprised approximately 28 percent of the total grievances for the quarter. Most of these were primarily water-related; with some grievants seeking alternative water sources, some raising concerns regarding side-casting disturbances of water sources, and some community claims with regard to erosion and sediment control. For the full year 2012, approximately 60 percent of the 104 environment grievances registered were related to water. Most of these were community demand for alternative water sources, followed by concerns regarding water disturbances and sediment control. By the end of 2012, the Project had provided 73 water catchment structures to communities in the Hides and Komo areas in response to their requests for alternative water sources.

This quarter, 18 percent of grievances received were economic with half relating to employment opportunities, particularly along the onshore pipeline. Additionally, demands for participation in local business development were received. Economic grievances for the full year 2012 also largely related to employment and local business opportunities, as well as opportunities for community development projects.

The Socioeconomic team continues to improve the timeliness of grievance resolution, with 89 percent of grievances for this quarter closed in less than 30 days.

Given the Project's focus on promptly resolving grievances, only 16 grievances were carried forward to be resolved in 2013.

### 5.1.2 Project Induced In-Migration

Stakeholder engagement was the focus of in-migration activities this quarter.

In the Upstream South area, meetings were held with the Kikori District Administration regarding plans for an in-migration workshop in 2013. In Kutubu, meetings were conducted with community leaders from the Kantobo, Mano and Kaimari villages to make them aware of potential in-migration challenges that could arise during pipeline construction through their areas. These meetings also provided the opportunity for villagers to raise any concerns they had, and for the Project to address those concerns.

In the Upstream North area, the Project held engagements with the Chairman of the Hides Special Purpose Authority regarding plans to manage in-migration into the Hides and Komo areas. A stakeholder workshop is also planned for 2013 in this region to review potential in-migration issues and identify strategies to manage these.

At the LNG plant site, the focus was on reviewing initial IMR demographic surveillance data from the four LNG plant site villages. Along with information gathered from fisheries surveys and community development profiles, this data is helping the Project to compile a desktop analysis of potential challenges relating to in-migration in this area. Once finalized, the desktop analysis will be used to determine the next steps to managing in-migration around the LNG plant site.

### 5.1.3 Fisheries surveys

The Fisheries team, together with the National Fisheries College, provided an intensive 12-day deep sea fishing training course to 20 fishers from the four LNG plant site villages during this quarter (refer to *Case Study One – Hooked on deep sea fishing training*). Graduates will be monitored to help the Project determine future activities to support fishers in these villages.

The first phase of a fisheries feasibility study was completed during this quarter. The feasibility study is helping to identify fisheries projects with the potential to improve economic opportunities for fishing communities within both the Omati and Kikori areas.

The study revealed that there is potential for operation of a successful fisheries project in the Kikori delta, with 12 fish species found that could easily be bred for commercial purposes. From the initial phase, a possible cooperative business model was identified for the Kikori delta. The second phase will begin in early 2013, and involves stakeholder engagement and meetings with prospective fisheries project partners.

The total fish catch recorded in Caution Bay increased from 10,352 kilograms in the third quarter 2012 to 15,476 kilograms for this quarter. Meanwhile, the number of survey participants declined from 606 to 292 because of unfavorable weather conditions for fishing and preparations in Boera Village for the Prince of Wales visit. Fishing was mostly done in shallow waters and reef fringes, and along mangrove lines near the LNG jetty construction area.

In the Omati region, 143 interviews with local fishers recorded 574 kilograms of fish caught in the area by the end of the quarter. Mubagowo Village recorded the highest catch volume with 176 kilograms. Data from surveys continues to show that fishing in the Omati is mostly done by men, while women are engaged primarily in mud crab and shellfish collection.

Meanwhile, a mangrove rehabilitation program in Papa Village is proving successful, with over 900 mangroves recorded to be growing well following the completion of a planting program in the third quarter 2012.



Plate 5.1 – Mangrove monitoring at Papa Village

# CASE STUDY ONE

## Hooked on deep sea fishing training

During this quarter, 20 fishers from the four LNG plant site villages of Boera, Papa, Lea Lea and Porebada had the opportunity to learn about sustainable fishing practices through a Project-funded deep sea fishing training course.

Fishing is the main economic activity of the LNG plant site villages, providing the primary source of income for most households in Caution Bay. Local fishers wanted their daily fish catches to increase but were unable to achieve this through traditional fishing methods.



Training was conducted at the Boera community hall



Some of the fishing equipment used in deep sea fishing

Traditional methods focus on net and spear fishing, limiting fishers to resources along the shoreline. This also puts pressure on near-shore fish stocks. Through the deep sea fishing training course, participants were trained in reel fishing and sea safety, broadening their scope to deep sea fish resources, which will enable them to maintain their income and improve their standard of living.

"The idea behind the training is to share this information with a few, so they can share it with many," said Justin Ondopa, Fisheries Team Lead, Esso Highlands Limited.

"Some outcomes from the training have been excellent. The participants are skilled fishers; they just needed to learn new techniques and safety tips. Now we have provided them with the skills needed to fish sustainably."

The Project worked with four Fisheries Committees (village level self-established community organizations) to identify five fishers from each of the four LNG plant site villages to participate in the intensive 12-day training course. The course was delivered by the National Fisheries College and hosted by Boera Village. The first five days were oriented towards theory, providing fishers with basic information on sea safety, safety operation plans, fishing methods and business management, including financial and resource management. The second half of the training focused on practical implementation including safety procedures, reel positioning and handling on vessel. The fishers spent five days on a practical fishing trip at sea, putting into practice their newly learned skills of deep sea fishing, small boat safety operations, maintenance, sanitation and hygiene.

"Esso Highlands Limited has given us an opportunity to learn new techniques," said training participant Ua Avei. "Most of us use traditional ways of fishing. These new techniques allow us to use different fishing resources," he said. "This training has given us a great opportunity to change how we live. It is the start of change for our communities."



Participants with fishing reels constructed during training

### 5.1.4 Social considerations for logistics activities

During this quarter, members of the eight tribal groups that represent the 33 villages surrounding the barging route waterways held their last quarterly meeting for the year. These meetings are a forum for the Project to provide updates about the progress of community projects implemented as part of the Barging Route Waterways Memorandum of Understanding, and for tribal groups to raise any concerns they may have.

Two community infrastructure projects were completed during this quarter. These included a water tank project in Omati, which was officially opened with a celebration organized by the villagers, and the completion of the Ogomabu community hall.

The Omati water supply project involved installing four 9,000-litre and two 1,000-litre water tanks near the Seventh-day Adventist Church. The new tanks will be used to provide clean drinking water to over 1,000 villagers. The provision of these tanks in a central village location means the villagers no longer need to walk along steep terrain to collect water from the Kikori River for drinking, cooking and washing.



Plate 5.2 a-b – Traditional opening of the Omati water tank project

Meanwhile, Ogomabu villagers are celebrating their new Ogomabu community hall and installation of two 1,000-litre water tanks. The project was completed within six weeks and involved building a 12-metre by 6-metre elevated timber hall incorporating a large open space and separate enclosed kitchen and office area.

The hall will serve as a meeting place and training facility for members of the Rumu tribe who are located within Ogomabu and in surrounding villages.

Fourteen students who were sponsored by the Project to attend the local St. Joseph Catholic Vocational School graduated this quarter. Graduate Ian Sobam said the course he took enabled him to upgrade his basic computer skills level and, as a result, he was accepted for further computing studies at a tertiary college.



Plate 5.3 – Graduates of St. Joseph Catholic Vocational School, including Ian Sobam (second from right)

### 5.2 Infrastructure, services and resources

The Prince of Wales and Duchess of Cornwall received a warm welcome from residents of Boera Village, near the LNG plant site, on November 4. More than 2,000 villagers and guests awaited the arrival of the royal couple, who agreed to officially open the newly renovated health clinic and launch the community's mangrove conservation program.



Plate 5.4 – Charles, Prince of Wales and Camilla, Duchess of Cornwall during their visit to Boera Village

A profit-sharing partnership between four Lancos from the LNG plant site villages and long-standing local retail and wholesale company RH Trading Limited, in conjunction with support from the Project and Laba Holdings Limited, has resulted in the opening of the fifth commissary in the LNG plant site area, and the first specifically for community use.

The fifth commissary is the first retail store located outside the LNG plant site, with the other four located inside the construction perimeter.

Opened in October, the latest commissary is at the Laba Holdings Limited office site and next to the recently opened rural Bank South Pacific (BSP) branch. Business operation for the store is guided by RH Trading Limited who hire and train staff from the four LNG plant site villages.

Profits from the new commissary are shared with the Lancos, while village residents benefit from employment, training and access to their first retail store close to their villages.



Plate 5.5 – Villagers shopping at the new commissary

In Porebada, the Project supported the community with the construction of a local meeting hall. The new facility was completed in December.



Plate 5.6 – The completed Porebada meeting hall

In Hides and Komo there was significant input from the Project for water supply catchment structures, with the majority being in response to community requests.

The Project has also assisted with the completion of concrete floors for three schools and the assembly of flat pack units for the Malanda Health Centre in Komo.

## Celebrating a significant bridge

Nearly one year after the collapse of their previous footbridge, Lea Lea residents celebrated with the grand opening of their new bridge in November.

Lea Lea Village is located on both sides of the Rea Rea River. Therefore, the bridge is an important link for villagers to enable them to move effectively through the Village and for those living on the western side of Lea Lea to access Port Moresby.

The Village lost its bridge on December 24, 2011 when it collapsed as a result of king tides and general debris washed down from the estuary hitting the ten-year-old structure. The previous bridge was constructed of mangroves and sawn timber.

The new Lea Lea Bridge is the result of the dedication of a team of 15 volunteer workers, along with work supervision and funding for materials and tools provided by the Project. At approximately 190 metres in length and with over 1,200 boards, the new structure is comprised of treated pine timber with stainless steel fasteners to ensure a longer life span. The new Lea Lea Bridge also has handrails to provide better safety for users.



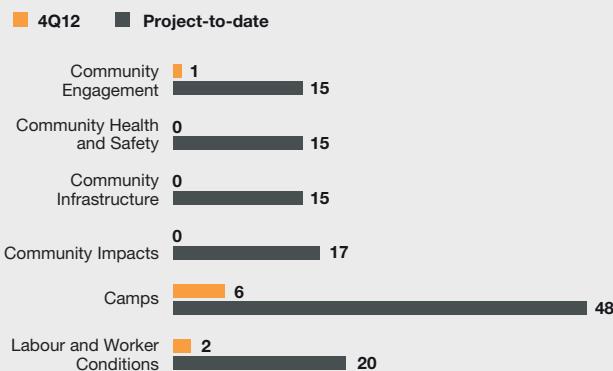
Lea Lea Bridge opening ceremony

## 5.3 Verification, monitoring, assessment and audit

The Project regularly monitors its compliance with commitments made under six social management plans – Camp, Labour and Worker Conditions, Community Engagement, Community Health and Safety, Community Impacts, and Community Infrastructure.

As shown in Figure 5.2, nine monitoring events were conducted during this quarter.

**Figure 5.2 – Number of monitoring events against relevant social management plans**

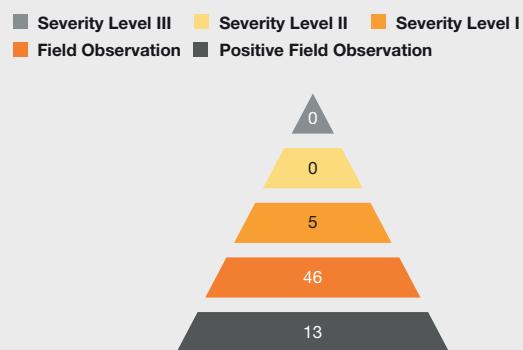


Three reporting tools are used to track the Project's conformance with the Social Management Plans. These are: non-conformances, field observations and positive field observations.

Non-conformances are situations that are not consistent with Social Management Plan requirements and therefore require corrective actions. A field observation is an observation, intervention and/or corrective action that is required to prevent a non-conformance. If not corrected in a timely manner, field observations can escalate to a non-conformance. Innovative or excellent performance against Social Management Plan requirements is recognized as a positive field observation.

During this quarter, 13 positive field observations were recorded, as shown in Figure 5.3, in areas such as employee contracts and recreation facilities for workers. This brings the total positive field observations recorded for 2012 to 58.

**Figure 5.3 – Number of non-conformances and field observations raised during the fourth quarter**

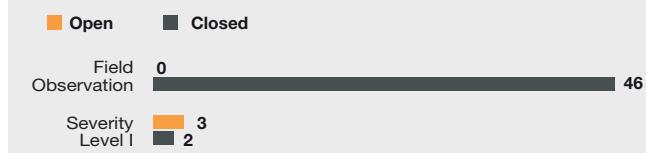


Forty-six field observations were also recorded this quarter. One observation related to workers smoking outside the front doors of camp dining halls and the litter they were causing.

This observation was addressed with the provision of additional ashtrays in designated smoking areas and non-smoking signs posted at the entrance to the dining hall.

Five non-conformances were raised regarding: excessive noise impacting on recreation; food safety standards; demobilization; and the cleanliness of toilet facilities in one of the worker camps. Two of the non-conformances were closed during the quarter by making improvements in camp facility cleanliness and food storage. Contractors are addressing the remaining non-conformances by reviewing noise emissions from a camp generator located close to residences and providing a detailed demobilization plan to the Project. The closure status of non-conformances and field observations is shown in Figure 5.4.

**Figure 5.4 – Closure status of non-conformances and field observations raised during the fourth quarter**



## 5.4 Community health

The Project's integrated Community Health Impact Mitigation Management Program is designed to mitigate and manage potential Project-related health impacts through working collaboratively with key non-government organizations and Papua New Guinean health research organizations. The aim of each Program activity is to build sustainable health services infrastructure and capacity.

The Program complies with a framework developed by the International Petroleum Industry Environmental Conservation Association (IPIECA), the international oil and gas trade association. It also aligns with the International Finance Corporation's guidance notes on Performance Standard No. 4 Community Health, Safety and Security.

Two major partners, the IMR and Population Services International (PSI), implement a large portion of the Program. To further emphasize the Project's commitments under the National Content Plan, the IMR and PSI engage local non-government organizations on-the-ground to strengthen Program activities.

During this quarter, the Project and its partners delivered a number of key health initiatives. Some examples of achievements across all Project areas are the opening of the newly renovated Boera clinic, a water supply for Kikori Hospital and the opening of the National Infectious Disease Diagnostic and Research Laboratory in Port Moresby. Further details about these particular initiatives are provided in Case Study Two – Partnering for health in Papua New Guinea.

# CASE STUDY TWO

## Partnering for health in Papua New Guinea

In partnership with organizations such as the IMR, the Project is aiming to make a positive difference to the quality of health care in Papua New Guinea.

The Project is working with community members, a team of volunteers, the Government and non-government organizations to improve community infrastructure and help provide better health care to communities in the Project impact area. This partnership led to the unveiling of three key health projects during this quarter.

### Clinic a boost for local health care

The LNG plant site village of Boera has a new health clinic and medical staff house, thanks to the efforts of a team of local volunteers supported by the Project and its contractors.



The newly renovated Boera community health clinic



Construction volunteers outside the new medical staff house

Following five months of work by volunteers and Project contractors, the extensively renovated community health clinic and newly constructed medical staff house opened in November.

Before the new staff house was built, the health extension officer and his family had to live in the community health clinic, which impacted on the privacy of both the family and clinic patients.

The new staff house not only offers more privacy for the health extension officer's family and his patients, but the conversion of his previous accommodation has also given patients private consultation and delivery rooms, and a separate outpatient facility.

Clinic Chairman, Gaiva Daure, said the new facilities would benefit the community for a long time.

### Clean water flows in Kikori Hospital

The Project is helping to improve access to clean water by providing 40 water tanks to Kikori Hospital. Located in the Gulf Province, the Kikori Hospital is one of the only medical facilities in the remote Kikori area. The Hospital provides basic medical services to thousands of people and is constantly under pressure, with health issues such as tuberculosis and HIV and Acquired Immune Deficiency Syndrome (AIDS) prevalent in the area.

Running a hospital of this scale is challenging and resources are limited. Before the Project's involvement, all hospital facilities relied on a small number of water tanks with limited holding capacity. With such a small carrying capacity, facilities such as toilets and bathrooms were often not functional.

The new tanks have the potential to provide over 400,000 litres of clean rainwater to the Hospital. As well as the new tanks, the Project replaced 13 toilet pans, cisterns, hand basins, shower taps and shower-roses in the wards.

# CASE STUDY TWO

## Partnering for health in Papua New Guinea



Aerial view of the 40 tanks at Kikori Hospital

"At Kikori Hospital, we want to provide a service to our people and make sure they are well looked after," said Hospital Administrator Larry Kaipu.

"But it is difficult to do this when we do not have sufficient resources. The support from our partners, like the PNG LNG Project, is what helps us to keep going."



Larry Kaipu says working at the Hospital is a calling, a service to the community

### Laboratory opens the doors for medical research

On December 21, the National Infectious Disease Diagnostic and Research Laboratory was officially opened in the University of Papua New Guinea School of Medicine and Health Sciences building in Port Moresby.

The new Laboratory is the result of an extensive effort by the IMR, the University of Papua New Guinea and the Project to develop high-quality laboratory facilities providing a platform for young Papua New Guinean scientists to develop their skills in biomedical research and diagnostics.

The Laboratory will be used to advance important biomedical research in tropical medicine and emerging infectious diseases such as cholera, tuberculosis and STIs, including the impact of the human papilloma virus (a known cause of cervical cancer) on Papua New Guinean women.

The Laboratory will undergo independent quality assurance and certification, scheduled to commence in the first quarter 2013.



Jonah Igo, Laboratory Manager working with the new equipment

#### **5.4.1 Integrated Health and Demographic Surveillance System**

As part of the 'Partnership for Health' program with the Project, the IMR established the Integrated Health and Demographic Surveillance System (iHDSS) in 2010.

The iHDSS is an important tool for local and national Government health and social policy makers. It will contribute to strengthening the National Department of Health's ability to analyze critical community-level trends across Papua New Guinea.

Population and household-level data is collected by the iHDSS from key Project areas through survey sites covering the four LNG plant site villages and the Hides and Komo areas. It compares this data with two matched control sites at Asaro Valley (Eastern Highlands Province) and KarKar Island (lying 53 kilometres north-east of Madang). The data is used to monitor and assess potential health impacts including morbidity, mortality and nutrition. Socioeconomic surveys are integrated into the iHDSS to monitor and assess potential social determinants of health and well-being.

#### **Boera, Papa, Lea Lea and Porebada**

As part of the iHDSS, local clinics in the four LNG plant site villages are involved in ongoing morbidity and mortality surveillance conducted by IMR personnel. Several surveys were completed during this quarter including a pilot study of non-communicable diseases and household nutrition led by Dr. Patricia Rarau. The IMR also held a workshop with collaborators from the University of Auckland and University of Tokyo to review the pilot non-communicable disease/nutrition survey. Meanwhile, demographic monitoring continued in the Hiri-West villages, with the initiation of a health survey of household-level social determinants. This survey covers all households in the LNG plant site villages and is 30 percent complete.



**Plate 5.7 – Dr. Patricia Rarau, lead researcher for the non-communicable disease study**

#### **Hides area**

In the Hides area, approximately 13,000 individuals participated in an initial census/household registration.

By the end of this quarter, data entry and quality assurance/quality control for the household registration was complete and the Project had provided remote sensing imagery (5-metre resolution) to the IMR for household mapping. Two clinical staff, a health extension officer and a Nursing Officer, were also recruited to the IMR to augment local clinic capacity.

#### **Asaro Valley and KarKar Island comparison sites**

In the comparison site of Asaro Valley, the pilot non-communicable disease/nutrition survey was finalized and approximately 30 percent of vaccination surveys were completed. Morbidity and mortality surveillance is ongoing. In KarKar Island, the baseline household registration/census was completed and recruitment was underway for clinical staff.

In November, all iHDSS survey sites were accepted and registered with the International Network for the Demographic Evaluation of Populations and Their Health (INDEPTH Network). The INDEPTH Network brings together key researchers from across the globe who conduct longitudinal health and demographic evaluation of populations in low- and middle-income countries. The INDEPTH Network's mission is to strengthen global capacity for health and demographic surveillance systems. Another aim of the INDEPTH Network is to mount multi-site research to guide health priorities and policies in low- and middle-income countries, based on up-to-date scientific evidence.

#### **5.4.2 Tuberculosis**

The IMR, with support from the Project through the 'Partnership for Health' program, established an infectious diseases diagnostic laboratory at Kikori Hospital, managed by Gulf Christian Services. The laboratory is equipped with a GeneXpert® diagnostic machine, which will improve the accuracy and efficiency of tuberculosis diagnosis. Monitoring of active tuberculosis cases continues and results of the program will be released during 2013.

#### **5.4.3 Support to non-government organizations**

With Project support, PSI is implementing public health initiatives in communities throughout the Project impact area and along the Highlands Highway in an effort to promote improved health choices. The PSI program focuses on communications campaigns and health awareness training regarding food and nutrition, social determinants of health (domestic violence and alcohol and drug abuse), Sexually Transmitted Infections (STIs), malaria, and diseases related to soil, water, waste and sanitation. To achieve its objectives, PSI is working in partnership with the local non-government organizations Susu Mamas, Maries Stopes Papua New Guinea, and the Evangelical Church of Papua New Guinea.

#### **The Water, and Sanitation Hygiene Program**

During this quarter, more than 1,800 Water, Sanitation and Hygiene (WASH) kits were distributed to communities in the Project impact area as part of the WASH Program.

Each kit contains a 20-litre bucket with tap, soap, water purification tablets, oral rehydration solution, zinc tablets and health information brochures. To date some 5,800 WASH kits have been distributed.

The WASH Program is conducted by PSI with support from the Project. The key Community-Led Total Sanitation component of this Program aims to educate communities about how to prevent diarrhoeal infections. By the end of this quarter, more than 1,300 people had participated in Community-Led Total Sanitation educational sessions. To date over 6,400 people have participated in these hygiene and sanitation training sessions.

### Prevention of Sexually Transmitted Infections

PSI continues to address STI prevention through a number of initiatives including the distribution of PSI-branded prophylactics, truck driver outreach programs, and the continuation of the successful Marital Relationship Training program.

As part of a Project-supported campaign to educate communities about the importance of minimizing the number of sexual partners/concurrent relationships, more than 66,000 prophylactics were distributed through key outlets along the Highlands Highway this quarter.

### Marital Relationship Training

More than 400 men and women participated in Marital Relationship Training workshops conducted in the Hides and Komo areas during the quarter.

Provided by PSI with funding from the Project, the program targets married couples and addresses topics including sexual health issues, partner communication, Human Immunodeficiency Virus (HIV) and STIs, the use of prophylactics, the benefits of having one partner, decision-making and goal-setting skills.



Plate 5.8 – A Marital Relationship Training workshop in progress at Para Village

Participants are enrolled into workshops based on gender, which provides a safe environment for participation. To date more than 6,000 people have participated in the workshops.

As well, 169 truckers and transportation company workers took part in behavioral change communication sessions along the Highlands Highway. These sessions involved reproductive health and gender-based violence prevention training.

### Safe Driver initiative

As part of the PSI-led STI prevention initiative ‘Seif Draiva’ (Safe Driver), more than 1,300 health care vouchers were distributed to truck drivers in Lae and the Morobe and Hela provinces during this quarter. The vouchers provide recipients with access to health services at Susu Mamas and Marie Stopes Papua New Guinea clinics. To date over 3,000 health care vouchers have been distributed.

## 5.5 Community safety

In Komo, ongoing engagement with communities along the Construction Logistics Route to the Komo Airfield site has resulted in a reduction in vehicular accidents with pedestrians and reported near misses. The Project continues to work with local communities to increase awareness of Project activities along the Construction Logistics Route from Tamalia to the Komo Airfield main gate.

The Project also developed an education campaign for malaria awareness and prevention during this quarter in partnership with teachers from schools in the LNG plant site villages. Based on the theme of staying safe during the wet season, the campaign consists of teaching materials relevant to students from elementary classes through to Grade 8. School teachers will distribute the materials at the beginning of the 2013 school year, with the Project providing additional support through school visits.

## 5.6 Community investment

The Project invests in and works with local organizations and individuals who can lead initiatives to improve opportunities for their communities.

### 5.6.1 Community Development Support Plan

Lessons learned from a review of the Project’s Community Development Support Plan in the third quarter 2012 were implemented during this quarter under the existing three focus areas of Strengthening Social Resilience, Local Economic Development, and Community Capacity Building and Partnerships.

## Strengthening Social Resilience

A key achievement this quarter was the release of a book titled *Kastom Stori Sene Gori* (traditional stories). The book represents a true partnership with communities because it is the result of a story writing and drawing competition conducted with 26 schools in the Project impact area in 2011. The book features winning handwritten stories and illustrations by students that reflect traditional stories from local villages.

Building from the success of the *Kastom Stori Sene Gori* competition and other initiatives for schools, including the popular Toea children's book series, the Project has developed a Support to Schools Plan for 2013. This includes identifying schools to work with in the areas of infrastructure development, improving the quality of educational services, training for teachers and school boards, and enhancing extracurricular activities. For further information on the *Kastom Stori Sene Gori* book refer to Case Study Three – *Telling the story of Papua New Guinea*.

The Project continues to support programs for Papua New Guinean women. During this quarter, 127 women from the LNG plant site villages participated in a training program offered through the Women in Mining and Petroleum group.

The training program was conducted over four weeks and focused on nutrition, health and hygiene, sewing and basic business skills such as bookkeeping. Upon completion of the program, participants remarked that they felt empowered to improve the livelihood of their families and their communities through starting their own small businesses.

Personal Viability training continued in Komo, Habono (Hides) and the LNG plant site villages during this quarter, bringing the total number of people trained-to-date to over 940.

Rather than choosing people through village committees, the Project is now holding open registrations for the training. Any person in the local community is invited to register for Personal Viability training, enabling the Project to offer the training to more people. Participants who register are asked to pay a registration fee of 50 Kina (US\$24) to ensure that they are committed to the training. The entire training course cost is 330 Kina (US\$157) per participant, with the Project funding 280 Kina (US\$133) for each trainee. This new approach is attracting participants who are more active and engaged in the training, and doing more with the knowledge obtained through the training course.

Personal Viability training is now also being used as the basis to help individuals establish micro-businesses in the Project impact area.

In the Hides and Komo areas, plans are being developed with various stakeholders on agriculture development, marketing and further training. This includes programs for local community members who want to invest in turning subsistence agriculture into a commercial venture.



Plate 5.9 – Women from the LNG plant site villages participating in the Women in Mining and Petroleum group's training program

## Changing lives

Personal Viability training continues to have a positive impact on the lives of many participants. Alicia Uriaa and Oala Seneka are just two of the many people whose lives are being changed by the training course.

"I heard a lot of things from previous participants who have gone through PV [Personal Viability training] previously, and was told how PV is changing their lives, and I wanted this for me and my family as well. PV has taught me how to save money and also to budget. This time around I want to build a poultry farm to which we can start our project and look at a brighter future," Alicia said.

Oala said that: "We young people spend our time doing nothing or doing unnecessary things in the village. I have learned that time is also money and a lot can be achieved when we use our time wisely. I have learned a lot and hope more young people attend this training in future. I plan to share what I have learned in this training with my family."



Alicia Uriaa



Oala Seneka

## Local Economic Development

Following the development of the community-led Agricultural Development Plan for communities in the LNG plant site area in the third quarter 2012, an agriculture support program, progressed during this quarter.

The program is being implemented in the four LNG plant site villages to improve food security by providing an additional sustainable source of income for villagers who currently rely on fishing as their main income source. In partnership with the National Agriculture Research Institute and the Papua New Guinea Cocoa and Coconut Institute, considerable progress has been made in procuring planting materials and establishing nurseries in the LNG plant site communities.

The aim of the support program is to:

- Enhance food security by providing a selection of food crop varieties and fruit trees that can survive extended dry periods, provide a consistent supply of food year round, and maintain supply of planting materials for future planting.
- Produce a regular supply of root crops and fruits to maintain a balanced diet of carbohydrates and dietary fibers to complement fish.
- Provide a selection of foods that are in high demand in Port Moresby so that they can be sold to generate income.

The support program will provide training on enhanced farming techniques, planting materials and tools to participants, and continued extension support after planting. The program focuses on producing crops such as mangos, banana, African yam, cassava, corn, pumpkin, breadfruit, karambola and guava.

### Community Capacity Building and Partnerships

During this quarter, the Project developed a partnership with the Samberigi Polopa Womens Voice Association; a community based organization from the Gobe/Samberigi area. The Association was established in 2006 to provide rural women with an input into addressing development and social issues affecting their communities. To help build the capacity of this group, the Project conducted an organizational assessment and planning workshop with Samberigi Polopa Womens Voice Association representatives in October.

From the workshop, the group was able to develop an action plan and obtain a clearer perspective on their organizations' vision, mission statement and core values. The Project continues to provide mentoring and follow-up capacity building support for this group's business development plan.

In the Upstream North area, five students were awarded two-year scholarships funded by the Project to attend the Highlands Agriculture Training Institute to attain a certificate in agro-business management. This opportunity will provide them with the skills to support agriculture business ventures.

### 5.6.2 Strategic community investments

In October, the Project committed over 325,000 Kina (US\$155,000) to the Port Moresby Nature Park, Papua New Guinea's first botanical and zoological facility dedicated to educating communities on the country's unique biodiversity.

The Park, formally known as the National Capital Botanical Gardens, is committed to the promotion and education of Papua New Guinea's flora and fauna and their influence in shaping the country's many unique cultures. Project funding will be used to develop a school education program, a Tree Kangaroo *Dendrolagus* sp. research and breeding exhibit, and educational signage to allow visitors to learn about plants and animals in the Park.



Plate 5.10 – Peter Graham, Managing Director, Esso Highlands Limited at the Port Moresby Nature Park feeding a Blyth's Hornbill *Rhyticeros plicatus*

The Project is also supporting the Papua New Guinea Tribal Foundation with the delivery of medical equipment and supplies from the United States for distribution to hospitals and medical centers throughout the Project impact area. The Papua New Guinea Tribal Foundation is a group of people who are passionate about working to provide answers to Papua New Guinea's health and education needs. The Foundation works in partnership with government, private organizations, corporations and individuals to support and implement projects that will produce lasting results.

In support of the Foundation, the Project is helping to source medical equipment, along with C.U.R.E. (Commission on Urgent Relief and Equipment) Kits containing pre-packaged medical supplies such as wound care, personal hygiene items, adhesive bandages, sponges, syringes, gloves and skin solutions. While medical equipment, such as hospital beds, x-ray machines and incubators are being delivered to hospitals and health centers within the Project impact area, C.U.R.E. Kits are being distributed to health centers both inside and outside the Project impact area.

Also during this quarter, nearly 120 women from LNG plant site communities graduated from the World Bank's Women's Self Reliance Program.



Plate 5.11 – Decie Autin, Project Executive, Esso Highlands Limited shaking hands with Gary Bustin, President, Papua New Guinea Tribal Foundation with Michelle Hau'ofo, Board Member, Papua New Guinea Tribal Foundation, and Liz Glissmeyer, Operations Specialist, Project C.U.R.E.

To date, the Project has provided US\$600,000 (\$1.26 million Kina) to the Program, which delivers training and support to women in areas such as basic finance and family life improvement skills. Specifically, the Program teaches women how to generate income through means such as farming, sewing or baking activities. The training was conducted mostly in the villages in conjunction with local women's associations and community groups.

Three biomedical technicians from Port Moresby General Hospital and two officials from the National Department of Health returned to Papua New Guinea in December after completing six months of training through the Biomedical Equipment Repair Training program in Dallas, Texas. Sponsored by the Project, the program participants were trained to properly install, repair, maintain and calibrate essential biomedical equipment and to educate doctors, nurses and other healthcare providers in the proper use of the equipment. Tracey Mandawali, one of two women to attend the training, said the program gave her the ability to communicate with doctors on their level and to help save lives that may otherwise be lost due to faulty equipment.



Plate 5.12 – The five Biomedical Equipment Repair Training program participants upon return to Port Moresby with Dr. Moses Lester, Deputy Manager Occupational Health, (far left); and Andry Nowosiwsky, Occupational Health Manager (far right), Esso Highlands Limited

### 5.6.3 Volunteer programs

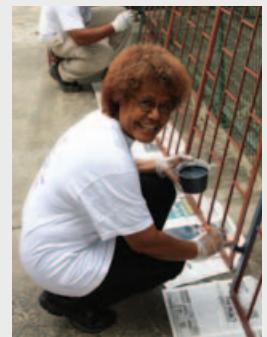
As part of the Project's commitment to the Port Moresby Nature Park, a team of 40 Project and contractor volunteers picked up paintbrushes this quarter to provide fresh paintwork for the Park's flower shop, guardhouse, crocodile enclosure, entrance gates and fencing.

#### Making a difference

Esso Highlands Limited volunteer Kutan Oli said she enjoyed getting back to nature and supporting a community initiative.

"Volunteering at the Nature Park has given me a sense of pride for the unique environment we live in," Kutan Oli said.

"The day was enjoyed by all and I look forward to volunteering with Esso Highlands Limited on other community initiatives," she said.



Kutan Oli painting fencing at the Port Moresby Nature Park

Project volunteers were also kept busy this quarter with the clean up of Ela Beach in Port Moresby on October 27. A team of 40 Project and contractor workers and their families collected more than 250 bags of rubbish during the clean up, which was organized in conjunction with the Papua New Guinea Sports Federation.



Plate 5.13 – Volunteers at the Ela Beach clean up

# CASE STUDY THREE

## Telling the story of Papua New Guinea

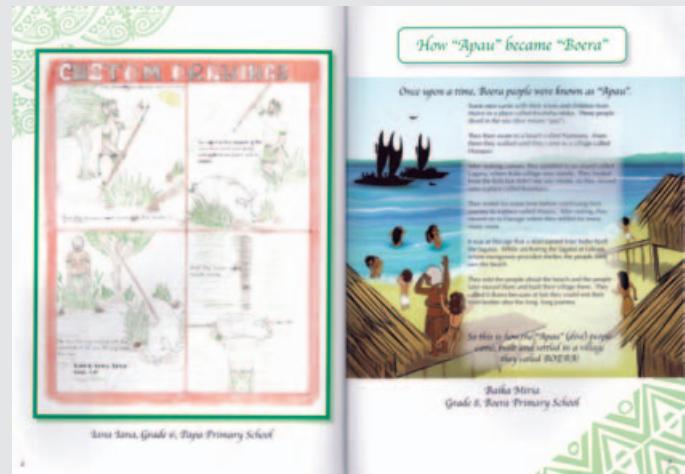
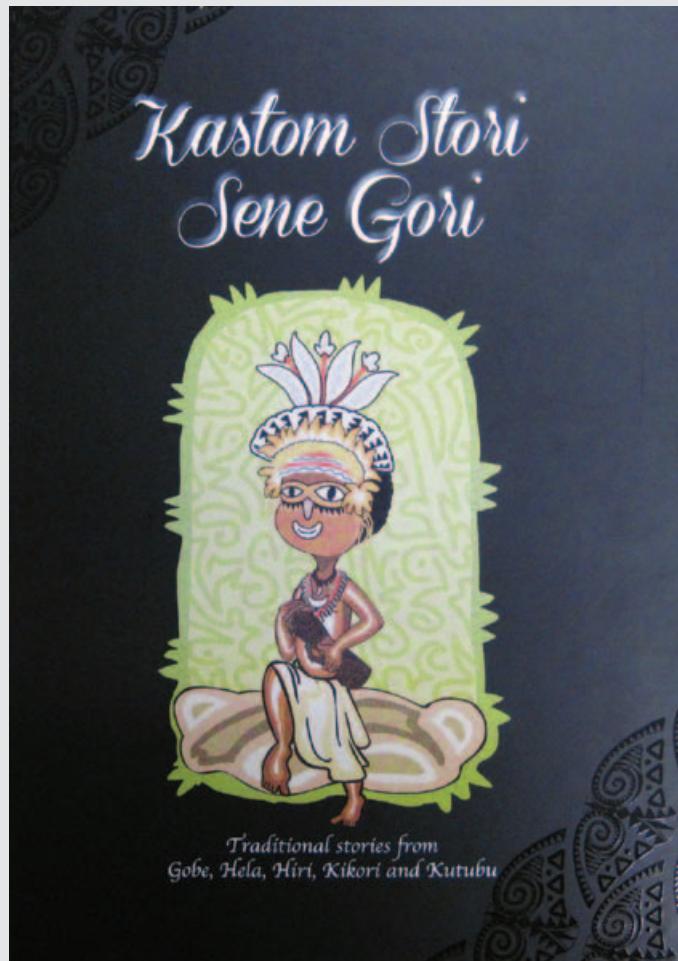
The story of Papua New Guinea is being told through the eyes of its children with the release of a new book called *Kastom Stori Sene Gori* (traditional stories) this quarter.

*Kastom Stori Sene Gori* is a collection of short stories and illustrations submitted by school-aged children as part of a story writing competition. To enter the competition, the children had to submit stories and artwork that truly reflected Papua New Guinea's cultural heritage.

Storytelling plays a vital role in Papua New Guinean communities. Many of the nation's more than 800 languages have no written form, so oral tradition passes the culture of the people from generation to generation. The *Kastom Stori Sene Gori* competition was designed to help preserve local culture by encouraging children to interview their elders so

they could learn traditional stories and write or draw pictures about the stories they heard.

The competition was organized by the Project, in collaboration with schools, and judged by an external panel of judges from both the public and private sectors in Papua New Guinea. Twenty-six schools across the Project area participated, submitting 3,700 stories and pictures. The winning schools were: Lea Lea Primary School, Kikori Primary School, Don Moseley Primary, Kutubu High School, Waro Primary, Idawi Primary and Tari Primary School.



Cover and pages from the *Kastom Stori Sene Gori* book

# CASE STUDY THREE

## Telling the story of Papua New Guinea

### Ekai the helper

A long time ago, when the world was still young and new, there were still some people who had not discovered the use of fire. They used to shiver when the weather grew cold and all the food they ate was raw and uncooked. They did not know that fire was useful to cook food.

In one such village called Beao in Kerewo Island in Kikori District lived two clans. One on the right called Neauri and one on the left called O'ouri clan. This story belongs to the Kerewo tribe and is told to their generations to tell them how they learnt to cook food using the fire.

The Neauri clan people always dry their food in the sun and eat. Sometimes when the sun doesn't shine, poor people eat raw food such as fish and sago. The O'ouri people always eat bush coconuts to survive. They had fire in their village but don't know that it is useful for cooking. This practice of the two clans had gone for a long time.

There was a snake called Ekai who lived with the Weura people in Babae Village, he always sees how Neauri and O'ouri people struggle to survive.

One day a grief fell upon Ekai. He thought to himself that he must do something to help O'ouri and Neauri clans, so he put the piece of firewood which was on fire in front of his mouth and swam across the river towards Beao Village. When he arrived, he gave the firewood which was burning to the Neauri clan people and showed them how to cook their food using it. He then went back to Babae Village.

When the Neauri people tasted the cooked food, it was delicious so they taught O'ouri clan also how to cook food using the fire.

From then on, the Beao Village people cooked food using fire and shared what they had. The Neauri clan gave coconuts to O'ouri clan and they exchanged marriage.



Illustration and story by Nancy Tuosaho, Grade 5, Kikori Primary School

# 6 Compensation and Resettlement

In accordance with requirements of the *Oil and Gas Act 1998*, compensation is paid to landowner clans for land impacted by the Project. Monitoring is also conducted of livelihood restoration activities, which are intended to give physically and economically displaced people the opportunity to restore their livelihoods and standards of living.

## 6.1 Compensation

After nearly two years of negotiation, a major milestone was achieved this quarter with close to half of the HGCP site clans receiving their statutory compensation payments. The customary landowners of this site are the Taguali and the Tuguba clans. Both of these clans are comprised of numerous subclans. During this quarter, the final four subclans of the Taguali clan signed their clan agency agreements with the Project and received statutory compensation payments. Negotiations continue with the Tuguba subclans who are yet to determine the appropriate division of their land among the subclans. The Project will compensate these clans once they have reached an internal agreement on the division of their land. In the meantime, Project work continues uninterrupted at HGCP through focused engagements with the Tuguba clan.

Another significant milestone was achieved when statutory compensation was paid to customary landowners for a portion of the onshore pipeline ROW in the historically disputed Gobe area of the Project. For over two decades, the Gobe area has been the subject of court disputes and Alternative Dispute Resolution proceedings between clans. For a portion of this land, impacted clans approached the Project with a voluntary consent agreement seeking their statutory compensation. For the other portion, land demarcation was completed with the clan leaders under the normal course of business. Due to the litigious nature of the area, the Project sought endorsement from the Papua New Guinean Department of Petroleum and Energy (DPE) to compensate 47 kilometres of the pipeline. The DPE endorsed the Project's plans to compensate all but three of the 47 kilometres of ROW subject to existing Alternative Dispute Resolution proceedings. As such, seven clan agency agreements were signed with the Bainam and Samberigi clans in the area, with compensation paid to four clans for 22 kilometres of the pipeline ROW. The three clans for the remaining 22 kilometres of onshore pipeline ROW are expected to accept payment early in 2013.

Another three clans received compensation for approximately 18 kilometres of pipeline ROW near Tamadigi Village. In addition, 3 kilometres of pipeline near the Kopi Scraper Station was compensated after the National Court ruled on a land dispute in that area. By the end of 2012, approximately 43 percent of onshore pipeline ROW clans had received their statutory compensation. Ongoing negotiations with clans and compensation payments for the ROW are keeping pace with construction. As construction work finishes on a section of the pipeline, the Socioeconomic team conducts a final clan demarcation of the ROW, executes clan agency agreements and pays statutory compensation.

In Komo, the Socioeconomic team continues discussions with the three remaining Komo Airfield clans who have yet to resolve their internal concerns before they can receive compensation for the Airfield land. In December, two of these clans provided clan agent contacts and made requests for compensation. The third clan executed a clan agency agreement and received compensation for the Komo Airfield Access Road but has yet to execute their agreement for their portion of the Komo Airfield. The Socioeconomic team continues to engage with these clans to finalize their agreements and pay compensation.

In Hides, the Socioeconomic team worked with clans to execute six clan agency agreements and paid compensation for six sites on the Hides Wellpad Access Road and Hides Spineline including Wellpad B. Work continues in an effort to finalize clan agency agreements with the remaining clans located between the HGCP site and Wellpad B in early 2013. As construction is completed between Wellpad B and Wellpad G, formal engagements will be undertaken for these additional areas.

## 6.2 Resettlement

Obtaining land access for the proposed pipeline ROW from Kilometre Points 0 to 80 and for the Angore Wellpads A and B and Access Roads, was the focus of resettlement activities during this quarter. Monitoring and evaluation activities continued in the Homa/Paua area, while livelihood restoration activities progressed in the Hides and Komo areas.

### 6.2.1 Milestones and progress

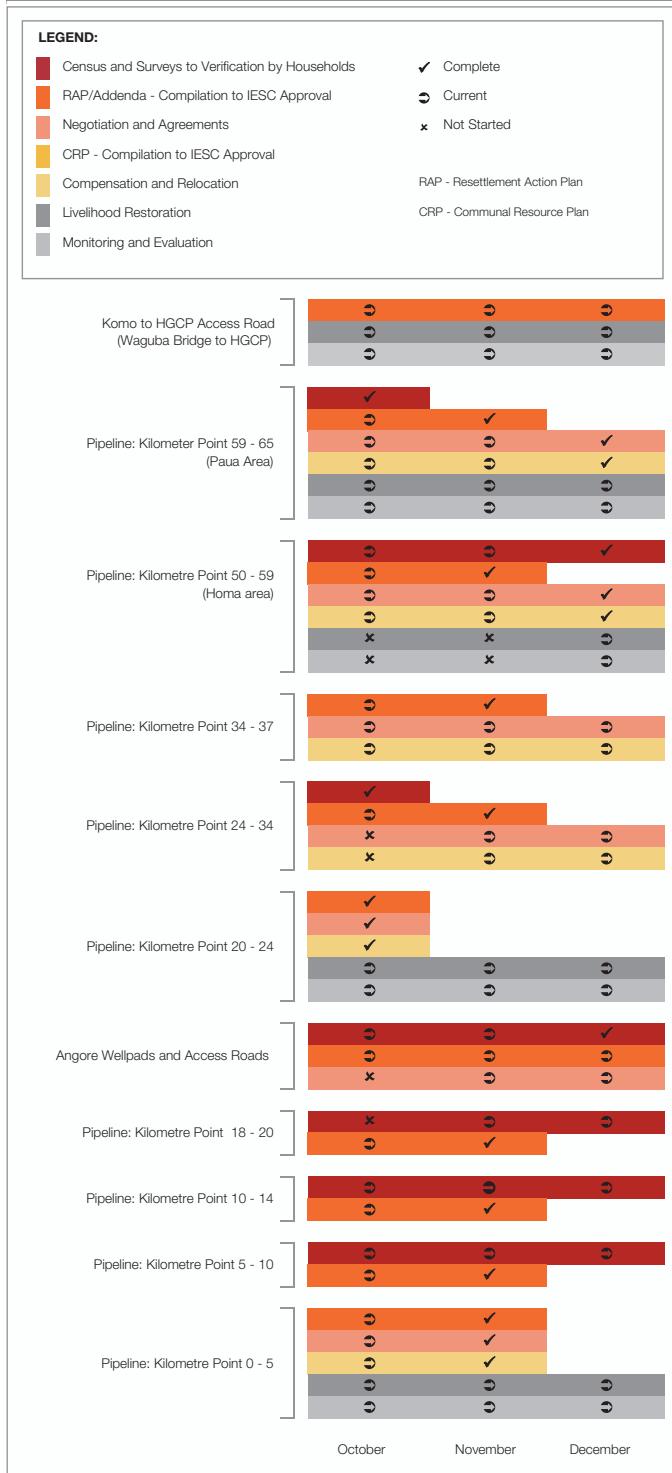
Resettlement milestones achieved included:

- Completion of census and survey activities for both the upgraded and new sections of the Angore Access Roads, and signing of agriculture compensation agreements for the new sections.
- Development and approval of the Resettlement Action Plan requirements for Angore Wellpads A and B and Access Roads.
- Completion of on-the-ground and aerial video surveys to record the baseline situation regarding land occupancy, and community disclosure to explain cut-off dates for resettlement compensation. Surveys and disclosure were completed for the: main pipeline ROW near Kilometre Points 19 to 20, 37 to 50 and 50 to 59; and Hides Spineline linking Wellpads B, C and D.
- Completion of compensation payments and rations deliveries in the Homa/Paua area.

Livelihood restoration and monitoring and evaluation activities continue in 16 areas.

Figure 6.1 provides an overview of the status of key resettlement activities during this quarter.

**Figure 6.1 – Status of key resettlement activities**



## 6.2.2 Highlights, achievements and lessons learned

Key activities during this quarter included:

**Trade store training:** Basic trade store operations training was provided to six of the nine resettled trade store operators in the Komo area to help them re-establish their businesses following resettlement. Upon completion, participants are awarded certificates during an informal graduation ceremony.

**Monetary advice:** The Project established a specialist team to provide advice to resettled households regarding the management of compensation payments they receive, as well as guidance on investment and business opportunities. The business and compensation advisors are provided primarily for the landowners impacted by resettlement but have also assisted landowners from the surrounding communities within the Project impact area.

**Livelihood restoration:** Better yielding varieties of the staple sweet potato and a range of other crops in high demand were distributed to 156 households across Upstream locations during this quarter. This includes 31,300 pathogen-tested sweet potato cuttings bringing the total sweet potato cuttings distributed to households in the Upstream North and South areas to over 100,000 since May 2011. Sweet potato provision is used as a guide to assess the adequacy of food supply to resettled households. Affected households living in Upstream North communities received 60 percent of the sweet potato cuttings, while 25 percent were distributed to resettled households in the Upstream South. The balance went to the wider community in Upstream North locations. For the first time, the Project purchased sweet potato cuttings from two small enterprises in Upstream North that continue to receive technical and business skills advice from the Livelihood Restoration team about propagating virus-free sweet potatoes.

Citrus crops (orange and mandarin) are among the few crops with commercial potential that grow well in the Hides, Komo and Angore areas, and the mid-altitude Lake Kutubu/Moro area, and can be a long-term income source for households. Around 1,500 bud-grafted citrus seedlings have already been distributed, mainly to resettled households in the Hides and Komo areas. Other popular fruit trees are being propagated at the Project's nursery at Komo. During this quarter, Angore communities and those living along the road corridor between Juni and Komo received the first batch of 1,383 guava and 106 papaya (pawpaw) seedlings for planting around their homes. Communities in the Upstream North area also received 125 chili seedlings, 84 African yam seed tubers and 281 cassava cuttings.

The Project also continues to promote the production of temperate climate vegetables in Upstream locations as a means of diversifying household gardens and diets, and to offer households the opportunity to sell fresh produce at local markets. About 2.8 kilograms of seed (11 grams per household) were distributed to 250 resettled and other households across Hides, Komo and Angore during this quarter. In addition, 280 kilograms of peanuts were distributed across Upstream locations. Skills training activities are now centered on community groups, in particular women's groups and church groups. For example, during this quarter, more than 60 percent of the farmers who received basic skills training in setting-up vegetable nurseries were women.



Plate 6.1 – Mango seedlings ready for bud grafting

As well as vegetable and fruit seedlings, small animals such as pigs, chickens and ducks are important livelihood assets of rural households in the Komo, Hides, Angore and Kutubu areas. As such, there is high demand for good quality animals. During this quarter, the Project distributed 264 chickens and ducks to resettled households. Nearly 80 percent of the chickens and ducks were supplied to households trained by the Livelihood Restoration team in basic poultry management.

In Papua New Guinea, pigs are a very important domestic animal, with high cultural and socioeconomic significance. The Project has introduced four genetically improved boars which are being used to breed with local sows to improve pig stocks. Of 14 sows mated in the previous quarter from communities surrounding breeding centers in Upstream North, five gave birth during this quarter to 40 piglets. This is an average litter size of eight piglets (compared to an average litter size of five to six from local sows), potentially earning the sow owners 800 to 1,200 Kina (US\$380 to 570) each for a young pig at four to six months of age.



Plate 6.2 – First litter of crossbred piglets from Yorobi Uga's breeding center at Kulu Village, near Juni

## A thriving family enterprise

The Uga family from Kulu Village in the Hides area is reaping the rewards of a thriving farming enterprise through support provided by the Project.

Yorobi Uga and his family are among four families from the Hides and Komo areas selected to become service providers for the Project's Livelihood Restoration Program. From May 2012, the Project provided Yorobi and his family with technical support and assistance with sourcing materials for small livestock, food crops and sweet potato production. By October, Yorobi had established an insect-proof screen house and planted his first sweet potato crop, which will be used to help establish sweet potato gardens in the community.



Yorobi and his family members after completion of the insect proof house

Yorobi and his family are also providing a pig breeding service to their local community by using a Project-supplied boar to breed with local sows. The first litter of piglets from this breeding service was born in October.

In addition, the family has harvested its first crop of peanuts and produced and sold Chinese cabbage from seeds distributed through the Project's Livelihood Restoration Program.

Income generated through the farming enterprise is helping the family to pay for school and medical fees, expand their current operations and fund small income generation projects. For example, Cathy Uga used funds earned from the sale of Chinese cabbages to purchase a manual sewing machine that she uses to sew skirts and blouses for the family and for sale. Cathy is also using the machine to resize work trousers and mend torn clothes of Hides Gas Development Company Limited employees.

Access to agricultural products such as vegetable seeds, stock feed and fertilizers is a major constraint to agricultural production in the Hides, Komo, Angore and Moro regions. The Project negotiated with a local trade store owner in Juni this quarter to source small quantities of high demand agricultural supplies for chicken and pig production, along with gardening tools, vegetable seed, fertilizer and other materials to test the local market. In the longer term, it is anticipated that this business will grow into an established '*didistoa*' (a retailer who sells agricultural inputs such as stockfeed, seed and fertilizer) to service the agricultural sector in the Project impact area.

To further support community development, during this quarter 50 drum ovens were placed in several locations in Upstream locations. These ovens are part of a food processing training program that provides women with the ability to engage in income generating activities to support their families.

During this quarter 855 people, of whom 85 percent were women, participated in food processing training. This brings the total number of people trained-to-date to 1,405.

**Monitoring of vulnerable individuals:** Two identified vulnerable individuals moved into their new homes in the Hides area this quarter. They bring the total to four houses built to date for vulnerable households. Two water structures were also provided to vulnerable households. The Project is in the process of identifying any other potential vulnerable individuals in need of assistance along the pipeline ROW.

**Komo and HGCP:** Monitoring was conducted during this quarter to evaluate the price of trade store goods in the Hides and Komo areas. The purpose of the survey was to understand socioeconomic trends, such as prices of goods, which may be influenced by money coming into the area. The Project can evaluate the affordability of goods and any impacts on livelihoods. Such information can be used to focus livelihood restoration activities, such as any need for improvements in local food production. By monitoring in this way, the Project gains a clear indication of the financial impact of the Project on the communities and households.

Monitoring of resettled households was also completed in Hides and Komo areas, the Timalia Quarry, and Kilometre Points 0 to 5. Some examples of the activities conducted include:

- A survey to assess the price of food crops at the market. The survey was extended to cover roadside markets from Komo to Tari (including the main Tari market) to understand the trends, impacts and the population around the market areas.
- A baseline survey for Angore community resources and social infrastructure (water sources, clinics, schools, market places and the like).
- A follow-up evaluation of the food processing training program to determine whether the program was having a positive impact on the communities and if lessons learned had been implemented.

**Pipeline ROW and Wellpad Access Roads:** Household surveys continued in the Homa/Paua area near Kilometre Points 59 to 60. Compensation agreements and payments were also made for Kilometre Points 7 to 10, 24 to 34, 34 to 37 and the Angore Wellpad A and B and Access Roads.



Plate 6.3 – Five of the 50 drum ovens distributed in the Upstream North area during this quarter



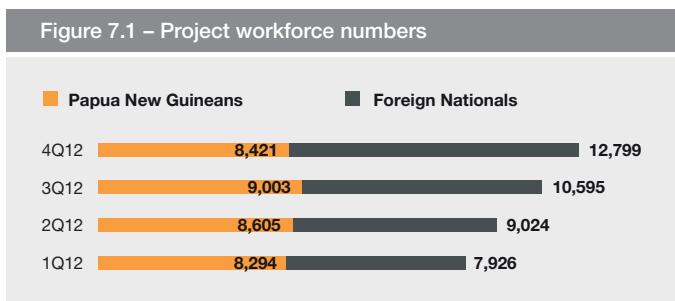
Plate 6.4 – Shirley Iragali from the Hela Province is among many participants learning about hygienic food preparation in the Project's food processing training

# 7 Workforce

The Project aims to help develop the skills of Papua New Guinean citizens, while also maximizing their employment opportunities. The Project is also committed to a best practice approach to worker health, safety and labor conditions.

## 7.1 Development

The Project's workforce continues to grow with the rising demands of construction activity. Throughout 2012, and particularly during this quarter, the increase was predominantly attributed to activity at the HGCP and LNG plant sites. By the end of 2012, the total Project workforce was 21,220, which is a 47 percent increase compared to workforce numbers recorded at the end of 2011. As shown in Figure 7.1, the Project workforce increased by approximately 1,620 during this quarter.



The Project remains strongly committed to training and employing Papua New Guineans wherever possible, both during construction and for the operation of the Project.

At the end of 2012, Papua New Guineans accounted for 40 percent of the total Project workforce. This is a short-term decrease in the ratio of Papua New Guineans to foreign nationals, due to the need for specialized skills not currently available in Papua New Guinea, and the demobilization of some Project worksites that have completed their roles.

The Project continues to maximize employment opportunities for Papua New Guineans. Lancos provide most of the Papua New Guineans employed on the Project. Lancos are also expanding Project employment opportunities to workers outside of the Project impact area.

## 7.2 Workforce training

The Project remains committed to building capacity and developing the skills of Papua New Guineans.

During 2012, development initiatives included formal classroom training using three dedicated facilities across the country, trainee programs in Canada, graduate development programs in Australia and Japan, and on-the-job site-based training across Project worksites. In preparation for operations, the Project has implemented graduate engineer programs, an Operations and Maintenance training program and Above Field workforce training.

### 7.2.1 Construction training

More than 1.6 million hours of training have been delivered by the Project-to-date. Of this, over 678,500 hours were delivered in 2012 with 139,133 hours delivered in this quarter alone. This has been achieved through over 6,800 courses offered across the Project since its inception. In 2012, the Project delivered over 3,650 courses, of which 828 were delivered during this quarter alone.

#### Project-provided training

Project-provided training during the year included construction-based training at the Port Moresby Construction Training Facility and the Juni Construction Training Facility. Both of these facilities provide programs that are Australian Quality Training Framework certified, and formal classroom training is supported by on-the-job training.

The Project also conducts mandatory courses such as safety, health, environment and cultural awareness. All personnel receive this mandatory training from senior management through to Project employees, contractors and subcontractors.

#### Contractor-provided training

Construction contractors continue to deliver valuable training of international quality to Papua New Guinean citizens. In addition to core mandatory training, contractors provide induction courses and other job- and site-specific courses. Course categories include catering and accommodation, logistics and driving, machinery and equipment, and quality standards just to name a few.

For example, a review of training undertaken at the HGCP site during the past year showed that 108,000 hours of formalized training was delivered by the contractor to 36,000 participants across courses including: welding, civil construction, driver training, mechanical piping and health, safety and environment training. The Hides Gas Conditioning Plant and Hides Wellpads contractor is liaising with the National Training Council Secretariat to have construction courses undertaken on-site recognized as complying with the national standard.

In addition, 750 employees participated in further safety training to reduce the risk of machinery-related incidents across the Project. Half of the participants completed the training by the end of 2012. At the same time, further training was provided for the Emergency Response team to help manage the expansion of employees on worksites.

### 7.2.2 Contractor workforce training

In November, 19 trainees from the fourth intake of the Juni Construction Training Facility graduated from their 12-week course. The graduates received their Australian Quality Training Framework Certificate Level II in General Construction and Civil Construction.

This brings the total number of graduates from this facility to 73, including 19 women. The fifth intake of trainees also began their training this quarter with 20 students engaging in the Certificate II in Construction and Resources Infrastructure work preparation program. All Juni Construction Training Facility trainers have also submitted registration applications to the National Training Council Secretariat for review.

To date, 1,043 Papua New Guinean workers, including 213 women, have completed training with the internationally recognized organization, Technical and Further Education (TAFE) Australia. Of these, over 660 have obtained their Certificate Level I, while the remaining trainees will be awarded a statement of attainment. The program included initial training at the Port Moresby Construction Training Facility, which then progressed to on-the-job training at the LNG plant site.



Plate 7.1 – Graduation ceremony for the fourth intake of Juni Construction Training Facility trainees



Plate 7.2 – TAFE trainees at the LNG plant site

### 7.2.3 Graduate programs

The original six engineering graduates who joined the operations group in September 2012 are preparing for operations. During this quarter, they were involved in developing a gas management system to ensure high reliability from the wellheads to the loading arms; as well as a maintenance strategy and the required contracts to support the fibre optic cable that runs from Hides to the LNG Plant.

The graduates are also developing post-start-up contracts for vibration monitoring of rotating machinery and remote operated vehicles that will inspect the underwater segment of the pipeline.

Meanwhile, the second group of engineering graduates recruited early in 2012 is involved in training assignments in Melbourne, Australia, where they have been based for the past eight months. They are learning the day-to-day operations surveillance and troubleshooting required for a producing affiliate, including: how to plan equipment inspections; review results and recommend repairs; and the ExxonMobil process for executing projects.

*“Having colleagues here with a great wealth of knowledge of the industry and their attitude towards sharing of that knowledge and skills with graduates like me is a very humbling experience and an important learning resource,”* said graduate engineer Dicksee Hiraiya on assignment at the Longford complex in Gippsland, Australia.



Plate 7.3 – Dicksee Hiraiya with a colleague at the Longford complex

### 7.2.4 Operations and Maintenance training

The Project's first intake of Operations and Maintenance trainees returned to Papua New Guinea after successfully completing their Advanced Skills training in Nova Scotia, Canada. During the past year, the trainees have become valued members of the Canadian community and have had the opportunity to share Papua New Guinea's culture with Canadians. Graduation celebrations were held for the trainees prior to their departure in December and were featured on the front page of the *Cape Breton Post*.

Upon arrival in Papua New Guinea, the Project provided a welcome home celebration for the new graduates and their families. They will commence on-the-job training with experienced operations and maintenance personnel in January 2013.

In the meantime, the second intake of Operations and Maintenance trainees has almost completed the Basic Skills Training Program. They will soon prepare for one year of Advanced Skills training in Malaysia.



Plate 7.4 – Operations and Maintenance training program graduate Sidney Isaiah speaking at the graduation ceremony

## Preparing for their future

The first Operations and Maintenance trainees are preparing for their future careers with the Project, with valuable skills gained during the past year in Nova Scotia, Canada.

"The Advance Skills training in Nova Scotia was another stepping stone towards developing my skills as a maintenance technician for this LNG project. The training facility there was ideal for the training career as it was well advanced with its facility and instructors who had a wealth of knowledge and experience to share with us. With the acquired knowledge from the program, I am well and truly prepared to undertake this next step, which is on-the-job training. I am very blessed and privileged to be one of the pioneer operations and maintenance technicians of this multi-million dollar LNG project, which will contribute positively towards the development of my nation," said Annemarie Norrie, Maintenance Planner trainee.

Another student of the Operations and Maintenance Training Program; Operations Technician trainee Michael Evara, said that "Having undergone Advanced Skills training in Canada, I feel I have been given the necessary skill and knowledge foundation required to assist me in the smooth transition between trainee and technician status, come the end of my facility specific training here in Papua New Guinea. Like the rest of my colleagues, I share a sense of great responsibility towards my job and the safety of my colleagues and the community and environment in which we work, and am looking forward to contributing in the near future as part of the operations team to the safe and efficient running of the LNG production facility".



Annmarie Norrie



Michael Evara

## 7.2.5 Above Field workforce training

Early this quarter, the first 'Welcome to ExxonMobil' program was introduced for office-based workers. This globally designed program is presented by senior ExxonMobil managers and is intended for new employees to ExxonMobil. It aims to instill a clear understanding of the corporation's values, structure and history to help new employees understand how they contribute to the success of the organization. The annual program also focuses on ExxonMobil's career development processes. Feedback from the first program was positive.

## 7.3 Health management

With increased drilling and onshore pipeline activities, the Health team is supporting programs that include the development of health infrastructure for new camps, maintaining existing public health programs and providing clinic demobilization procedures in locations where activities are complete.

During this quarter, the Health team completed all of their planned health activities, as shown in Figure 7.2.

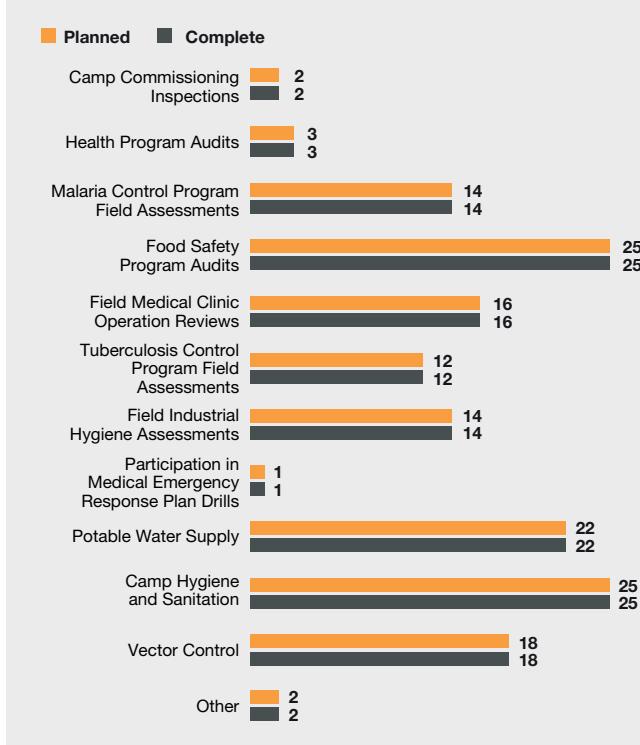
In October, the IESC conducted an independent review of the Health Management Program for both Project and community health initiatives. Results of this review show that Program implementation has "exceeded good practice". The review also indicates that the Project's occupational health program is leading the way with careful monitoring of leading and lagging indicators across malaria control, tuberculosis control, food and water safety, vector control, hygiene and sanitation, clinical operations and infectious disease outbreak management.

### 7.3.1 Camp and contractor health support

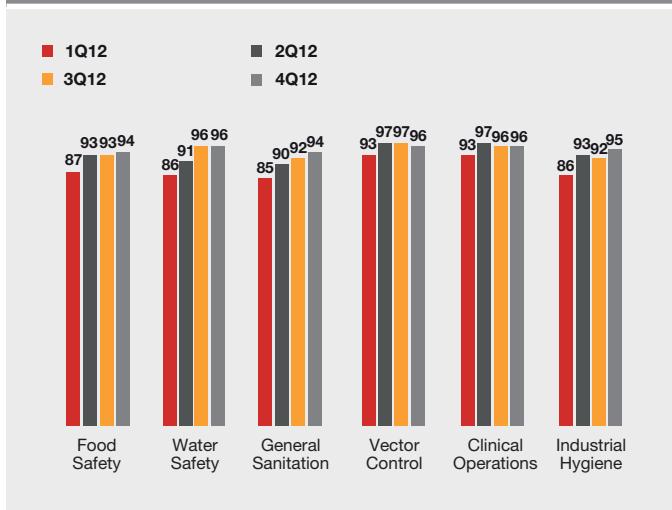
During this quarter, there was a strong focus on potable water safety and camp sanitation in the Hides area. This was due to the increasing personnel and camp construction activities for drilling operations as well as the onshore pipeline workforce approaching the area.

Health program assessments continue to be conducted jointly between the Health team and contractors. As illustrated in Figure 7.3, results from the assessments show that all health program areas have improved throughout the year, in adherence to Project health standards, with potable water safety showing the greatest improvement.

**Figure 7.2 – Number of planned and completed health activities during the fourth quarter<sup>1</sup>**



**Figure 7.3 – Percentage of camp adherence to Project specifications by health category<sup>1</sup>**



### 7.3.2 Leading and lagging indicators

Leading and lagging health indicators enable the Project to monitor the effectiveness of its health programs. Leading indicators are those whereby the Project is proactively managing worker health in areas such as the Tuberculosis Control Program, intended to minimize the risk of tuberculosis to workers. Lagging indicators confirm the effectiveness of control programs by tracking actual cases of illness.

For example, the Project evaluates the effectiveness of malaria diagnosis and control measures by tracking the cause of malaria cases. This section covers both leading and lagging indicators for the Project's health criteria.

### Malaria and tuberculosis

There was one case of serious malaria involving a non-immune<sup>2</sup> worker reported this quarter. The worker received treatment immediately and recovered within two days. An investigation revealed that this case originated from outside of Papua New Guinea. There were another ten cases involving semi-immune<sup>3</sup> personnel recorded during this quarter. This is a significant decrease from the 37 cases recorded in the third quarter 2012. The decrease in case numbers reflects the continued efforts of the Health team in working with contractors and workers to manage bite prevention through personal protection measures and improving vector surveillance and control.

Throughout 2012, no serious malaria cases were found to have originated from the Project, while five cases have been recorded for the Project-to-date. Improved diagnostics, case management and ongoing risk assessment, as well as mitigation measures introduced in 2012, have contributed to the effective management of malaria on the Project.

The Health team will continue surveillance and engaging with workers and contractors to maintain a high level of awareness of the disease and bite prevention measures. This is of particular importance ahead of the approaching wet season, which increases the prevalence of mosquitoes and raises the risk of malaria infection.

Seven tuberculosis Index cases (community-acquired) were identified during this quarter. This brings the total to 21 Index cases recorded in 2012. The total number of Serious Illness Event cases remains at zero for the Project-to-date, which means that no community-acquired case has infected any worker inside a camp or worksite due to the effective management of tuberculosis at Project worksites. Management procedures include early detection, isolation, diagnosis and referral off-site for treatment.

Both malaria and tuberculosis incident trends for the year-to-date are shown in Figure 7.4.

### Malaria

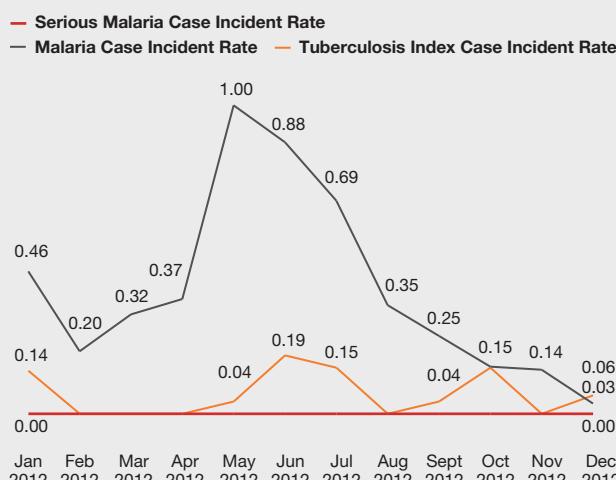
There has been a significant reduction in total recorded malaria cases over the past 12 months. Cases of semi-immune malaria decreased from 37 in the third quarter 2012 to nine cases recorded during this quarter. Project compliance with the Malaria Control Program remains high at 96 percent, which is consistent with the previous quarter.

<sup>1</sup> Data adjustments may be reported by contractors after the Report is released, and as such health data may be refined between one report and the next.

<sup>2</sup> A non-immune individual is where a person was not born and raised (at least to the age of five years) in a location that has malaria exposure.

<sup>3</sup> A semi-immune individual is where a person was born and raised (at least to the age of five years) in a location that has malaria exposure.

**Figure 7.4 – Malaria and tuberculosis case incident rates per 200,000 work hours<sup>1</sup>**



NOTE: This Figure shows the incident rate for tuberculosis Index cases only as there were zero Serious Illness Event cases for tuberculosis within this period.

The non-detect<sup>4</sup> rate for non-immune worker compliance with the Malaria Chemoprophylaxis Compliance Control Program was 9.5 percent this quarter, an increase from 3.9 percent recorded for the third quarter 2012. Investigations into the increase indicate that it may be attributed to: workforce misconceptions regarding perceived side effects of chemoprophylaxis; chemoprophylaxis supply chain issues; and logistical issues with the large number of non-immune personnel tested monthly at the LNG plant site.

At the end of this quarter, approximately 11,000 non-immune personnel were working on Project worksites. Despite the increase in the non-detect rate there have been no cases of serious malaria contracted on any Project site in 2012. The use of Tetrapal® malaria chemoprophylaxis compliance test kit provides instant results for those taking the anti-malarial medications Malerone® and Larium®, allowing for immediate investigation, worker counseling and intervention of approximately 80 percent of the workforce. The Project will continue monitoring and supporting compliance with malaria chemoprophylaxis and other malaria control measures to ensure reduced malaria risk for all Project personnel.

Any person who returns a non-detect result is provided with additional training and awareness about the risks of contracting malaria. Personnel returning repeat non-detect results may be removed from the Project.

### Tuberculosis

Compliance with the Project's Tuberculosis Control Program remains consistent with the previous quarter at 94 percent. The Health team has provided additional training for medical personnel on the revised QuantiFERON® testing protocols and implemented a trial program to test the new protocols at clinics in Port Moresby and at the LNG plant site.

Meanwhile, the two GeneXpert® diagnostic machines purchased for the LNG plant site clinic and the HGCP clinic are providing Project personnel with rapid and accurate tuberculosis diagnosis.

### Food and water safety

The Project has maintained ongoing improvements in food and water safety throughout 2012 and recorded no outbreaks of food or water borne illness for the past 12 months. The Project's food safety compliance score has also increased from 93 percent to 94 percent. During this quarter, the Project's main caterer began an internal audit of their food suppliers, both for imported foods and foods purchased locally, to ensure high food quality.

Prolonged dry conditions in the Hides area have resulted in a reduced capacity and supply of bore water on some Project sites. The provision of an adequate water supply has been achieved through strategies such as implementing water use reduction methods in the laundries and coordinating the sharing of water between Project sites using water tankers as needed. Despite the challenges, the Project's water safety score has remained at 96 percent, which is consistent with the previous quarter.

Even with the high compliance scores achieved this quarter, the Health team is working with contractors on a process of continuous improvement. The most recent assessments identified a need to upgrade the skills and knowledge of kitchen workers and water operators at some Project sites.

### Camp hygiene and sanitation

This quarter the Project achieved a camp hygiene and sanitation compliance score of 94 percent, compared to 92 percent recorded in the third quarter 2012. General cleaning and sanitation, especially laundry procedures and cleaning of shared accommodation and shared facilities, remains a focus for the Health team as camp populations increase across the Project.

During this quarter, the Health team raised awareness of food and water borne diseases and the role of personal hygiene and general sanitation practices in preventing illness. Project site health education and awareness sessions were provided in parallel with community health programs conducted in partnership with organizations such as the IMR and PSI. Consistent messaging enables workers to take information home to their communities that matches the information being delivered to the communities by non-government organizations working in the area.

### Vector control

The Health team is using both ongoing surveillance of adult and larval mosquitoes (leading indicators) and vector-borne illness case data from Project sites (lagging indicators) to assess and mitigate the risk of malaria and other vector-borne diseases and communicate this to Project personnel.

4 A non-detect means chemoprophylaxis is not detected during testing.

Throughout 2012, the IMR provided data on malaria cases diagnosed in community clinics around Project sites to assist with assessing the malaria risk near Project work areas. The IMR intends to continue sharing malaria data from community clinics and will begin providing vector surveillance data from communities near Project work areas in 2013.

The partnership with the IMR will facilitate risk assessment and mitigation measures for malaria and other vector borne illness, including emerging vector borne illnesses such as chikungunya virus (causes an illness with symptoms similar to dengue fever), which the IMR began tracking when the disease was confirmed in Papua New Guinea this quarter.

The Project's vector control compliance for this quarter was 96 percent compared to 97 percent during the previous quarter. The slight decrease in the overall score is attributed to a negligible decrease in the effectiveness of vector surveillance activities for one contractor at one worksite.

### Clinical operations

The Project's clinical operations maintained a high compliance rating with 96 percent recorded this quarter, which remains consistent with the previous quarter.

The HGCP clinic, which became fully operational in the second quarter 2012, is providing a centralized facility for comprehensive medical care to multiple contractors in the Hides area. This clinic works in conjunction with the Esso Highlands Limited satellite clinics at Moro, Juni and Kobalu.

During this quarter, a training workshop and emergency response drill was held with all contractors and stakeholders to finalize an integrated response plan to manage various medical and emergency situations in Hides.

The Health team is also working closely with the Drilling organization to integrate medical support for the new camp at Hides, which will begin accommodating personnel in the first quarter 2013.

### Industrial hygiene

The Project's assessment score for industrial hygiene was 95 percent this quarter, an increase from 92 percent observed in the third quarter 2012. This increase represents a marked improvement in contractor compliance across Project sites during the past 12 months, which can be attributed to increased engagement and support provided by the Health team. In particular, significant improvement was made in heat stress management, compliance with personal protective equipment and respiratory protection.

The Health team will continue to focus on industrial hygiene issues relevant to Project activities. This includes the safe management of radiation sources, noise and hearing conservation, and effectively managing welding and blasting operations.

## Getting to Zero AIDS

More than 550 information kits and 3,500 brochures were distributed to Project workers and throughout worksite clinics during this quarter in support of the World AIDS Day theme of *Getting to Zero AIDS*.

As part of raising awareness about HIV/AIDS, the Project conducted toolbox stand-downs to convey the message of: Zero HIV in Papua New Guinea – Protect Yourself, Protect Your Family, Test Your Blood Today, Know Your Tomorrow. This was supported by a theatrical performance of culturally appropriate skits for Port Moresby-based workers. The performance included a dramatic depiction of healthy behaviors and overcoming ignorance and the stigma surrounding HIV and AIDS.

With Papua New Guinea recording the highest rate of HIV infection in the Pacific region, the Project is committed to raising awareness through employee toolbox talks and World AIDS Day brochures and information kits.

World AIDS Day is held on December 1 each year and has become one of the most recognized international health days on the Project. It provides an opportunity to raise awareness, commemorate those who have died from the illness, and celebrate victories such as living longer with HIV and increased access to treatment and prevention services. The key messages delivered this year were focused on how Project employees can make a difference with helping to achieve the World AIDS Day target of *Getting to Zero AIDS* through the ZERO campaign:

- ZERO Fear – Get educated, get informed, understand HIV and AIDS.
- ZERO Stigma – Don't judge or blame people living with HIV or AIDS for their illness.
- ZERO Discrimination – Don't treat people who have HIV/AIDS differently from people who do not have HIV, to disadvantage or harm them.
- ZERO Ignorance – Knowing your status for HIV confers knowledge and great benefits in healthy decision-making.
- ZERO New Cases – You can protect yourself from AIDS and not become a new case.
- ZERO Death – Visit a clinic, see a nurse or a doctor and start on medication to move towards a normal healthy and productive life.



Project workers supporting the World AIDS Day message

## General illness events

Two dengue cases were recorded during this quarter. An investigation revealed that one case may have originated from outside of Papua New Guinea and the other case was contracted within Papua New Guinea. Dengue is a mosquito-borne illness that is spread predominately by the *Aedes aegypti* mosquito. This mosquito often breeds in containers found around homes and traditionally bites during the day. The Project also recorded the first single case of hepatitis A and a case of mumps during this quarter.

There were nine cases of chickenpox reported across the Project this quarter. These cases were linked to an outbreak that commenced in third quarter 2012. The infected employees were treated and isolated from other Project workers. Worker accommodation was decontaminated and the Project increased employee awareness and surveillance activities to minimize the risk of further cases.

## Medevacs and medical transfers

There were 23 medevacs during this quarter, which was an increase from the 18 medevacs recorded in the previous quarter. This increase can be attributed to the increase in workforce across the Project and the result of two motor vehicle incidents. Only two of these medevacs were due to work-related activities, the remainder was for personal health issues. There were 130 medical transfers during this quarter, the majority of which were also due to personal health issues.

During the quarter, the Health team conducted a medical emergency risk assessment involving the HGCP clinic in the Hides area. The risk assessment enabled the Project to plan for a multi-casualty medical emergency event and determine the appropriate level of medical response that would be required in such a situation.

### 7.3.3 Other strategic initiatives

The Project continues to integrate worker and community health programs to provide consistent messaging, awareness and education among workers and surrounding communities. For example, the successful community WASH Program messaging is consistent with Project worker messaging about practicing good personal hygiene, such as washing hands before eating food.

Meanwhile, the Camp Obesity Prevention Plan was completed during this quarter. The Health team will begin working with contractors and Project sites to implement guidelines to educate and support the workforce in preventing obesity and obesity-related illnesses.

## 7.4 Safety management

In October, 116 Project and contractor leaders participated in the ninth Safety, Security, Health and Environment (SSHE) workshop as part of the SSHE leadership program.

The workshop focused on topics including: enhancing social license to operate; mitigating law and order challenges; sustaining worker morale; mitigating fatal risks; and managing worker risk tolerance. A key outcome was for participants to provide their input into team specific action plans to define focus areas for improvement in 2013.



Plate 7.5 – An Esso Highlands Limited senior leadership panel discussion at the SSHE workshop

Some of the key lessons learned through the workshop included a strong focus on the fundamentals of *Lead, Look, Listen and Live*, and the impact of risk tolerance on safety.

## Lead, Look, Listen and Live

- Lead:** Ensure adequate coverage and experience levels for supervisors.
- Look:** Maximize supervisor presence at workforce.
- Listen:** Maximize engagement with first line supervisors and workers.
- Live:** Personally verify controls in place and intervene as needed.

The Project continues to focus on addressing safety fundamentals related to hazard recognition, worker perception of consequences, and risk tolerance. People drawn together for the Project are from diverse cultures and work backgrounds with varying personal experiences, so they have the potential to demonstrate significant variability in how much risk they are prepared to accept (both on- and off-the-job). In recognition of this, the Project provides risk tolerance training intended to mitigate the potential for risk-taking by employees and encourage participants to consider several factors that influence their decisions to accept risk, or reduce their exposure to risk. Participants are taught that how they perceive and evaluate these factors will influence their behavior, their work, and ultimately their safety.



**Plate 7.6 – Workers participating in the Risk Tolerance training program**

The Risk Tolerance training program is provided in multiple formats to ensure maximum participation across Project sites. The primary method of delivery is through a one-day interactive, group-based training program supported by video and group discussions. The training program is also provided through ten one-hour modules presented by site leaders at various Project locations, as part of their management/worker communication and engagement program. Another mode of delivery is through discussion sheets presented by safety advisors, safety champions, and first line supervisors at pre-shift safety meetings.

A safety milestone was achieved this quarter, with over 800 workers graduating from the Project's Safety Champions initiative to date. The positive impact of the Safety Champions is generating additional interest from contractors who continue to nominate candidates for the initiative. The expansion of the Safety Champions initiative into multiple languages and cultural groups is also proving successful.

#### 7.4.1 Leading indicators

The Project's ongoing improvements in its core safety processes such as Job Safety Analyses and Observations and Interactions are having a positive impact as shown in Figures 7.5 and 7.6. For the Project-to-date, more than 1.1 million Job Safety Analyses and over 1 million Observations and Interactions have been submitted.

**Figure 7.5 – Number of Job Safety Analyses conducted by quarter<sup>5</sup>**

4Q12	231,086
3Q12	197,626
2Q12	161,686
1Q12	153,239

## Mary: A Safety Champion

An outstanding performance at a Project Safety Champions course has led to a new career for Mary Anda from Kelowagi Village in Papua New Guinea's Western Highlands Province.

In November, Mary joined Esso Highlands Limited as a Safety Training Advisor, conducting safety training for personnel across the Project.

Before joining Esso Highlands Limited, Mary worked as a purchasing officer with the Onshore Pipeline contractor where she had the opportunity to attend one of the Project's first Safety Champion courses. Her performance on the course was such that she became the first woman to be recognized as the 'Champion of Champions'.

Mary, who holds a degree in Business Management from Papua New Guinea's University of Technology, said she was enjoying her new role with Esso Highlands Limited.

"I knew that getting a college degree would help me to get a good job and give a good life to my family," she said.

Mary has three children and said she believed women could excel at whatever they put their mind to. "Never restrict yourself. There is more that we can achieve if we try to think outside of the box," she said.



**Mary Anda conducting a safety training session**

**Figure 7.6 – Number of Observations and Interactions conducted by quarter<sup>5</sup>**

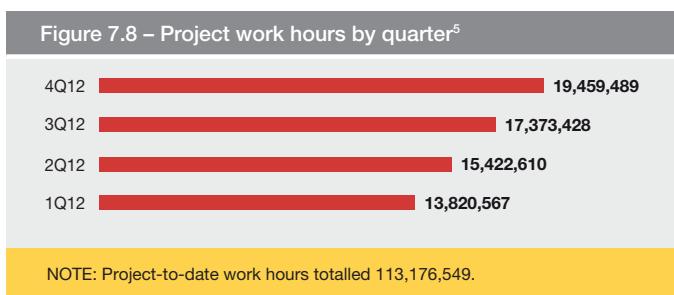
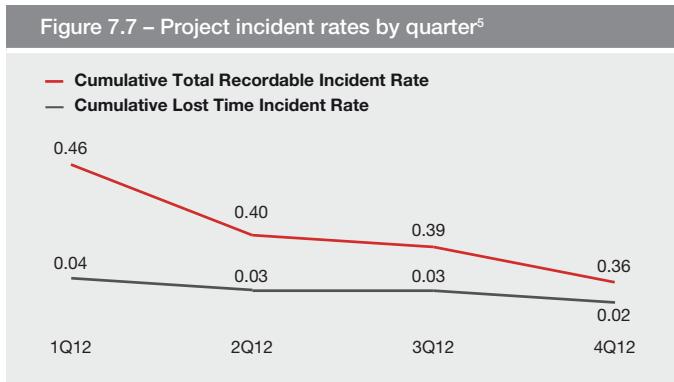
4Q12	259,684
3Q12	216,449
2Q12	146,718
1Q12	122,932

<sup>5</sup> Data adjustments may be reported by contractors after the Report is released, and as such safety data may be refined between one report and the next.

## 7.4.2 Lagging indicators

Both the Project's Total Recordable Incident Rate and Lost Time Incident Rate continue to improve (as shown in Figure 7.7) despite increasing Project work hours (as shown in Figure 7.8).

In-line with these improvements, the Project and its contractors experienced their safest quarter to date with 19.4 million work hours achieved without a Lost Time Incident.



## 7.5 Worker welfare and conditions

In accordance with commitments made under the Labour and Worker Conditions Management Plan and the Camp Management Plan, the Project aims to maintain high standards of worker welfare and conditions.

### 7.5.1 Camps

The LNG plant site currently has 8,500 people residing on-site. Fortnightly LNG Plant Site Camp and Food Committee meetings continue to be held with contractor and Project representatives to discuss workers' suggestions and any concerns regarding camp food, accommodation and associated facilities.

Komo's Camp Facilities Management Committee is also conducting regular meetings with camp residents, contractor representatives and the Project to give local Komo workers the chance to raise work-related concerns with their Committee member, who places these on the agenda for discussion at the regular meeting. Outcomes of these meetings have enabled a clearer understanding among workers about the way wages are paid and how superannuation is handled.

These meetings have also enabled Komo camp residents' concerns to be addressed and closed within a 30-day period.

Contractors across numerous Project sites are implementing sporting, social and entertainment activities within worker camps to enable work teams to congregate in an informal setting.

### Bringing banking to Hides

On December 10, the HGCP site gained its own banking facilities with the official opening of a small rural branch of the Australia and New Zealand Banking Group Limited (ANZ) bank in the Para Camp Office.

The bank is located within a custom-built container which houses three automatic teller machines and three teller windows to provide deposit and withdrawal facilities for people in the local community. This service means that workers and local villagers near the HGCP site will no longer need to travel long distances to Tari or other areas for their banking needs.

The arrival of the new ANZ bank follows the opening of the rural BSP branch at the LNG plant site in September 2012. The BSP bank has four automatic teller machines and three tellers to provide deposit and withdrawal services to members of the local community and LNG plant site workers.

Manager of the new ANZ branch, Reynolds Mairave said the new bank provided the same banking services as other ANZ branches in Papua New Guinea and was serving 30 to 40 customers a day.

"I see that banking services are needed mostly by people in the remote areas. For ANZ to set up here has done proud for the people of Hela Province," he said.

Bank customer Peter Hawa from Kopeanda said he was happy to have the convenience of a bank in Hides.

"We do not have to worry about travelling long distances anymore to do banking. We must take good care of our bank," Mr. Hawa said.

Both the ANZ and BSP branches are based on a model of bringing banking services closer to people who live outside of the major cities in Papua New Guinea.



Project workers take advantage of the new ANZ banking facility at Hides

## 7.5.2 Labor and worker conditions

'Bright Future' training, a program designed specifically for the Project's Papua New Guinean construction workforce, commenced at the LNG plant site in October. The program was created to help these workers plan for a future beyond the construction phase of the Project. It aims to have individuals see themselves as a valuable resource with vast potential to succeed and be prosperous mentally, spiritually and physically.

As part of the program, trainers assist participants with developing a personal plan to help them work toward their long-term goals in small steps. Participants attend training for two hours per day over five days. By the end of 2012, more than 1,800 workers had participated in the program.



**Plate 7.7 – The first graduates of the 'Bright Future' training program**

The Project and the Komo Airfield contractor are working with the Camp Facilities Management Committee to ensure that concerns of service providers are addressed and solutions implemented. This is done with the aim of achieving worker satisfaction and a better understanding of the resolution process. This approach, along with mentoring for catering supervisors and workers to educate them on the correct procedures to deal with grievances and wage queries, resulted with a number of potential work stoppages being resolved, preventing any disruption occurring.

# 8 Conformance

To conform to environmental commitments outlined in the ESMP, the Project's verification, monitoring, assessment and audit activities are used to identify areas and actions for improvement.

## 8.1 Verification

The Field Environmental team ensures contractors implement the Project Environmental Management Plan by managing verification, stewardship, and quality control. The Field Environmental team also provides on-site training and works with contractors to resolve any issues.

During this quarter, the Field Environmental team was involved in verification activities including:

- Project-wide monitoring campaigns covering areas such as water quality, noise and weeds.
- Contractor training and awareness-raising with regard to wastewater treatment plant performance improvements and surface water quality. In-situ water quality sampling and awareness training was also completed for drilling and camps contractors.
- Assisting the Socioeconomic team with addressing community grievances by undertaking investigations, completing in-situ testing where necessary and providing recommendations for resolutions or improvements.
- Assisting with Project chance finds and salvage works along the pipeline ROW.

In addition, three Field Environmental team contractors were appointed to full-time positions with Esso Highlands Limited and will continue to support the Project through the production phase. Two trainee Field Environmental Advisors were appointed as contractors for the Project.

Meanwhile, the 2012 Environmental Internship Program was successfully completed this quarter and three new interns were chosen for the 2013 Program. The new interns were selected from a group of candidates from the University of Papua New Guinea and the Pacific Adventist University. They commenced work at the LNG plant site in December.

## 8.2 Monitoring

In implementing the Project's environmental monitoring programs, individual Field Environmental Advisors are assigned to specific worksites and tasks such as clearing, surveys and sampling. Each Field Environmental Advisor conducts routine inspections of sites and activities in their area to evaluate compliance with environmental commitments consistent with the verification components of the environmental management plans.

Project Field Environmental Advisors are also responsible for collecting, or stewarding, the collection of necessary samples and data for analysis, consistent with Project monitoring requirements. Results of monitoring conducted during this quarter are outlined in the following sections.

## 8.3 Assessments and audits

Project verification and monitoring activities are supplemented by contractor-led assessments and audits. For example, the Onshore Pipeline contractor was part of a regulatory compliance audit during this quarter to ascertain their level of compliance against Papua New Guinean regulations and the Project Environment Permit conditions. Recommendations for improvement were made in areas such as spill drills, equipment wash certificates and trench inspections.

The Project and contractors also conducted joint inspections covering specific aspects of environmental performance. For example, the LNG Plant and Marine Facilities contractor, with Project support, conducted their fourth environment compliance audit. The audit was conducted across all subcontractors over a ten-day period, with 26 observations being made and closed-out within the quarter.

In October, the IESC also completed their eighth site visit to monitor conformance with the Project's environmental and social commitments. When completed, a report of the IESC's findings will be available on the Project website. The report from the seventh IESC visit, conducted in August 2012, is on the Project website.



Visit the Project website at  
[www.pnglng.com](http://www.pnglng.com)

## 8.4 Incidents, non-conformances and corrective action

### 8.4.1 Incident summary

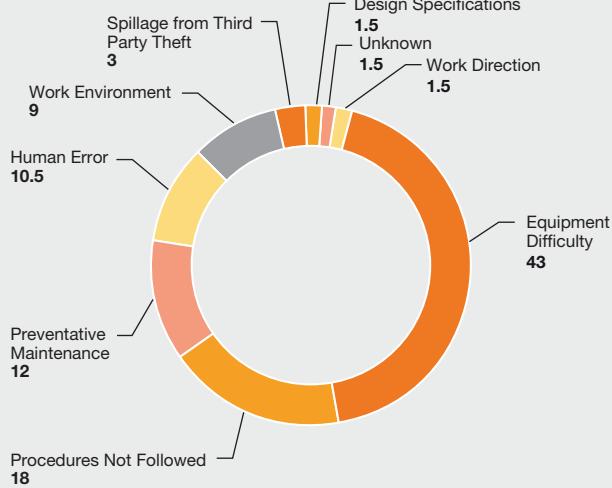
During this quarter, 60 environmental incidents were reported, all classified as Severity Level <0. These were all related to hydrocarbon or chemical spills, with the exception of one wastewater spill and one instance of excursion from the pre-construction survey boundary. There were no serious environmental incidents (greater than Severity Level 0), requiring notification to the IESC or the Papua New Guinean Department of Environment and Conservation (DEC). To determine and correct the causal factors of incidents, investigations were undertaken for all incidents reported this quarter, to a level appropriate to their severity. Figure 8.1 illustrates incidents classified by severity, while Figure 8.2 groups incidents by their cause.

**Figure 8.1 – Number of environmental incidents by severity level<sup>6</sup>**

■ Severity Level 3 ■ Severity Level 2 ■ Severity Level 1  
 ■ Severity Level 0 ■ Severity Level <0 ■ Near Miss



**Figure 8.2 – Percentage of environmental incidents by causal factor<sup>6</sup>**



#### 8.4.2 Non-conformance and field observation performance

The Project records non-conformances and field observations as part of its ongoing environmental performance verification efforts. Field observations present a potential non-conformance situation where an observation, intervention and/or corrective action is required to prevent a non-conformance. A non-conformance is a situation that is not consistent with ESMP requirements. The Project also records positive field observations when contractors display good environmental practices.

During this quarter, the Project recorded 27 positive field observations. These positive observations related to the application of management plans for waste management; spill prevention and response; and weed, plant pathogen and pest management. An example of continuous improvement in wastewater treatment plant performance was observed at Kobalu, where preventative maintenance identified the need for a replacement air circulation pump.

<sup>6</sup> Data adjustments may be reported by contractors after the Report is released, and as such conformance data may be refined between one report and the next.

The pump was replaced and effluent quality was maintained without any loss in performance at the plant.

Also during the quarter, 92 field observations and two Level I non-conformances were raised. Most field observations recorded were in relation to erosion and sediment control, spill prevention and waste management. A Level I non-conformance was raised for the HGCP Main Camp wastewater treatment plant discharge not reaching prescribed conditions within the permissible 90-day stabilization period. Corrective actions were implemented and testing is underway to confirm that the discharge quality has reached the prescribed levels.

The second Level I non-conformance involved the incorrect alignment of the ROW where it was cleared at the Homa Access Road section. Corrective actions included an immediate toolbox talk with all crews and a revision of the procedure for clearing and grading works to include more stringent controls on staking operations and verification of alignment prior to ground distance. No Level II or Level III non-conformances were recorded during this quarter.

The Project is focusing on increasing the number of field observations to match the opening of worksites in Hides, while providing more detailed observations and corrective actions to contractors. The aim is to decrease the length of time that a field observation is open and reduce the number of repeat observations in the same management area.

A summary of all non-conformances and field observations is outlined in Figure 8.3. The closure status for non-conformances and field observations is shown in Figure 8.4.

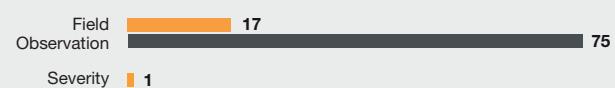
**Figure 8.3 – Number of environmental non-conformances and field observations by severity level<sup>6</sup>**

■ Severity Level III ■ Severity Level II ■ Severity Level I  
 ■ Field Observation ■ Positive Field Observation



**Figure 8.4 – Number of environmental non-conformances and field observations by closure status<sup>6</sup>**

■ Open ■ Closed  
 Field Observation  
 Severity Level I



# 9 Pollution Prevention and Abatement

The Project implements measures to minimize pollution and actively encourages recycling across all worksites.

## 9.1 Air emissions

Some Project activities generate air emissions in the form of dust from vehicle movement and exposed soils; exhaust gases from construction equipment and incinerators, and greenhouse gas emissions from direct fuel combustion.

The Project placed additional focus on dust control and suppression this quarter. Although heavy rainfall was recorded at times in the Upstream Project area, extended dry periods were also experienced, particularly at the LNG plant site. At that site, dust was suppressed through water trucks reusing over 9,500 cubic metres of tertiary treated wastewater in preference to fresh potable water. At the Komo Airfield, two water trucks were used on the road between Komo and the Timalia River. The HGCP site also experienced dry periods at the end of this quarter, so three trucks were used to suppress dust there.



Plate 9.1 – Use of a water truck at the LNG plant site

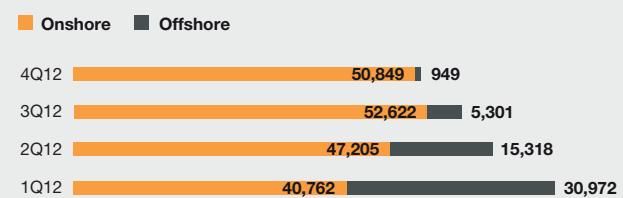
At the HGCP site the operational responsibility for incinerator operations, maintenance and staffing was transferred from the Upstream Infrastructure contractor to the Hides Gas Conditioning Plant and Hides Wellpads contractor. As part of the transfer, incinerator operators participated in refresher training that included: instruction on the efficient operation of the units to ensure no black smoke is emitted from the stack; record keeping of primary and secondary burn chamber temperatures; and identification of waste types incinerated and approximate volumes. The secondary burn chambers within the HGCP incinerator are de-ashed weekly, along with routine primary chamber de-ashing operations. Secondary chamber ash, along with ash generated from the combustion of contaminated spill kit materials and rags, is stored separately for disposal.

The Project calculates its greenhouse gas emissions based on direct fuel use. Indirect sources, such as purchased electricity, are not included. Greenhouse gas emissions are decreasing due to the decline in offshore work activity following completion of the offshore pipeline, and therefore minimal requirement for marine vessels.

During this quarter, the Project's onshore and aviation fuel use equated to a greenhouse gas emissions value of 50,849 tonnes of carbon dioxide equivalent, with marine operations contributing an additional 949 tonnes of carbon dioxide equivalent.

Figure 9.1 shows Project-related greenhouse gas emissions.

Figure 9.1 – Greenhouse gas emissions (tonnes of carbon dioxide equivalent) per quarter



NOTE: Emissions calculations are based on the Australian Government Department of Climate Change and Energy Efficiency, National Greenhouse Accounts Factors, July 2011.

Meanwhile, air quality measurements at the four monitoring locations at the LNG plant site remained well below the criteria adopted for the Project.

## 9.2 Noise and vibration

In accordance with the Project Environment Permit, noise criteria are applicable to permanent Project facilities but not to temporary construction activities. However, the Project continues to record noise from construction activities to monitor noise levels.

Following a review conducted by external consultants in the third quarter 2012, some site noise monitoring programs were modified to obtain more accurate results. For example, at Komo Airfield sampling locations and methods were modified to ensure results more accurately reflected construction noise, rather than non-Project noise.

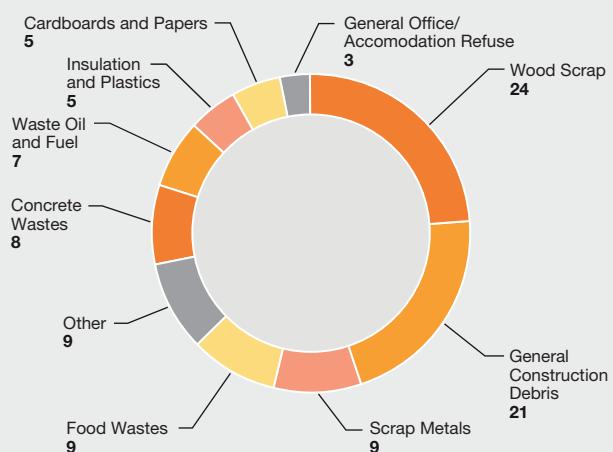
Overall, the Project recorded no unresolved noise grievances by the end of the quarter.

## 9.3 Waste management

The largest volume of wastes generated in the quarter were from general construction debris and wood scrap as illustrated in Figure 9.2. Disposal methods used for solid wastes during the quarter are shown in Figure 9.3.

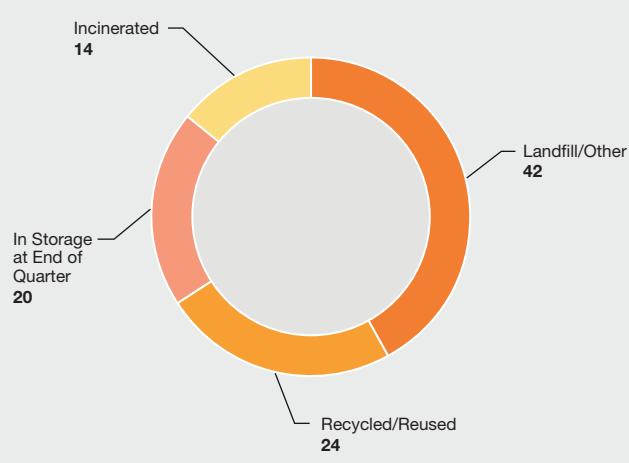
A key achievement this quarter was the completion of the waste process building at the Hides Waste Management Facility. By the end of the quarter, waste processing equipment including the weighbridge, tire debeader, industrial shredder and drum crusher were installed and prepared for mechanical completion and commissioning. The installation of subsurface drainage and a limestone layer were also completed for the second of two landfill cells at the Facility. The first cell is complete and has received some landfill waste.

**Figure 9.2 – Percentage of solid waste by type**



NOTE: Waste types with values of 2% and under have been combined in the category of 'Other'.

**Figure 9.3 – Percentage of waste by disposal method**



**Plate 9.2 – Installation of landfill limestone base at the Hides Waste Management Facility**

In preparation for completion of the entire Facility, the contracted operator performed waste segregation, sludge dewatering and waste storage management.

Waste management equipment, including a waste compactor, and consumable items were also sourced for use during operation of the Facility.

Wastes from onshore pipeline operations continue to be managed at existing waste management areas at Kopi Shore Base, Gobe Camp 3, Tamadigi Camp 4 and Moro Camp 5. An additional waste management area was completed during the quarter at Paua Camp 6. This area collects waste from the Hegero and Tuabge camps and work activities in the area, and provides incineration and segregation of waste prior to transport to Moro Camp 5 facility for further treatment.

By the end of the quarter, the LNG plant site sent 245 tonnes of waste oil and 20 tonnes of used tires, classified as hazardous waste for recycling and disposal in Australia through a Papua New Guinea affiliated waste disposal contractor approved in 2012.

Project contractors continue to implement ways to recycle and reuse waste materials. For example, before the end of the sugar processing season, a final shipment of waste oil from Komo Airfield was sent to a sugar factory for reuse in firing furnaces. This brings the total oil provided to the sugar factory furnaces for the season to approximately 160,000 litres. The Upstream Infrastructure contractor also continued donating aluminum cans to the Hides Women's Association for recycling, with 13 cubic metres of cans donated in 2012. The cans are sold by the association to a recycling company in Mount Hagen to raise funds for programs such as buying materials for sewing.

### 9.3.1 Wastewater

Wastewater treatment plants are proactively maintained to effectively manage the quality of treated wastewater. By the end of 2012, 33 wastewater treatment plants were deployed throughout Project sites. During this quarter, two wastewater treatment plants were installed and commissioned at Paua Camp 6 to service onshore pipeline activities.



**Plate 9.3 – Wastewater treatment plants ready for installation at Paua Camp 6**

In Hides, the Upstream Infrastructure contractor transferred the management of wastewater treatment and sampling to the Hides Gas Conditioning Plant and Hides Wellpads contractor who has on-site testing capabilities. This provides immediate test results, which improves the reliability and consistency of sampling and enables a faster response to any plant modifications that are required.

#### 9.4 Hazardous materials

The Project has committed to avoiding the use of hazardous materials where possible and, in particular, those that are subject to international bans or phase-outs.

No materials subject to bans or phase-outs were reported on any Project site. At drilling sites, hazardous materials were inspected to ensure they were stored in bunded areas or that containers were placed on matting or liners during use.

#### 9.5 Spill prevention and response

During this quarter, the Project recorded its lowest hydrocarbon spill rate since January 2010. The number of spills was nearly half that experienced in the fourth quarter 2011, with 58 spills occurring compared to 102 last year.

The improvement in the spill rate is the result of contractor diligence throughout 2012. For example, despite nearing the end of their works, the Upstream Infrastructure contractor took advantage of a recent shutdown to provide spill prevention and response training for workers, underlining the need for continued vigilance. The Offshore Pipeline contractor, who is also nearing completion of work at the Omati River landfall site, still maintains daily inspections on generators, equipment and fuel storage areas. Checks include ensuring drip trays are provided for generators, spill kits are available for both onshore and onboard vessels, and vessel maintenance programs are followed. Weekly spill control and equipment inspections are also conducted by contractor environmental and management representatives.

In addition to these controls, spill response drills occurred at various worksites, including the HGCP and Omati River landfall sites.

The Onshore Pipeline contractor held a successful unannounced spill drill in the Moro area where the communication chain of command, preparedness and response were commended. Areas of improvement were also identified, and corrective actions recommended.



Plate 9.4 – A spill response drill demonstrating bagging of used absorbent for disposal

During this quarter, an initiative was employed to reduce the spill risk of stored hydrocarbon through bunding and lining of some container storage areas. For example, at the Moro Camp 5 mechanic yard, a shipping container was lined with Polyvinyl chloride (PVC) sheeting to assist in the containment of any spills or drum ruptures.



Plate 9.5 – The lined container at the Moro Camp 5 mechanic yard

#### 9.6 Dredging and offshore trenching

There were no dredging or trenching activities conducted during this quarter.

# 10 Biodiversity

The Project continues to implement measures to protect the rich biodiversity resources of Papua New Guinea. Such measures include controls on work activities, management of biodiversity resources and monitoring.

## 10.1 Ecological management

The Onshore Pipeline contractor expanded their biodiversity capability with an additional Papua New Guinean ecologist joining the Pre-construction Survey team during this quarter. The ecologist is responsible for ecological management along the ROW.

Pipeline work continued in the sensitive Lake Kutubu Wildlife Management Area (WMA), with best practice behaviors enforced. For example, monitoring was conducted for *Echidna Zaglossus* or *Tachyglossus* spp. during brush clearing and tree felling activities, with no Echidnas observed.

Ongoing training was also provided to ensure good worker practices in the WMA. For example, general awareness training on WMA requirements was provided to fuel truck drivers this quarter. Re-training regarding the wildlife management policy (no hunting, no fishing, and no collection of flora or fauna) was given to workers at Kaimari Quarry within the WMA. The Komo Airfield contractor also provided wildlife management policy training to 38 of its workers. At Homa Quarry, workers were reminded of the prohibition on the collection of flora (which is sometimes used for decorating trucks and machines) and on the Onshore Pipeline contractor's weed management policy. Meanwhile, the Upstream Infrastructure contractor provided ecological management training to 112 people, as well as worksite boundary training to 56 workers in Hides.



Plate 10.1 – Sign installed at Kilometre Point 88 highlighting rules for working within the WMA

Annual Sandalwood *Santalum macgregorii* monitoring at the LNG plant site indicated that the two trees were in the same condition as they were in the previous two years of monitoring. This monitoring event also noted abundant bird life in the sedimentation ponds at the site; an inadvertent benefit of the creation of the ponds for construction purposes.

## The Cassowary and the Hornbill

An extract from *Kastom Stori Sene Gori*, written by Julie Buri, Grade 8, Fogomaiyu School.

This story is about the Cassowary and the Hornbill. It is one of the popular stories told within the Foe area of Kutubu.

A long time ago Cassowary and Hornbill lived together as friends. It was Cassowary which flew through the forest while Hornbill lived on the ground. In that far-off time they were good friends and Hornbill always built his nest at the foot of the tree where Cassowary chose to live.

One day Cassowary discovered a new area of the forest where food was plentiful and there were few creatures to compete with. "We should make our home in that place," Cassowary told Hornbill. "But we have a good home here", said Hornbill.

In the end however, Cassowary persuaded Hornbill to leave their old home for the new one.

Early the next morning they both set off. Cassowary took only a short while to reach the new place in the forest. He flew straight above the treetops but Hornbill, who could not fly had to travel uphill and downhill through valleys and across rivers. He arrived when it was almost dark and he was very exhausted. All the while, Hornbill walked very slowly. He had become more and more bitter and had grown more and more jealous of Cassowary who was able to fly whilst he could not.

"You at last!" Cassowary greeted him from the highest branch of a tall tree. "What a long time you've been! I have been dozing in this tree all day waiting for you to turn up!"

All of Hornbill's bitter and jealous thoughts spilled over. He decided to find out how he could destroy Cassowary's ability to fly.

The next day, Hornbill visited the wise tree beetle. "Please help me," Hornbill said. "I can no longer bear Cassowary's arrogance and thoughtlessness."

That night, while Cassowary was sleeping, perched on a high branch, the tree beetle climbed up and with his needle-sharp snout bored a lot of holes in the branch. The branch gave way, and Cassowary fell to the ground with a loud thump. He was so badly injured and knew he would never be able to fly again. Then, beetle transferred the flying magic that had belonged to Cassowary. This time Hornbill was able to flap his wings and rise in the air, and fly from tree to tree as Cassowary used to do.

Today, Hornbills still fly while Cassowaries keep to the ground. And if you go to the hollow trees in which Hornbills build their nests you will see Cassowary feeding on the ground beneath them.

During this quarter, the Offshore Pipeline contractor found no trapped fauna during regular patrols of the Omati River landfall pipeline trench. Meanwhile, a Southern Cassowary *Casuarius casuarius* with three chicks was rescued from the onshore pipeline trench near Kilometre Point 112 as a result of daily monitoring.

Sightings of Blyth's Hornbill *Rhyticeros plicatus* were made in the quarter at a number of onshore pipeline worksites, particularly in the Lake Kutubu WMA, while an Echidna was observed at Kilometre Point 88. In addition, Tree Kangaroos *Dendrolagus* spp. were sighted at Kilometre Point 85 and Kilometre Point 109, along with two unknown species of Iguana. Mitigation measures, such as signage, were put in place to protect the animals. A few individuals of the frog species *Cophixalus* sp. were also observed during onshore pipeline activities, along with some pythons sighted during front-end construction works. A Small Eyed Snake *Micropechis ikaheka* was discovered in the pipeline trench at Kilometre Point 111 and a Taipan *Oxyuranus scutellatus canni* found on the ROW following clearing and grading activities at Kilometre Point 84. No faunal sensitivities were found during checks by the Drilling organization of trees to be removed at Wellpad B.

The Offshore Pipeline contractor noted no marine mammal or turtle activity during the quarter. However, the LNG Plant and Marine Facilities contractor observed one Bottlenose Dolphin *Tursiops truncatus* near the LNG jetty loading platform.

An extensive cave system was identified approximately 7 metres from the onshore pipeline ROW at Kilometre Point 88. The cave was undisturbed by construction activity and the site was barricaded with a warning sign erected to prevent disturbance in case the area was used by bats. The Upstream Infrastructure contractor also found a Bowerbird display site at the edge of their work area, so they applied mitigation measures to ensure that it was not disturbed.

Project monitoring events during this quarter found that contractors undertaking tree and brush clearing activities were generally working within their agreed workspaces. There was, however, one corrective action request issued when some brush clearing activity was conducted outside the footprint of the Homa Ridge Access Road following a survey misalignment. The survey was corrected and cross-checked throughout the clearing of the access track to the ROW at Kilometre Point 53. A toolbox talk was given regarding the need for the surveyors to remain within the approved Project footprint. The contractor also conducted more frequent checks prior to tree felling activities. By the end of the quarter, brush clearing was completed along the Homa Ridge Access Road with no further environmental issues noted.

## 10.2 Quarantine management

Sharing of contractor inspection and fumigation rates continues at regular meetings with senior management from the Papua New Guinean National Agriculture Quarantine and Inspection Authority. The National Agriculture Quarantine and Inspection Authority is evaluating data received from contractors with the intention of updating their own internal processes by the middle of 2013. Quarantine inspections and clearances continue to progress efficiently and without any major delays.



Plate 10.2 – The frog species *Cophixalus* sp. observed during onshore pipeline lowering at the Ai'io River crossing



Plate 10.3 – An undisturbed Bowerbird display site

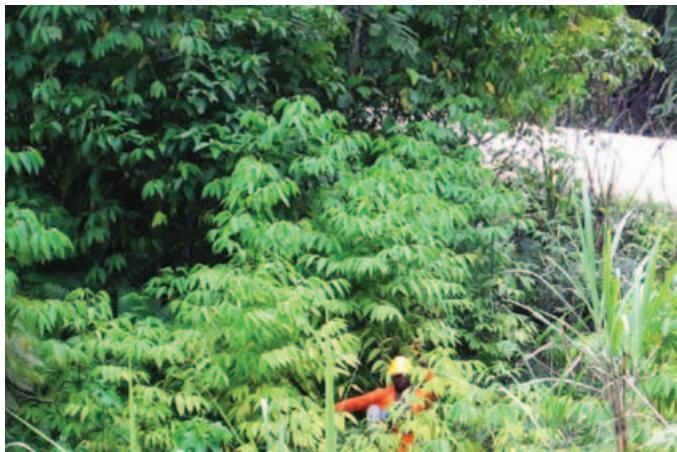
## 10.3 Weed, plant pathogen and pest management

The Onshore Pipeline contractor is focusing weed assessments on the Homa Ridge Access Road to Homa Quarry 2, the Homa Ridge access turn-offs and one of the laydown areas. Entry of vehicles onto the Homa Ridge Access Road is restricted to minimize the spread of weeds. A designated vehicle parking area is set-up and only vehicles transferring workers are allowed along the road, with spotters located at the parking area to prevent unauthorized access. During this quarter, weed control efforts also concentrated on the ROW and access road in the Kantobo to Tamadigi area, where reinstatement activities have occurred.

The Komo Airfield contractor conducted weed audits at Timalia River Boulder Pit and Zones A to E at the Airfield. The Drilling organization also undertook weed inspections at all worksites, both inside and outside worksite perimeters.

Priority 1 weeds identified and treated during this quarter at the LNG plant site included Forest Blue Grass *Bothrioloa ewartina*, Cloncurry Buffel *Cenchrurus pennisetiformis*, and White Leadtree *Leucaena leucocephala*.

Meanwhile, the Onshore Pipeline contractor recorded and treated weeds such as Bamboo Piper *Piper aduncum*, Kudzu *Pueraria phaseoloides*, Bitter Vine *Mikania micrantha*, Singapore Daisy *Tithonia diversifolia*, Blood Leaf Plant *Iresine* sp., May Grass *Melinis minutiflora*, False Sugar Cane *Sacharum spontaneum*, Feathery Pennisetum/Mission Grass *Pennisetum polystachyon*, *Blumea* spp., *Desmodium* sp., and *Desmodium sequax*. With the exception of May Grass and Feathery Pennisetum/Mission Grass, which were treated using herbicide, the weeds were cleared by hand pulling and grubbing. The Drilling organization undertook manual clearance of Bamboo Piper, Singapore Daisy and Silver-Leaved Desmodium *Desmodium uniciatum*, Fountain Grass *Cenchrus macrostachyum*, Chaff Flower *Achyranthes aspera* and Thick Head *Crassocephalum* at almost all worksites. At the Omati River landfall site, the Offshore Pipeline contractor cleared almost 3,900 square metres of Anglestem Willow Primrose *Ludwigia leptocarpa*. The Upstream Infrastructure contractor also conducted weed control at their camp and along the Hides Wellpad Access Road, while the Komo Airfield contractor undertook manual and chemical weed control at 30 locations across their worksite.



**Plate 10.4 – Removal of Bamboo Piper between Homa Quarry and Homa Ridge Access Road**



**Plate 10.5 – Weed control by the Upstream Infrastructure contractor**

Yearly weed monitoring undertaken at the LNG plant site showed 60 species present, compared to 61 in 2011, and 81 in 2010. However, the survey area had reduced in 2012 as a result of increased construction activity.

The species composition of weeds in undisturbed areas remained similar to previous surveys. At disturbed areas, Priority 1 weeds, which were also identified in previous surveys, included Purple Bush-bean *Macroptilium atropurpureum*, Forest Blue Grass, Guinea Grass *Panicum maximum* and Butterfly Pea *Clitoria ternatea*. A previously bare soil stockpile was noted to be covered by weed species that included Sesbania Pea *Sesbania cannabina*, Native Thyme *Ocimum tenuifolium* and Asthma Weed *Chamaesyce hirta*, however, these species were not invading the area surrounding the stockpile. Previously noted weeds such as Passionflower *Passiflora foetida* and Milkweed *Euphorbia heterophylla* remained limited around the edges of sedimentation ponds as a result of successful weed management controls.

The Onshore Pipeline contractor's weed management policy has become a regular topic at the toolbox talks of the construction crew working in the Homa Ridge Access Road and Homa Quarry, as well as the pipeline front-end crews. Training at Homa Quarry includes raising awareness with workers about the prohibition of car washing at undesignated areas to prevent the spread of weeds.

During this quarter, the Hides Vehicle Washdown Area transferred from the Upstream Infrastructure contractor to Esso Highlands Limited. Prior to the handover, 1,250 washdown certificates were issued through this facility. In addition to the Hides Vehicle Washdown Area, the Hides Gas Conditioning Plant and Hides Wellpads contractor installed a temporary washdown station at the warehouse area of the HGCP worksite. At the same time, the installation of a fleet wash station at Homa Quarry 2 was completed by the Onshore Pipeline contractor, while the Komo Airfield contractor issued five washdown certificates during this quarter.

The Project reported no outbreaks of dieback at any worksite in the quarter.



**Plate 10.6 – The new fleet wash station at Homa Quarry 2**

## 10.4 Induced access

No new access roads were opened for onshore pipeline works during this quarter. One temporary access road to Kilometre Point 137 was reinstated. The Project is maintaining security checkpoints at main junctions where onshore pipeline access roads link to existing community roads. Monitoring shows that Project roads are being used exclusively by Project-related traffic.

The Upstream Infrastructure contractor continues to use worker inductions and identification cards to control access to the Hides Wellpad Access Road.

## 10.5 Reinstatement

By the end of this quarter, the Upstream Infrastructure contractor completed the reinstatement of soil stockpiles no longer in use along the Hides Wellpad Access Road between Kilometre Point 0 and 3.3 (the section between the HGCP site and the Hides vehicle washdown facility). Reinstatement activities involved earthworks and the sowing of Japanese Millet *Echinochloa* spp. seeds, as well as tree planting. Site observations indicated that the Japanese Millet was sprouting.



Plate 10.7 – Seeding progress at a soil stockpile

The Upstream Infrastructure contractor will continue to monitor the coverage and condition of the vegetation planted on the soil stockpile area. The Upstream Infrastructure contractor also took the opportunity to re-plant small Yar trees *Casuarina* spp. that were previously removed from underneath accommodation blocks at their camp. Japanese Millet seeding was also conducted at Kopeanda and the HGCP during this quarter, with jute matting installed as part of the reinstatement process.

Meanwhile, topsoil management to encourage successful reinstatement remains a focus for the Onshore Pipeline contractor, with monitoring of reinstatement activities conducted throughout this quarter.

The Komo Airfield contractor progressed reinstatement activities, achieving 1.71 hectares reinstated this quarter. Reinstatement works included the establishment of drainage lines, planting of native seedlings, the application of fertilizer

and the seeding of Japanese Millet and Carpet Grass *Axonopus compressus*. A reinstatement work plan was also prepared for 2013. The Komo Main Camp and Timalia nurseries remain active in providing stock for reinstatement works. During this quarter, nursery workers received training on herbicide application. Mangrove re-planting also started at the LNG Plant landfall site during this quarter.



Plate 10.8 – Planting of Yar trees



Plate 10.9 – A sign erected to notify pedestrians of reinstatement

## 10.6 Biodiversity Strategy

During this quarter, the Project engaged with the DEC to discuss opportunities for the Project, as part of the biodiversity offset program, to support the DEC with protected area planning in the Kikori River Basin and with the implementation of Papua New Guinea's National Biodiversity Strategy and Action Plan. This engagement will continue into 2013.

The scope of the conservation capacity building program, to be delivered as one of the components of the biodiversity offset program, was further developed during the quarter with detailed discussions conducted with potential partners including the University of Papua New Guinea.

Also during the quarter, the Project held discussions with co-venturer Oil Search Limited regarding a potential collaboration to enhance the Lake Kutubu WMA.

# 11 Resource Management

The Project aims to manage the use of resources, including quarry materials, timber, water and soils sustainably in recognition of their social, economic and cultural value to the people of Papua New Guinea.

## 11.1 Water management

### 11.1.1 Usage

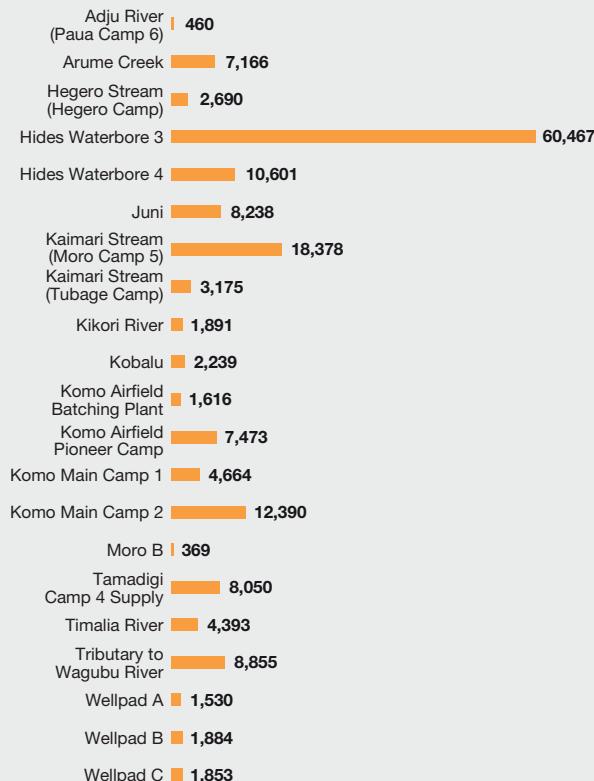
The Project extracted 175,516 kilolitres of freshwater and 647,940 kilolitres of seawater for drinking, domestic camp needs, dust suppression and construction-related activities during this quarter.

In the Hides area, water is abstracted from two main groundwater bores, under license with the DEC. Water for onshore pipeline activities is primarily sourced from surface waters surrounding camps, with some extracted from springs or underground streams.

All water extraction volumes remained within permitted limits and no additional water extraction permits were obtained this quarter.

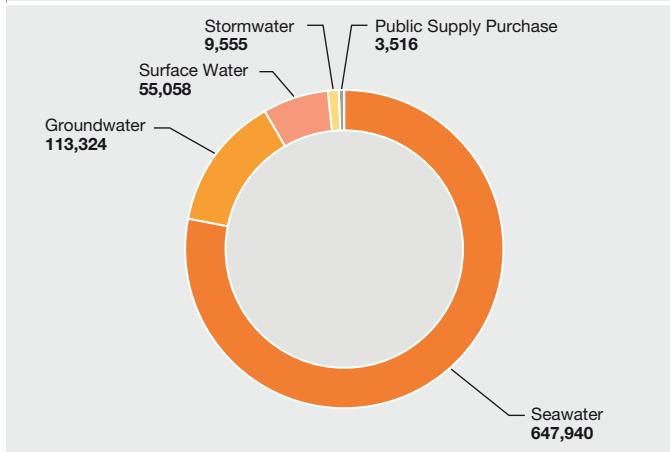
Figure 11.1 shows the volume of water used by each extraction source, while Figure 11.2 illustrates the breakdown of water used by water type.

Figure 11.1 – Volume (kilolitres) of water used during the fourth quarter by extraction source<sup>7</sup>



NOTE: Seawater, stormwater and purchased water are not included in this Figure.  
Water use for the LNG plant site is not shown in this Figure as the site's water usage is from desalinated seawater.

Figure 11.2 – Volume (kilolitres) of water used during the fourth quarter by water type



### 11.1.2 Quality

The Project and contractors continue to monitor the quality of surface waters, groundwater and seawater surrounding Project activities. Monitoring of water quality aims to detect any changes that may be attributable to Project activities and have the potential to impact the environment.

During this quarter, the Project initiated a proactive review of in-situ surface water sampling for construction and drilling activities north-east of Hides Ridge. The intention was to ensure that baseline water quality data targeted key locations and was completed prior to drilling activity at each site. Desktop assessments and field surveys are underway with a focus on identifying adjacent surface waters near Wellpads C to G.

Many of the onshore pipeline construction activities during this quarter were within the Lake Kutubu WMA. Surface water samples were tested frequently for physical parameters, with results indicating normal water quality, with no significant disturbance from construction activities.

Frequent inspections of watercourses, such as the Ai'io, Kaimari and Mandali rivers, were also conducted during onshore pipeline construction activities and precautionary measures were taken to protect water quality. Precautions included the installation of spaghetti booms and silt curtains downstream prior to the commencement of watercourse-crossing construction activities. Water quality testing measured physical parameters, with no significant disturbance recorded from watercourse crossings.

This included the Ai'io River crossing, where an increase in turbidity was witnessed during pipeline installation but was short-term due to the effectiveness of silt curtains installed in the River.

<sup>7</sup> Water usage adjustments may be reported by contractors after the Report is released, and as such volumes may be refined between one report and the next.



**Plate 11.1 – Installation of silt curtains downstream of the Ai'i River crossing**

At the HGCP site, surface water samples at Pukari Creek found elevated Total Suspended Solids. In response, a culvert area upstream was cleaned out and maintenance increased. There were no other water quality impacts noted from sediment and site run-off near work areas. Sampling locations are expanding with the handover of the site to the Hides Gas Conditioning Plant and Hides Wellpads contractor to reflect the increase in construction site activity.

At the LNG plant site, stormwater monitoring in October recorded higher turbidity at the inlet of a sediment pond due to dewatering of excavation pits after a significant rainfall event. However, a comparison made against baseline levels found that the discharge for all sediment ponds was well below baseline levels. Rain subsided quickly after a rainfall event in October, and by November rainfall was minimal. As a result, some sediment ponds developed algae from the lack of continuous water flow.

Meanwhile, surface water quality monitoring, both upstream and downstream of the LNG plant site, was conducted with testing for pH, temperature, dissolved oxygen, turbidity, electrical conductivity and visible oil. Leachate analysis at one of the construction landfill cells showed that the leachate was not suitable for discharging to a Project sediment pond, thought to be from natural variation from low rainfall in the saline environment. Subsequently, two cubic metres of leachate was extracted from the cell and sent to the LNG plant site wastewater treatment plant for treatment.

During this quarter, a baseline groundwater monitoring report was completed for the Hides Waste Management Facility. The report will provide a comprehensive baseline for future analysis of the Facility. Groundwater and surface water monitoring will continue for the life of the Facility.

Also during this quarter, the DEC issued a hydrotest water discharge approval for the feed gas pipeline portion that is located on the LNG plant site.

Hydrotesting was also undertaken for a number of tanks at the LNG plant site including the fresh firewater storage tank, condensate tank B and the equalization tank.

Hydrotest waters were tested before and during discharge for pH, temperature, dissolved oxygen, turbidity and electrical conductivity. Discharge water was also visually monitored for any scouring in the discharge outlet due to the high velocity of water. All discharges were routed to specific sedimentation ponds to ensure flow and quality were controlled when leaving the site.

The Onshore Pipeline contractor commissioned a microbiologist to undertake sampling and analysis of the microbiology of streams and rivers proposed as hydrotest water abstraction points. During this quarter, sampling was completed for all proposed abstraction points between Kilometre Point 60 and 293. Results will be analyzed in the first quarter 2013.

Hydrotesting was completed for the Gobe Spurline and discharge samples were collected in accordance with the DEC permit. Results showed no environmental issues as a result of onshore pipeline construction activities.

The Project's Field Environmental team is providing valuable expertise for water-related grievances. For example, in response to a grievance received this quarter in relation to odor from wastewater, the team conducted an investigation that included site inspections, additional water sampling and an assessment of existing records. As a result of their findings, the grievance was resolved by the end of the quarter.

## 11.2 Raw materials

The Project aims to sustainably manage the use of raw materials, with aggregate and timber sourced through either Project-approved local suppliers or from a reputable external source.

One new quarry was opened by the Onshore Pipeline contractor during this quarter. All other aggregate was sourced from Project approved facilities. The Upstream Infrastructure contractor no longer has an open quarry but instead used material extracted from approved cuts along the Hides Wellpad Access Road and at wellpads. Some aggregate types are supplied from Mount Hagen due to the lack of a local supply.

Table 11.1 shows the volume of quarry material extracted by the end of the quarter.

**Table 11.1 – Quarries in use and extracted volumes during the fourth quarter**

Area/quarry name	Volumes extracted (cubic metres)
LNG plant site	91,898
Hides	21,210
Komo	224,007
Onshore Pipeline	276,105

Small volumes of timber are procured, with 61 cubic metres of timber purchased during this quarter.

### 11.3 Erosion and sediment control

Periods of dry weather provided an opportunity to undertake maintenance of erosion and sediment control devices during this quarter. At the HGCP site, in addition to routine maintenance, temporary erosion and sediment control measures were de-silted, additional gabion baskets built and sediment ponds installed, where required. A specialist Erosion and Sediment Control team used by the Upstream Infrastructure contractor was assigned to focus on the maintenance of temporary construction erosion and sediment control measures at the HGCP site.

A review of permanent site drainage designs and culvert crossings was undertaken at the HGCP site to check that flow rates met design criteria requirements. As a result, culvert road crossings were cleaned out following heavy rainfall during October. Permanent erosion control measures were also installed around the Hides Waste Management Facility process building.



Plate 11.2 – Seeding and jute mesh at the Hides Waste Management Facility process building

Clearing and grading of the ROW commenced in areas outside karst terrain where volcanic soils needed careful management due to the risk of erosion during rainfall. Erosion control measures are being modified to address the steeper slopes in these areas by reducing the fall and gradient of temporary control berms. This will assist with preventing erosion along the base of the berms. Monitoring of these control measures is undertaken after rain events to assess their effectiveness and any requirements for modification or maintenance.

The steep pinnacles traversed by the ROW from Kilometre Point 89 to 90 were assessed to require horizontal direction drilling in order to best minimize potential impacts. Drilling of a pilot hole completed during the quarter. A sampling regime was put in place downstream of the horizontal directional drilling location, and streams tested daily for their physical quality given that fluctuations in physical parameters is an indicator of water pollution.

With slope and rainfall presenting the potential for localized soil movement, extensive works were required on the Homa Ridge Access Road this quarter. This involved minimizing sidecasting through the use of staked logs on the side of the road verge to prevent material from moving down slope, and to control drainage along the road. The Homa Ridge construction crew also helped weed control in the area by washing vehicles and using the contractor-provided bus until the vehicle washdown facility was established. As a result of their efforts, the Homa Ridge crew was awarded the ‘environmental crew of the month’ award by the Onshore Pipeline contractor in October.



Plate 11.3 – The ‘environmental crew of the month’ award being distributed to the Homa Ridge crew

### 11.4 Acid sulfate soils

No further testing for acid sulfate soils is planned at the Omati River landfall, considering previous monitoring results show the development of acid sulfate soils is unlikely.

At the LNG plant site, daily pH monitoring of water collected in the feed gas pipeline trench was conducted during this quarter prior to the water being pumped into a sedimentation pond. The results showed the pH was slightly alkaline due to the natural presence of coral rocks, and not an issue for acid sulfate soils, which are identified with a pH of less than four in this region.

Soil samples were collected from multiple depths at one location on the feed gas pipeline route for laboratory testing to determine the presence of Possible Acid Sulfate Soil prior to excavation works. The findings confirmed that none of the samples tested would be classified as acid sulfate soils.

# 12 Cultural Heritage

Respect for Papua New Guinea's cultural heritage and the history of communities located in the Project impact area is at the forefront of all Project activities. Pre-construction surveys are used to identify sites that are either subject to salvage activities or to be protected from disturbance. Chance finds are managed in accordance with a protocol agreed with the Papua New Guinean Government and in close consultation with local communities.

Site worker training remains an important element in maintaining effective cultural heritage management. During this quarter, the Onshore Pipeline contractor provided ongoing training on the Chance Finds Protocol to construction supervisors and conducted informal cultural heritage awareness training to construction crews along the pipeline ROW. The LNG Plant and Marine Facilities contractor also delivered chance finds training to workers prior to site preparation activities.



Plate 12.1 – Chance Finds Protocol training for construction supervisors

In addition, archaeologists from the Onshore Pipeline contractor team completed daily monitoring and inspection of all worksites covering: ROW brush clearing and tree felling; ROW clearing and grading; trenching; blasting; quarry extraction; and camp platform construction.

## 12.1 Pre-construction surveys

Pre-construction surveys are conducted prior to construction activities to identify cultural heritage sites that may require preservation, or mitigation measures to be developed in partnership with local landowners. During this quarter, nine cultural heritage sites were identified during pre-construction surveys for the Uruma Camp 7 site, the Hulia River gravel abstraction site, and the Aijako and Pipita quarries near Tari.

A review of the pre-construction survey report around the Mandali River crossing revealed that a minor relocation of the ROW would affect a spirit site. This area is believed to be inhabited by a number of spirits, or '*dama*', and is a site that was used for various ceremonies. The area is no longer used as a ceremonial site but is still thought to house the many spirits. Landowner consent was received prior to construction disturbance.



Plate 12.2 – A contractor archaeologist interviewing community members during a pre-construction survey



Plate 12.3 – A spirit site near the Mandali River crossing at Kilometre Point 60

Additional assessments were conducted on three sections of the ROW to determine their potential cultural heritage value – Kilometre Point 65 to 67, Kilometre Point 63 and Kilometre Point 61. These surveys showed some chance finds, while other artifacts had been recently moved to the area from elsewhere.

Two cultural heritage assessments were undertaken at Homa Quarry because of landowner claims of disturbance to cultural sites caused by construction activities. The evaluation involved Huguango clan representatives from Homa Village and resulted in the discovery of a '*Liru-kui Ni-habane*' magic stone.

The sites demarcated and monitored for disturbance during this quarter are listed in Table 12.1.

Table 12.1 – Cultural heritage sites monitored during the fourth quarter

Location	Site description
Kilometre Point 94	Two individual burial sites.
Kilometre Point 129	'Putape Aina 2' ossuary <sup>8</sup> .
Kilometre Point 130	Ossuary.
Kilometre Point 142	Sleeping cave.

<sup>8</sup> An ossuary is a site, building, well or chest that serves as the final resting place of human skeletal remains.

## Special stones

In Papua New Guinean culture certain stones are believed to symbolize supernatural beings. Two such stones were discovered at Project worksites during this quarter.

At Homa Quarry a '*Liru-kui Ni-habane*' ('egg of the sun') magic stone was found. It is a round white stone about 15 centimetres in diameter and weighing approximately 2.5 kilograms. The '*Liru-kui Ni-habane*' had been placed in a hole under an overhang and appeared to have been there for some time. The '*liru-kui*' stones were kept in sacred places called '*llruanda*' and looked after by custodians who performed rituals to spirits at special ceremonies.

Another sacred spirit stone axe head known as '*Bari numbi*' was also identified and salvaged at the Timaila River Borrow Pit. It is a circular stone club with drilled holes on either side. Weathering indicated that the stone had been discarded for some time and the sacred value was lost.



'*Bari numbi*' spirit stone from Timaila River Borrow Pit

Most of the sites were considered to be either of low significance to the local communities, or items recently moved to the ROW from elsewhere by landowners. The axe adze at Komo Airfield was considered to be of medium significance due to its context with similar finds elsewhere in Papua New Guinea. No other artifacts were associated with it.

Table 12.2 – Chance finds during the fourth quarter

Location of find	Type of find
Komo Airfield	Axe adze. Tanged blade (2). ' <i>Bari numbi</i> ' spirit stone.
HGCP	Oral tradition site (6): <ul style="list-style-type: none"><li>Initiation site where pigs are sacrificed and offerings made to the gods in appreciation for protection, guidance and blessings.</li><li>'<i>Pewi</i>' healing site, a sacred site where spells are chanted to release water to heal the sick.</li><li>The Paru clan members invoke their ancestors from this site to get clearance before leaving Tete hamlet to go hunting, gardening and tribal fighting.</li><li>An open spot where the ancestors of the Paru clan would sleep, believing their ancestor would appear in a dream, bringing good fortune.</li><li>A shallow doline and a site where offerings were made to a spirit to bless his gardens, pigs and children so that they would grow well and prosper.</li><li>Pig ritual site.</li></ul> Ossuary (8). Rock shelter. Burial site (3).
Homa Quarry	' <i>Liru-kui Ni-habane</i> ' magic stone.



Plate 12.4 – Axe adze chance find recorded at Komo Airfield

## 12.2 Salvage excavations

A rock shelter at Kilometre Point 65 near the Ayu River that had been identified in the pre-construction survey was subject to salvage works. These were completed in December before construction started. Two pits were excavated and revealed charcoal, human and animal bone fragments, lithics and shell fragments. Twenty-six artifacts will be transferred to the Papua New Guinea National Museum and Arts Gallery.

## 12.3 Incidents of disturbance to known cultural heritage sites

There were no incidents of Project-related disturbance to known cultural heritage sites during this quarter.

## 12.4 Chance finds

The Project conducts inspections to identify the presence of chance finds before ground disturbance activities can commence. Chance finds recorded this quarter are shown in Table 12.2.

# 13 Stakeholder Engagement

The Project and its contractors are committed to proactively engaging with Papua New Guinean communities to build relationships based on trust, collaboration and mutual understanding.

## 13.1 Government

The Project engages with all levels of government, members of the community and other stakeholders to keep them informed of Project activities.

### 13.1.1 People processes

By the end of this quarter, 95 percent of the Project's non-national workforce was mobilized, with over 14,000 work permits and visas approved. More than 25 Restricted Employment Facility visas have also been approved since Papua New Guinea's Immigration and Citizenship Service Authority introduced them in the third quarter 2012. The Restricted Employment Facility visa assists in areas where there is urgent specialist or emergency work required. They also enable Project staff to work for 30 days, up to four times in a year, without a work permit.

### 13.1.2 Materials and tax

Papua New Guinea's Customs Service continues to expedite the clearance of Project cargo. The Customs Service has also agreed in principle to waive the duty on purpose-built facilities for the Project.

### 13.1.3 Infrastructure and Government support

During this quarter, Papua New Guinea's Department of Works completed the installation of three Highlands Highway bridges at Tari in the Hela Province and commenced the construction of a fourth bridge at Mendi in the Southern Highlands Province. In addition to supplying materials for the new bridges, the Project assisted the Department of Works with design, supervision and contractor training for bridge installation.

In anticipation of the forthcoming rainy season, the Project is working with the Department of Works to proactively identify and repair sections of the Highlands Highway that will most likely be impacted by bad weather. As part of this collaboration, the Project is assisting with developing and implementing a robust plan for repairs and preventative maintenance along the Highway.

Papua New Guinea's National Road Safety Council completed its Road Safety Awareness campaign for the Highlands Highway. Sponsored by the Project, the campaign was conducted from Goroka through to Hides and Komo in the Hela Province. More than 50,000 people from communities along the Highway attended the Road Safety Awareness campaign, which was held at schools, community centers, market places and villages.

## Working together for Papua New Guinea

Project representatives joined Papua New Guinea's Prime Minister, the Hon. Peter O'Neill, at the 12th Annual Papua New Guinea Mining and Petroleum Investment conference held in Sydney, Australia in December.



Decie Autin, Project Executive, Esso Highlands Limited at the conference with (from left to right) Esther Yuyuge, Marilyn Wingi and Euralia Paine

The two-day conference brought together speakers from Deloitte Touche Tohmatsu, Wood MacKenzie Australia and Rio Tinto to share knowledge about Papua New Guinea's resources sector and developments currently underway within the country.

At the conference, PNG LNG Project Executive, Decie Autin said the reason for the Project's achievements rested in cooperation with stakeholders.

"The PNG LNG Project is truly a partnership. While challenges remain, I have full confidence that together we will successfully meet our objectives," Ms. Autin said.

"The strength of our partnerships is critical to the success of the Project. We look forward to continuing to work with everyone as we bring this Project online."

In addition to the opening keynote address given by Prime Minister O'Neill, presentations were delivered by ExxonMobil's Senior Vice President of LNG Marketing for Asia Pacific, Jeff Appleton, and PNG LNG Project Land and Community Social Impacts Manager, Sisa Kini.



Sisa Kini (right) discussing socioeconomic programs with a visitor to the booth

### 13.1.4 Advocacy

The Project has completed its Advocacy Workshop program for 2012 with more than 30 workshops conducted with provincial and national Government departments and foreign embassies. This included visiting dignitaries and foreign government leaders.

During this quarter, the Project hosted an advocacy workshop and LNG plant site visit for dignitaries from Papua New Guinea's Department of Foreign Affairs, Trade and Immigration and coordinated a PNG LNG Open Book Economics workshop in Brisbane, Australia, for the Department of Treasury, the DPE and the National Petroleum Company of PNG (Kroton) Limited.

In addition to workshops held at the LNG plant site, meetings were held in the provinces to provide 455 national and provincial government representatives with an overview of the LNG plant site construction.

### 13.1.5 Benefits assurance delivery

The Project and the DPE have developed a plan to conduct a landowner identification program in Project areas during 2013. This program will help to identify beneficiaries for Government royalty payments. The program will be managed by the Government, and the Project will provide support.

The Project and DPE have also jointly developed a plan to support a sustainable Government agency presence in remote Project areas, for implementation in early 2013. The presence of a Government agency in the field will improve the rate of delivery of Government commitments to landowners and Project communities.

## 13.2 Communities

The Project is maintaining an open dialogue with communities to keep people residing in the Project area well informed of construction and demobilization activities.

### 13.2.1 Engagement activities

During this quarter, the Socioeconomic team completed 80 formal engagements with more than 50 communities. To date, about 840 formal engagements have been conducted with communities across Project areas. This is in addition to the 1,260 people reached through informal engagements.

Topics discussed with communities this quarter covered: safety and expectations along the reinstated pipeline ROW; safety around construction sites; pedestrian safety; raising grievances; malaria awareness; AIDS awareness; financial planning; and general Project updates.

Community drama performances were conducted to raise awareness about demobilization activities.



Plate 13.1 – Malaria awareness drama performance at Lea Lea

### Hides and Komo

Pedestrian and road safety awareness continue to be the focus for Hides and Komo construction areas. The Socioeconomic team reinforced the Project's *Stop, Look and Listen* safety theme with local school students, and Toea from the book series was used to help children identify with the safety message. As well as the formal pedestrian safety engagements, the Socioeconomic team is engaging informally on an almost daily basis with community members to emphasize the need to be vigilant in their road safety awareness.

In Komo in particular, safety messages are accompanied by Komo Airfield construction status updates. With drilling activities in the Hides area, community engagements enable the Project to address community concerns regarding drilling foam management and the emergence of speculative structures near the HGCP.

### Pipeline (north and south)

During this quarter, integrated field teams worked together to provide subject matter specialists, such as security personnel, for community engagements. There were cooperative community engagements with the Royal Papua New Guinea Constabulary and the Papua New Guinean Defence Force to provide positive messaging around the need for law and order.

Pedestrian safety and road traffic awareness were the focus of many engagements, with police reinforcing the Project's pedestrian and road safety messages. The Socioeconomic team also continued to distribute bright yellow Toea safety shirts to children.

In the south, where the pipeline is reinstated, messages focused on how to ensure safety and integrity around the ROW during construction and throughout the production phase. Engagements were conducted from Omati to Moro and covered details of what the community could do to ensure safe operation of the pipeline and what to do in an emergency.



Plate 13.2 – Children wearing the Toea safety shirts at Paua



Plate 13.4 – Pipeline ROW engagement at Kaiam



Plate 13.3 – Road safety engagement session at Homa

The Socioeconomic team was joined by subject matter experts from the operations group to address community questions and concerns. The communities involved were provided with a Project ROW brochure explaining all that was communicated in the engagements. The process for lodging a grievance was also communicated at each of the community engagements.

#### LNG plant site

Educational site tours continue at the LNG plant site, with about 290 visitors from schools, community organizations and Government participating in site tours during this quarter. These visits are an important part of the support the Project provides to helping educate school students and local communities about construction activities, and to reinforce health and safety messages. The Project also supports school health and safety education programs, as well as community drama performances.

During this quarter, drama performances were used in community meetings and worker toolbox talks to convey messages about: money management; demobilization; the grievance process; hand safety; hygiene practices in the kitchen; and malaria awareness; as well as the repercussions of theft and possession of betelnut and other contraband items.



Plate 13.5 – Meeting with community leaders

The Socioeconomic team was also involved in focus groups with community leaders to address topics such as the status of construction activities and the progress of community social programs.

Engagement activities are supported by the ongoing publication of the monthly *PNG LNG Plant Site Newsletter*, bi-monthly *Plant Site Camp News* bulletin and tri-weekly *Plant Site Worker Bulletin*.

#### Issues identification

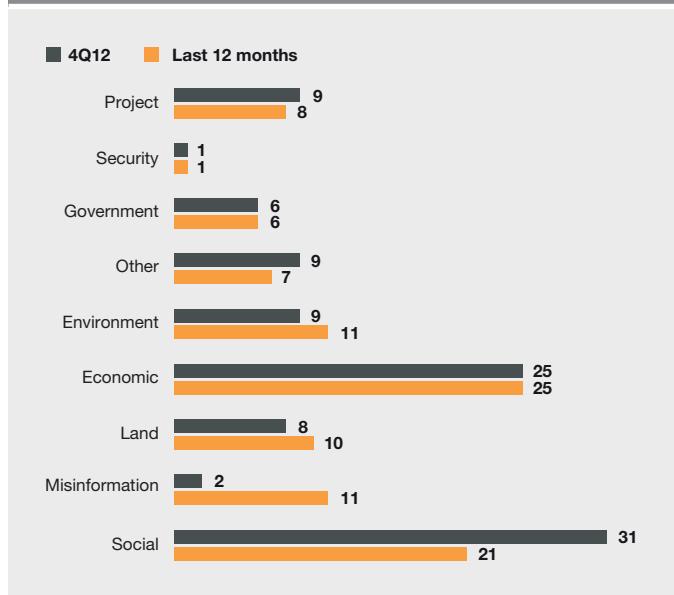
As shown in Figure 13.1, social and economic issues continue to dominate concerns raised by the communities. Social issues are predominantly about ongoing concerns with regard to community health and safety, while economic issues reflect employment and business opportunities.

ROW and road safety engagements conducted during this quarter corresponded with the number of inquiries from communities in relation to community health and safety.

Nine percent of issues raised during this quarter were with regard to overall Project activities. Questions from communities covered topics such as: who would do the maintenance along the pipeline ROW, functions of the equipment and their specifications, and questions regarding Project workers (such as how many were female and how many were from nearby communities).

Community concerns around the Project's potential impact on water sources accounted for most of the environmental issues recorded. Other issues related to the noise from construction vehicles, and concerns about marine life.

**Figure 13.1 – Percentage of issues received by issue category**



### 13.2.2 Media

The Project's three-month newspaper and radio advertising campaign titled 'Yu Save Olsem?' ('Did You Know?') progressed this quarter. The campaign focuses on Project accomplishments under the three pillars of citizenship, economic development and operator of choice.

Advertisements were published in English in *The National*, the *Sunday Chronicle* and the *Post Courier*, and aired over the four major Papua New Guinean radio stations. They were also translated into Tok Pisin for publication in the *Wantok Nius* and aired on *Yumi FM*.

The Project continues to be featured on radio station FM100's popular talkback show on a monthly basis. During this quarter, topics included women's development programs and the Project's community relations activities.

Meanwhile, the monthly newspaper column by Esso Highlands Limited Managing Director, Peter Graham featured updates about citizenship initiatives and activities along the Highlands Highway. The column is also published in Tok Pisin in the *Wantok Nius*.

A fourth workshop for local media was held in November, which included a visit to the LNG plant site. These workshops continue to be well attended and provide an opportunity to share information about Project milestones and successful community engagement activities with local media.

The Project's eleventh PNG LNG Quarterly Environmental and Social Report covering activity during July to September 2012 is on the Project website and was distributed in hard copy to a wide network of stakeholders.



Read the Quarterly Environmental and Social Report series at  
[www.pnglng.com](http://www.pnglng.com)

The Executive Summary of the Report was distributed in Tok Pisin and English through a suite of national papers including the *Post Courier*, *The National* and *Wantok Nius*.

## 14 Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ANZ	Australia and New Zealand Banking Group Limited
BSP	Bank South Pacific
C.U.R.E.	Commission on Urgent Relief and Equipment
DEC	Papua New Guinean Department of Environment and Conservation
DPE	Papua New Guinean Department of Petroleum and Energy
ESMP	Environmental and Social Management Plan
HGCP	Hides Gas Conditioning Plant
HIV	Human Immunodeficiency Virus
IESC	Lender Group's Independent Environmental and Social Consultant
iHDSS	Integrated Health and Demographic Surveillance System
IMR	Papua New Guinea Institute of Medical Research
INDEPTH Network	International Network for the Demographic Evaluation of Populations and Their Health
Lanco(s)	Landowner Company (Companies)
LNG	Liquefied Natural Gas
PNG	Papua New Guinea
PSI	Population Services International
ROW	Right of Way
SSHE	Safety, Security, Health and Environment
STI	Sexually Transmitted Infection
TAFE	Technical and Further Education
WASH	Water, Sanitation and Hygiene
WMA	Wildlife Management Area

# APPENDIX 1 – Project Contractors and Work Scopes

**Table A1.1 – Summary of contractors and work scopes**

Contract	Description of work scope
Upstream Infrastructure Clough and Curtain Brothers Joint Venture	<ul style="list-style-type: none"> <li>Infrastructure upgrades supporting main construction activities in the Gulf Province and Southern Highlands Province.</li> <li>Camps for Esso Highlands Limited and to support construction activities.</li> <li>Construction of a landfill site at Hides.</li> <li>Bulk earthworks for the HGCP and wellpads.</li> </ul>
LNG Plant Early Works Curtain Brothers Papua New Guinea Limited	<ul style="list-style-type: none"> <li>Upgrade of existing road from Motukea Island to LNG plant site.</li> <li>New Bypass Road (re-routing of existing public road, which transects with the LNG plant site).</li> </ul>
Telecommunications TransTel Engineering	<ul style="list-style-type: none"> <li>Installation of a telecommunications system to support construction and operations.</li> </ul>
Offshore Pipeline Saipem	<ul style="list-style-type: none"> <li>Construction and installation of the offshore pipeline from Omati River landfall to LNG Plant landfall site.</li> <li>Pipeline tie-in at Omati River landfall and shore crossing at the LNG Plant landfall site.</li> <li>Installation of near-shore fiber optic cable in the Omati area.</li> </ul>
Offshore Fiber Optic Cable Alcatel	<ul style="list-style-type: none"> <li>Installation of the offshore fiber optic cable from the Omati delta to the LNG Plant landfall.</li> </ul>
LNG Plant and Marine Facilities Chiyoda and JGC Joint Venture	<ul style="list-style-type: none"> <li>LNG facility engineering and construction, including LNG process trains, condensate storage tanks, LNG storage tanks, utilities, permanent accommodations, heliport, and telecommunications.</li> <li>Marine facilities including the jetty and LNG/condensate export berths.</li> </ul>
Hides Gas Conditioning Plant and Hides Wellpads CBI and Clough Joint Venture	<ul style="list-style-type: none"> <li>Engineering and construction of the HGCP processing facilities and associated wellpads, including permanent accommodations and maintenance facilities.</li> </ul>
Onshore Pipeline SpieCapag	<ul style="list-style-type: none"> <li>Installation of the onshore gas and condensate pipelines, and associated valve and metering stations.</li> <li>Installation of the pipelines for the Hides gathering system including flowlines, spineline, utility lines, and associated power and telecommunications cables.</li> </ul>
Komo Airfield McConnell Dowell and Consolidated Contractor Group Joint Venture	<ul style="list-style-type: none"> <li>Airfield and supporting infrastructure.</li> </ul>
Associated Gas Development Various	<ul style="list-style-type: none"> <li>Upgrades and modifications to Kutubu Central Processing Facility and Gobe Production Facility including gas dehydration, metering, and condensate handling.</li> </ul>
Nabors Drilling International Limited	<ul style="list-style-type: none"> <li>Drill and complete 11 new wells.</li> </ul>
Permanent Office and Housing Company (to be determined)	<ul style="list-style-type: none"> <li>Construction of office accommodation and housing to support the operation of the facilities.</li> </ul>

Esso Highlands Limited acknowledges the aforementioned contractors for their respective contributions to developing this PNG LNG Quarterly Environmental and Social Report.





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