# PNG LNG Quarterly Environmental and Social Report

## First Quarter 2013

PNG LNG

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


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Prepared by IDP Consulting Pty Ltd.

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PNG LNG

## About This Report

The Papua New Guinea Liquefied Natural Gas Quarterly Environmental and Social Report – First Quarter 2013, 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. Printed copies are also available.

# Contents

# ES

# EXECUTIVE SUMMARY

## SUPPORTING PAPUA NEW GUINEA'S RICH BIODIVERSITY

**"We are committed to working with the Government, non-government organizations and the people of Papua New Guinea to protect and enhance this nation's rich, unique and internationally renowned biodiversity."**

**- Decie Autin, Project Executive, Esso Highlands Limited**

The Papua New Guinea Liquefied Natural Gas (PNG LNG) Project (the Project) marked many milestones during the first quarter 2013. One in particular was the signing of an agreement with the Mama Graun Conservation Trust Fund and the University of Papua New Guinea to deliver a conservation training program to build enhanced conservation capacity of individuals and organizations in Papua New Guinea. This is part of the significant progress made across all five components of the Project's biodiversity offset program, which is intended to support and enhance biodiversity activities in Papua New Guinea.


***Peter Graham, Managing Director, Esso Highlands Limited, signing the agreement with Leo Bualia, Executive Director, Mama Graun Conservation Trust Fund***

In this thirteenth PNG LNG Quarterly Environmental and Social Report, updates are provided about the Project's environmental, construction, safety, health, security and social progress this quarter. 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 has completed over 130 million work hours since construction began. A significant milestone was achieved during this quarter with completion of both the Offshore Pipeline and Upstream Infrastructure contractors' scopes of work. The Upstream Infrastructure contractor was the first major contractor to mobilize to Papua New Guinea and was tasked with a wide-ranging work scope that included infrastructure upgrades across the entire Upstream area; construction of the Project's worker camps and a landfill site at Hides; as well as the bulk earthworks for the Hides Gas Conditioning Plant (HGCP) and Hides Wellpads.

In addition to the Offshore Pipeline and Upstream Infrastructure contractors completing their work scopes, a new contract was awarded for construction of the Permanent Facilities Compound near Port Moresby Airport. The new contractor mobilized to site and completed their pre-construction readiness review during the quarter. The Permanent Facilities Compound will include offices and associated service facilities for the production phase.

A major telecommunications milestone was also achieved during the first quarter, with completion of a 400-kilometre Fiber Optic Cable from Omati to Caution Bay.

**Project construction is 80% complete**

Key construction highlights are outlined in Table 1.

**Table 1 – Contracts and construction highlights**

| Contract | Contractor | Major activities during the first quarter 2013 |
|---|---|---|
| Upstream Infrastructure (C1) | Clough and Curtain Brothers Joint Venture | Completed 100 percent of their scope of work without a Lost Time Incident. |
| Offshore Pipeline (EPC2) | Saipem | Completed their scope of work without a Lost Time Incident and demobilized from the Project. |
| LNG Plant and Marine Facilities (EPC3) | Chiyoda and JGC Joint Venture | Completion of LNG Plant feed gas pipeline connection to the offshore pipeline.<br>Engineering and procurement for the LNG Plant completed.<br>Completed hydrotesting on the north and south LNG tanks. |
| Hides Gas Conditioning Plant and Hides Wellpads (EPC4) | CBI and Clough Joint Venture | Erection and mechanical completion of the slug catcher achieved.<br>Completed heavy haul test runs for the Komo to Hides road.<br>Concrete foundations laid for the major electrical and equipment control room in the gas processing area. |
| Onshore Pipeline (EPC5A) | SpieCapag | Over 294 kilometres of mainline welding, 205 kilometres of pipeline hydrotesting and 162 kilometres of Right of Way (ROW) reinstatement completed.<br>Commenced construction of Hides gas gathering pipeline ROW. |
| Komo Airfield (EPC5B) | McConnell Dowell and Consolidated Contractor Group Joint Venture | Completion of fuel farm, power house and power generators. |
| Associated Gas Development | Various | Neared mechanical completion of the second triethylene glycol unit at the Kutubu Central Processing Facility.<br>Gas metering skid completed and prepared for commissioning. |
| Drilling | Nabors Drilling International Limited | Drilling Rig 703 commissioning activities commenced in preparation for the start of drilling on Wellpad C. |
| Permanent Facilities Compound | Leighton (PNG) Limited | Mobilized to site and completed pre-construction readiness reviews. |

*Aerial view of the HGCP*

## Safety, health and security

Regrettably, two separate fatal incidents occurred during this quarter. The Project is greatly saddened by these tragic events and expresses deepest sympathies to the families and friends of the individuals involved.

The first incident involved a pedestrian who was fatally injured in Semin Village near Mendi when struck by a contractor's third party convoy escort vehicle. Police were immediately notified and attended the scene. The second incident involved a tipper truck employed by a contractor's third party supplier, which rolled into a gully at Hides Hill resulting in the fatal injury of the driver and a passenger. Incident investigations were conducted and recommendations are being implemented to minimize the risk of these types of incidents recurring.

The Project continues to support contractors in their initiatives to reinforce programs dedicated to safe driving.

These events have further underlined the Project's firm resolve for all workers and contractors to promote safety consciousness at work and in the communities associated with the Project. Project workers and contractors who show a strong commitment to safety are recognized for their contributions and achievements.

At the tenth Safety, Security, Health and Environment leadership workshop held in March, several Project contractors were recognized for their safety performance. A safety milestone was also achieved this quarter with the 1,100th worker graduating from the Safety Champions initiative. This initiative continues to prove successful with attracting high levels of interest from workers and contractors.

As the Project makes the transition to the production phase, the Safety team is focusing on ensuring safe operations during commissioning activities, recognizing the impacts of introducing hydrocarbons to plant and equipment.

The Project has also developed a security transition plan that includes developing the skills and capabilities of local security service providers to ensure ongoing support to the Project's security requirements during the production phase.

The Health team is involved in transition planning by assisting contractors during the demobilization process with clinical stock management, medical equipment donation protocols to hospitals and community clinics, and the transfer and retention of medical records.

## Workforce development

By the end of the quarter, the total Project workforce was 20,270, which is a slight decrease compared with the 21,220 workers at the end of 2012. This decline is an expected result of demobilization activities at some worksites following completion of work scopes. Of the total Project workforce, 66 percent are assigned to roles within the HGCP and LNG Plant site.

**20,270 people make up the total Project workforce**

The Project remains committed to building the skills of Papua New Guinean citizens for future roles both within and outside of the Project.

For example, in February the fifth intake of trainees graduated from the Juni Construction Training Facility, while the sixth intake of 20 new students began their training. The Juni Construction Training Facility provides programs that are Australian Quality Training Framework certified.

At the LNG Plant site, 171 trainees graduated with Technical and Further Education (TAFE) Australia awards this quarter. More than 1,000 Papua New Guinean trainees have attained their internationally recognized TAFE Certificate Level I or Statement of Attainment after completing a combination of classroom and on-the-job training.

In preparation for the Project's production phase, the second intake of Operations and Maintenance trainees began Advanced Skills training in Malaysia after graduating from the Basic Skills Training Program in Port Moresby during the quarter.

*The Operations and Maintenance trainees upon arrival in Malaysia*

The Project is also providing a new series of Women's Health Awareness Programs for female workers. The first of these monthly programs, Nutritional Awareness, was held in January. This was followed by programs targeting women's awareness of personal hygiene, and awareness of herbal products misuse.

## Growing Papua New Guinean businesses

Another milestone was achieved this quarter with the 15,000th Papua New Guinean entrepreneur benefitting from the Enterprise Centre's workshops, use of workstations, business meetings or provision of information. The Centre has also provided the equivalent of more than 7,100 training days and over 880 advisory and mentoring days to Papua New Guinean businesses.

The Enterprise Centre plays an important role in connecting Project contractors with Papua New Guinean suppliers, particularly Landowner Companies (Lancos), for both construction and commissioning-related activities. During this quarter, the Project spent 227.6 million Kina (US$106.4 million) with Lancos. This brings the total Project spend-to-date with Lancos to more than 1.7 billion Kina (US$790 million).

Other Papua New Guinean businesses are also being used for support services, such as equipment hire and camp rental.

Together, these additional services and Lanco services brought the total in-country in Kina spend to more than 8.2 billion Kina (US$3.8 billion) for the Project-to-date.

**More than 8.2 billion Kina spent in Papua New Guinea to date**

## Social development

A social development milestone was achieved this quarter with the 1,000th participant successfully completing Personal Viability training. The program is intended to empower communities to drive their own development and help individuals manage their changing lifestyles. By the end of the quarter, more than 1,200 people had completed the program.

The Project is also working with communities to build their capacity in crop production and animal husbandry. This quarter, the Project distributed approximately 16,000 seedlings of high-yielding crops specifically selected for their compatibility to the Papua New Guinean environment. It also created 27 fact sheets in Pidgin and English to give farmers information about simple methods used to grow healthy crops.

To support trade in villages, construction has started on a permanent community market facility in Komo. The facility will contain purpose-built covered market structures within a fenced area. It will also incorporate a bus stop at the entrance, and is expected to become one of the central features of the developing Komo town center.

In recognition of the role of education in helping build the capacity of communities, the Project is sponsoring 17 students from communities surrounding the barging route waterways to attend numerous training institutions. The Project has also committed to sponsoring additional students for short training courses in the second quarter 2013.

Empowering women remains a priority for the Project. On March 8, the Project celebrated International Women's Day with events including a panel discussion about 'Gender Agenda Gaining Momentum'. The panel featured influential Papua New Guinean women including the first female Chief Magistrate of Papua New Guinea, the Acting Secretary for Foreign Affairs and Trade, and a Program Specialist from United Nations Women.

***Nerrie Eliakim, Chief Magistrate of Papua New Guinea; Decie Autin, Project Executive, Esso Highlands Limited; Ambassador Lucy Bogari, Acting Secretary of the Department of Foreign Affairs; and Alethia Jimenez, Program Specialist, from United Nations Women cut a cake to celebrate International Women's Day***

## Environmental performance

The hydrocarbon spill rate in the first quarter is the lowest spill rate recorded since substantial works began in January 2010. Ongoing spill response training and drills continue at Project sites, with the Onshore Pipeline contractor conducting a full simulated spill response drill at Homa Quarry. The drill simulated a spill scenario of 400 litres of diesel to allow teams to test their readiness for incident response.

At the Hides Waste Management Facility, the second of two landfill cells was completed. Further waste processing equipment, including the tire debeader, shredder, drum crusher and weighbridge, was delivered to complete the processing facility. Commissioning of the high-temperature incinerator also commenced.

Contractors continue to find new ways to reuse materials and minimize waste disposal. This quarter, the Drilling organization commissioned a cutting processing unit to remove residual drilling fluid from drill cuttings prior to their disposal at the Hides Waste Management Facility.

Fluid recovered from the drill cuttings is reused to make new drilling fluid. Water used in the treatment process is also reused for worksite needs such as dust suppression.

As construction nears completion at Komo Airfield, the contractor is focusing on reinstatement activities, with almost 10 hectares of land reinstated by the end of the quarter. The Onshore Pipeline contractor is also reinforcing the importance of topsoil management and reinstatement through worker training and toolbox talks.

***A reinstated section of the main onshore pipeline ROW***

To control erosion in Hides, the Project has started using a combination of traditional and modern erosion and sediment control measures. Methods including hay bales, jute matting, silt traps and '*huli*' style fence barriers are achieving up to a 90 percent reduction in sediment entering waterways in the area.

## Stakeholder and community engagement

During the first quarter, the Socioeconomic team conducted 126 formal engagements across 36 communities along with 79 informal engagements in 28 communities.

**~1,000 formal engagements conducted to date**

The Project continues to focus on building and strengthening community relationships by addressing and closing grievances in a timely manner. This is achieved through maintaining alignment with the Socioeconomic field teams, ongoing grievance management process training, and the effective registration and categorization of grievances. By the end of the first quarter, 103 grievances were closed as a result of the Project's grievance management efforts.

The Project also continues to engage closely with all levels of government. This quarter, over 80 dignitaries attended six advocacy workshops held for Foreign Missions and Papua New Guinean Government officials at the LNG Plant site. In addition, the Project committed to provide more funding to Papua New Guinea's Department of Works for further repairs and maintenance to sections of the Highlands Highway between Lae and Hides.

As the Project moves closer to the production phase, it recognizes the importance of fostering long-term collaborative relationships with stakeholders. It is these relationships that will not only drive the ongoing success of the Project itself but, more importantly, will deliver outcomes that showcase Papua New Guinea's ability to become a strategic global player in sustainable growth balancing economic development with conservation best practice.


***Toea during a visit to the Waru Primary School***

# 01 INTRODUCTION

## The US$19 billion PNG LNG Project is moving towards the end of the construction phase, with commissioning activities increasing as worksites prepare to transition to the production phase.

This thirteenth PNG LNG Quarterly Environmental and Social Report provides an update on the Project's construction, health, safety, environmental and social management progress during the first quarter.

The Project involves the 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 north-west 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 built to connect the facilities. The Project is on schedule for the first LNG deliveries to begin in 2014.

More than 250 billion cubic metres of gas are expected 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.

This PNG LNG Quarterly Environmental and Social Report is part of a series, which is publicly available through the Project's website.

Read the PNG LNG Quarterly Environmental and Social Report series at
**www.pnglng.com**

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


***Tie-in between the LNG Plant feed gas pipeline and the offshore pipeline prior to backfilling***

## Figure 1.1

Project elements

# 02 CONSTRUCTION OVERVIEW

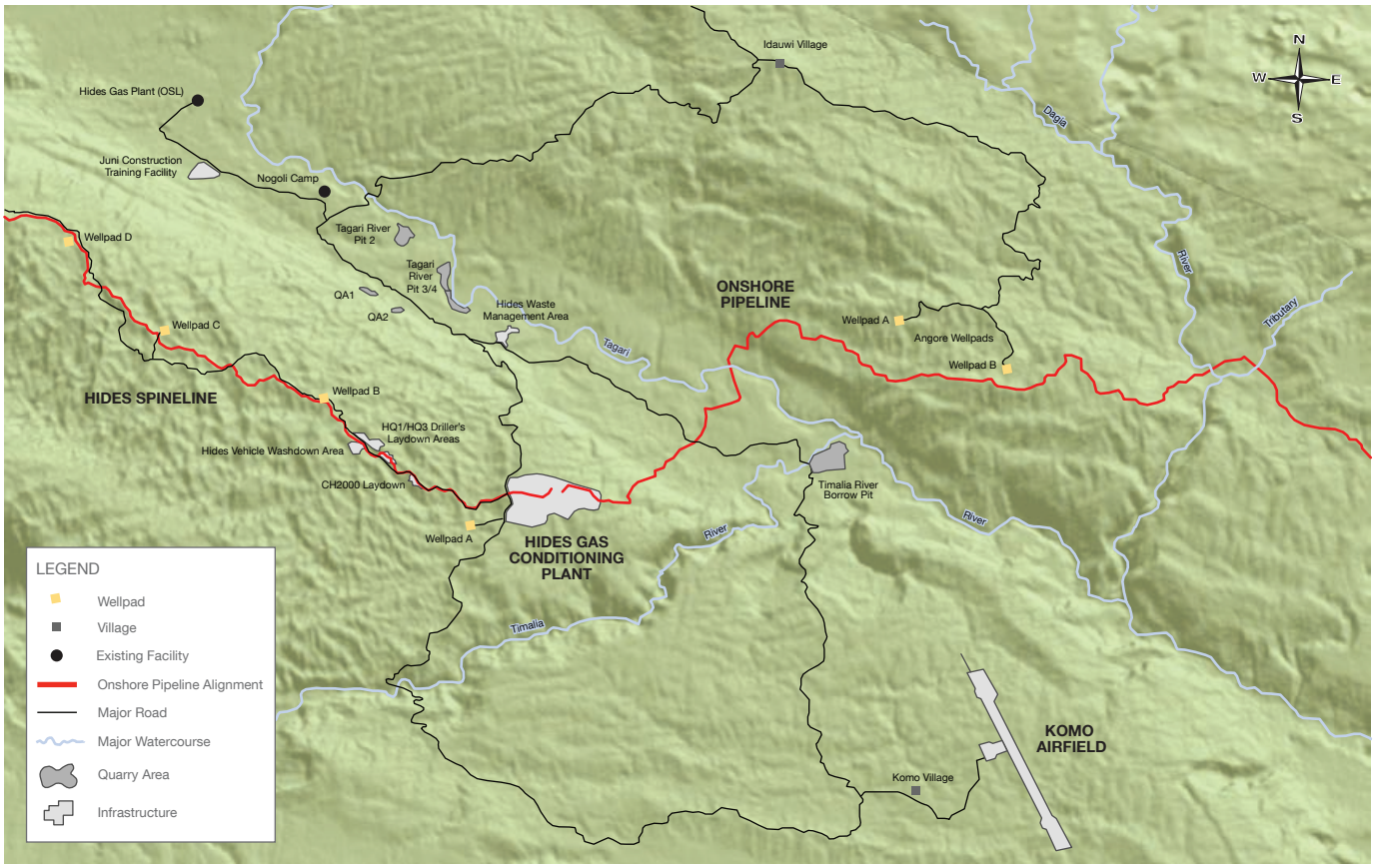
A significant milestone was achieved during this quarter with the completion of the Upstream Infrastructure contractor's scope of work. The Upstream Infrastructure contractor was the Project's first major contractor to mobilize to Papua New Guinea and was tasked with a wide-ranging work scope that included infrastructure upgrades across the entire Upstream area, construction of Esso Highlands Limited camps and a landfill site at Hides, as well as the bulk earthworks for the HGCP and Hides Wellpads.

Other key achievements this quarter were the start of ROW works on the Hides gas gathering pipeline system and completion of hydrotesting on the two LNG tanks at the LNG Plant site.

## 2.1 Highlands area

**Figure 2.1**

Highlands area Project activities




### 2.1.1 Upstream Infrastructure

With the completion of earthworks at the HGCP and Hides Wellpads this quarter, the Upstream Infrastructure contractor successfully completed 100 percent of their scope of work without a Lost Time Incident. The Upstream Infrastructure contractor has been on the Project since mid-2009.

### 2.1.2 Hides Gas Conditioning Plant and Hides Wellpads

Construction progressed well on the HGCP site, with the erection and mechanical completion of the slug catcher.

The Hides Gas Conditioning Plant and Hides Wellpads contractor also completed wall and roof cladding for the control building and warehouse; all heavy haul test runs for the Komo to Hides road; and installation of air coolers for Pipeline Compressor No. 1.

Concrete foundations were laid for the major electrical and equipment room in the gas processing area and erection of the diesel storage tank was completed.

*Concrete foundations being laid at Hides*

### 2.1.3 Komo Airfield

The Komo Airfield contractor completed the fuel farm, power house and power generators. A flight test was performed in January to confirm the aircraft flight approach path and missed approach go-around path. The test flight enabled certification of the short-range radio navigation system and the precision approach path indicator (a visual aid that provides guidance information to help a pilot acquire and maintain the correct approach).

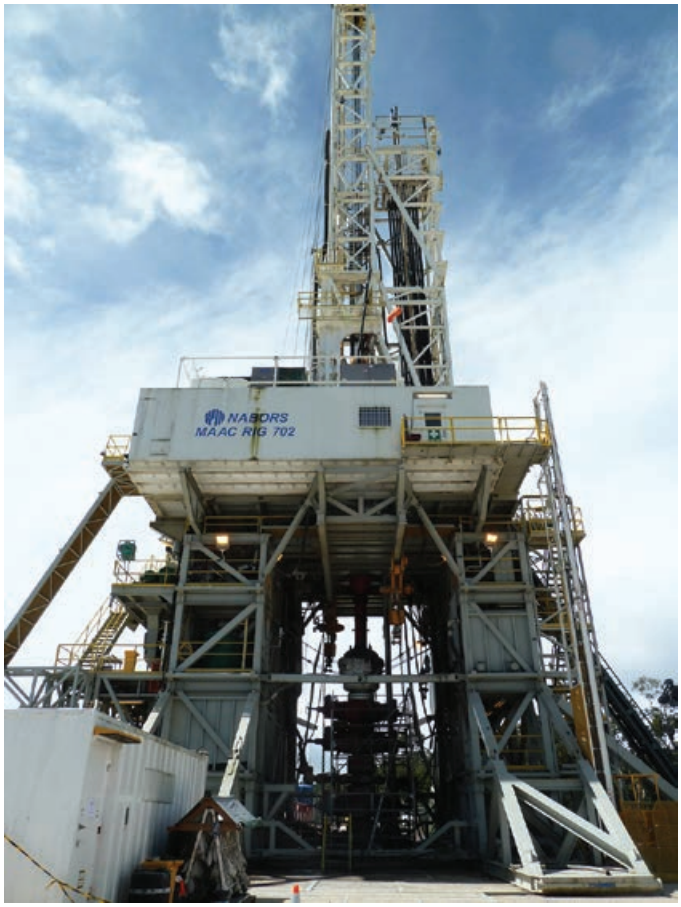
*Komo Airfield fuel farm*

Construction activities in other areas progressed, with line painting on the runway, the completion of asphalt laying in the taxiway and the start of taxiway lighting installation. In January, minor subsidence occurred along an isolated area of the runway. This was repaired and repaving had commenced by the end of the quarter.

### 2.1.4 Drilling

During this quarter, Drilling Rig 702 at Wellpad B continued to drill reaching a drill depth of approximately 2,800 meters on the first production well.

Meanwhile, commissioning activities for Drilling Rig 703 at Wellpad C neared completion with the first well expected to start in early April 2013.




*Drilling Rig 702 at Wellpad B*

## 2.2 Onshore Pipeline

Construction of the Hides gas gathering pipeline ROW began during this quarter. This results in two working areas of pipeline construction on the Project. The Hides gas gathering pipeline construction will start near the HGCP and progress up the Hides Ridge, while the main pipeline continues its construction progress towards the HGCP.

Construction of the pipeline progressed well, with completion of the Homa Ridge Access Road and occupancy of Paua Camp 6. Construction of Awatangi Quarry Camp 7 commenced, while all pipeline connections from Kutubu to the LNG Plant were completed. Preparation for commissioning of the Kutubu to LNG Plant pipeline also started in preparation for commissioning gas delivery to the LNG Plant site.

By the end of this quarter, the Onshore Pipeline contractor had completed over 294 kilometres of mainline welding, 205 kilometres of pipeline hydrotesting and 162 kilometres of ROW reinstatement.

## 2.3 Offshore Pipeline

The Offshore Pipeline contractor has completed installation of the offshore pipeline marking the completion of their work scope and demobilized from the Project. The contractors' scope of work was completed without a Lost Time Incident.

## 2.4 LNG Plant and Marine Facilities

The LNG Plant and Marine Facilities contractor continued their exceptional safety performance, with over 30 million hours worked without a Lost Time Incident. This is a remarkable achievement for the nearly 11,000 workers on-site. All engineering and procurement for the LNG Plant was completed during this quarter.

*View of the LNG Plant site*

Other notable achievements at the LNG Plant site included: successful completion of hydrotesting for both north and south LNG tanks; completion of the underground firewater pipelines in the process area; and completion of the LNG Plant feed gas pipeline connection to the 900-millimetre offshore pipeline. The feed gas pipeline is a 2-kilometre onshore subsurface pipeline that connects to the offshore pipeline at the LNG Plant landfall.

The marine and jetty construction is nearing completion, with hydrotesting and pneumatic testing of the jetty topside piping conducted. The cold insulation for the LNG piping on the jetty pipe racks was also installed. Planning has begun for jetty commissioning activities.

## 2.5 Associated Gas Development

Construction of the new triethylene glycol unit at the Gobe Production Facility progressed well, with the insulation of all equipment and vessels conducted. Area lighting installation was also completed.

At the Kutubu Central Processing Facility, the second triethylene glycol unit neared mechanical completion with the start of leak testing, installation of insulation and completion of the electrical cables. In addition, the gas metering skid was successfully completed and prepared for commissioning.

## 2.6 Development support execution, logistics and aviation

The Material Logistics team continued to exceed load delivery targets from Lae to Tari. To date, more than 10,800 loads have been delivered, completing 14 consecutive months of over 400 deliveries.

### Fiber link speeds Project's future

The Project reached a major telecommunications milestone with completion of a 400-kilometre Fiber Optic Cable from Omati to Caution Bay. Using state-of-the-art underwater survey equipment, a 60-person crew from French telecommunications giant Alcatel-Lucent spent several months installing the cable along the offshore pipeline route.

Covering around 10 kilometres per day with a cable-lay vessel, the Alcatel-Lucent crew arrived in Caution Bay and connected the cable to the LNG Plant fiber system on February 26. "This cable will connect the HGCP and the LNG Plant site with voice and data communications," said Jim Mancuso, Esso Highlands Limited Telecommunications Engineer. "It is one of the many ways the Project will monitor the flow of gas through the pipeline."

Along with sharing data on Project servers, the LNG Plant site will use the connection for security systems, e-mail, telephones and control data systems. The Fiber Optic Cable provides fast access to data for servers located hundreds of kilometers away.

"Fiber optic communication allows almost instant response no matter what the weather," Jim says. "It is much more reliable than satellite, which has limited bandwidth (or information downloading) capacity."

Fiber optics also allows for future information capacity upgrades as technology advances, which means the Project's communication system will always be up-to-date.

The LNG Plant site expects to start using the cable in November 2013.

*Workers complete the fiber optic link to the Project*

With the Komo Airfield runway nearing completion, the Aviation team has mobilized safety teams to site to commence training activities such as fire fighting.

## 2.7 Permanent Facilities Compound

During this quarter, the contract was awarded for construction of the Permanent Facilities Compound (formerly known as the Permanent Office and Housing Compound) near Port Moresby Airport. The new contractor subsequently mobilized to site and completed their pre-construction readiness review. The site security fence and access road were also completed.

The Permanent Facilities Compound will include offices and associated service facilities for the production phase.

## 2.8 Pre-construction surveys

Pre-construction surveys were conducted on supporting infrastructure such as access roads, spoil stockpile sites and areas likely to be affected by sidecasting for the onshore pipeline.

Re-routes identified for the pipeline ROW on the Hides Spineline were also surveyed during this quarter.

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

### Figure 2.2

**Pre-construction survey progress**

1 Protected Areas
2 Protected Species
3 High-Conservation Value Habitat
4 Sites or Habitats of Ecological Significance
5 Cultural Heritage Sensitivity
6 Social Sensitivity

Report in Preparation
➔ Issued to DEC
✖ No longer going to be used
☑ Approved by Project
➲ DEC Permission to Construct (as required)

| Survey Site | Sensitivities Surveyed | | | | | | Status |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| *ONSHORE PIPELINE FACILITIES* | | | | | | | |
| Moro Camp 5 Additional Platforms | | | | ✓ | ✓ | | ☑ |
| Onshore Pipeline ROW: Kilometer Point 0 - 5 | | | | ✓ | ✓ | | ☑ |
| Onshore Pipeline ROW: Kilometer Point 5 - 9.5 | | | | ✓ | ✓ | | ☑ |
| Onshore Pipeline ROW: Re-alignment Kilometer Point 65 - 67 | | ✓ | | ✓ | ✓ | | ➔ |
| Homa/Paua Laydown and Quarry | | ✓ | | ✓ | ✓ | | ☑ |
| Auwitangi Quarry 1 and Quarry 2 and Associated Access Road | | ✓ | | ✓ | ✓ | | ☑ |
| Cathodic Protection 1 and Associated Infrastructure | | ✓ | | ✓ | ✓ | | ➔ |
| Kutubu Mainline Valve Station and Associated Facilities | | ✓ | | | | | ➔ |
| Benaria Mainline Valve Station 1 and Quarry | | ✓ | | | ✓ | | |
| Mainline Valve Station 2 (Kilometer Point 57) and 3 (Kilometer Point 66) and Additional Workspace | | ✓ | | ✓ | ✓ | | |
| Shoo-fly Access Road at Kilometre Point 137 | | | | ✓ | | | ☑ |
| Neango to Dauli Access Road at Kilometer Point 18 | | ✓ | | ✓ | ✓ | | |
| Angore Roads and Angore Wellpads | | ✓ | | ✓ | ✓ | | |
| Homa Ridge Access Road | | ✓ | | ✓ | | | ☑ |
| Access Road to Positive Side of Tagari River Crossing | | | | ✓ | ✓ | | ☑ |
| Hegero Campsite | | ✓ | | | | | ☑ |
| Onshore Pipeline ROW: Re-alignment Kilometer Point 92 - 94 | ✓ | | | ✓ | ✓ | | ☑ |
| Kaimari Pipe Laydown Area | ✓ | | | ✓ | ✓ | | ➔ |
| Kilometer Point 72.5 Laydown Area | | ✓ | | ✓ | | | ☑ |
| Kilometer Point 68 Quarry | | ✓ | | ✓ | | | ➔ |
| Arakubi Quarry | | | | ✓ | | | ☑ |
| Kekero and Hegero Laydown Areas | | | | ✓ | | | ☑ |
| Homa Campsite and Laydown Area | | | | ✓ | ✓ | | ☑ |
| Jaia Creek Laydown Area | ✓ | | | ✓ | | | ☑ |
| Kilometer Point 81+250 Access Road | | ✓ | | ✓ | | | ☑ |
| Kilometer Point 85+350 Access Road | ✓ | ✓ | | ✓ | ✓ | | ☑ |
| Kilometer Point 89 - 90 Horizontal Directional Drilling Platforms | ✓ | | | ✓ | ✓ | | ☑ |
| Paua Access Road to ROW Kilometer Point 65+560 | | | | ✓ | ✓ | | |
| Kilometer Point 69 Quarry | | ✓ | | ✓ | | | ☑ |
| Hides Spineline | | ✓ | | ✓ | ✓ | | |
| Tagari River North Bypass Access Road to Kilometre Point 4+750 | | | | ✓ | ✓ | | |

***Environment Permit sensitivity definitions:***

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

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

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

**4 Sites or Habitats of Ecological Significance**
Sites or habitats of ecological significance such as:
a) Caves with a large entrance which may be used by bat colonies.
b) Pinnacles containing bat colonies.
c) Birds-of-Paradise or Bowerbird display trees or display grounds.
d) *Pandanus* swamp forest.
e) Antarctic Beech *Nothofagus* spp. forest.
f) Areas of Antarctic Beech *Nothofagus* spp. dieback.
g) New Guinea Big-eared Bat *Pharotis imogene* colonies.
h) Sandalwood *Santalum macgregorii* trees.
i) High-value conservation swamps containing juvenile fish nursery habitat.
j) Swamps in sink holes <50 metres deep on Hides Ridge.
k) Areas of infestations of priority weeds or pests.
l) Mangrove stands and forest.
m) Seagrass beds.
n) Coral reefs.

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

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

# 03 SAFETY, SECURITY, HEALTH, ENVIRONMENT AND SOCIAL MANAGEMENT

The Project remains committed to protecting the safety and health of workers and local communities, as well as the environment within which Project activities occur.

## 3.1 Approach

The Environmental and Social Management Plan (ESMP) describes the Project's approach and commitment to environmental and social management activities. Discipline-specific plans, as shown in Figure 3.1, were developed from the Project's Environmental Impact Statement to support the ESMP. All of these plans are publicly available on the Project's website.

Explore the plans at
www.pnglng.com/commitment

As well as environmental and social management plans, the Project also has Security, Health, Safety and Regulatory Compliance management plans.

These documents enable the Project to deliver a best-practice culture across all activities. They also demonstrate Esso Highlands Limited's commitment to supporting sustainable economic growth in Papua New Guinea.

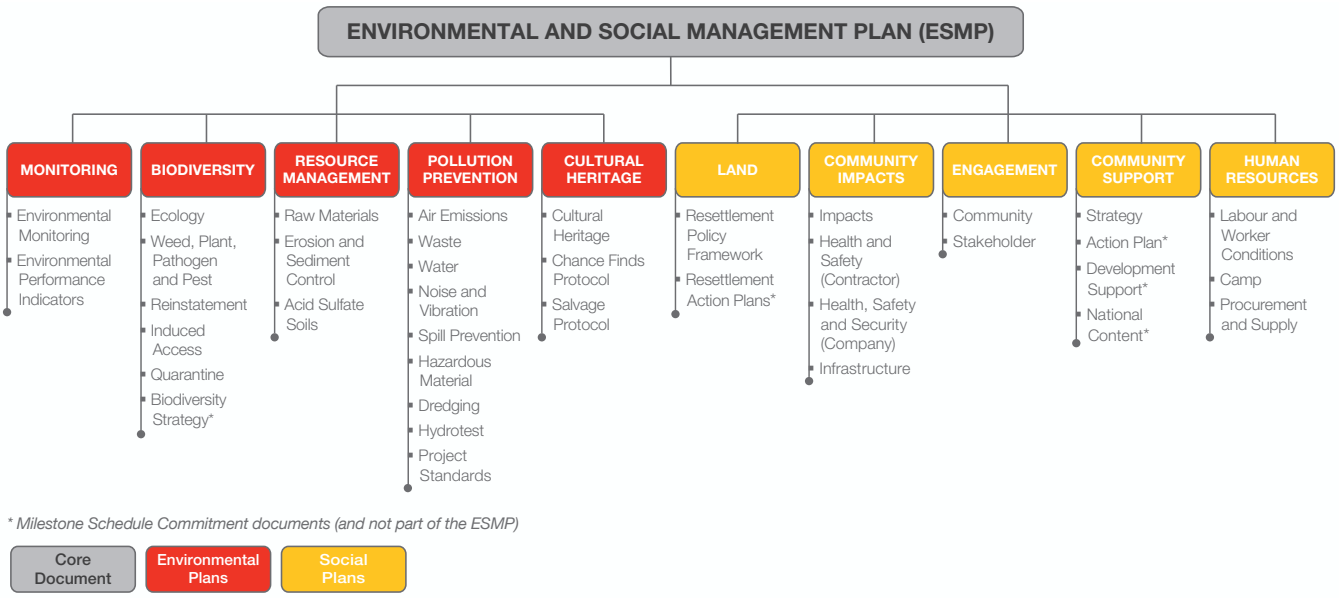
## 3.2 Security

Progress was made this quarter with development of a security transition plan in anticipation of the transition from the Project's construction phase to the production phase. This included revising the Project's security management plans. An integral aspect of this planning is further developing the skills and capabilities of local security service providers to ensure ongoing support to the Project's security requirements. As part of transition planning, the Project aims to ensure that guards supplied by Lancos are trained by their companies in the Voluntary Principles of Security and Human Rights.

The participation of locally engaged contractor security personnel in the Project's Safety Champions course continued this quarter, with 40 personnel successfully completing the course. In addition, four security contractors completed the ExxonMobil Fundamentals of Safety course. Specialist training was also provided to security drivers on specific skills including safe driver training techniques for driver training instructors.

**Figure 3.1**

**Environmental and social management plans**



## 3.3 Revenue management

Since the release of the National Budget in November 2012, the Papua New Guinean Government has progressed plans to provide greater budgetary and related support to the provincial and sub-provincial levels of Government, with a focus on devolving responsibility and funding control to improve Government service delivery.

The Government also continues to state its commitment to establishing a sovereign wealth fund to manage revenues from extractive industries, including the Project. In March, Jonas Moberg, Head of Extractive Industries Transparency Initiative (EITI) Secretariat, visited Papua New Guinea to meet with Prime Minister Peter O'Neill and a range of other senior government officials as well as industry and civil society stakeholders. Discussions focused on Papua New Guinea's potential interest in applying for EITI candidacy. EITI is a voluntary mechanism that promotes and supports improved governance in resource-rich countries through the full disclosure and verification of company payments and government revenues from oil, gas and mining. As part of its commitment to revenue transparency, Exxon Mobil Corporation has served continuously as either a member or alternate member of the EITI board since its inception in 2002.

## 3.4 Management of Change

The Project uses its Management of Change procedure to address situations where changes to the Project Development Plan are needed. Before any proposed change, the Project considers requirements regarding: safety, health, security, environmental and social management; operability and maintenance; regulatory and cost; and scheduling. Change classifications reflect how any proposed change must be managed. Class I changes require Lender Group review prior to implementation, while Class II changes require notification in the PNG LNG Quarterly Environmental and Social Report.

There were no Class I or II Management of Change requests made during the first quarter 2013.

## 3.5 Environmental and Social Milestone Schedule

The Project's Biodiversity Offset Delivery Plan was revised following comments received by the Lender Group's Independent Environmental and Social Consultant (IESC) in late 2012. Also during this quarter, the Project finalized the Biodiversity Monitoring Plan and submitted it to the IESC for review.

Resettlement activities have continued, with site-specific Resettlement Action Plans developed as needed.

# 04 PROCUREMENT AND SUPPLY

The Project aims to build the capacity of local suppliers and optimize their participation in Project activities through the efforts of the Business Development team and the Enterprise Centre. Project contractors also use their own initiatives to support the development of local suppliers, including Lancos.

## 4.1 Supplier development

The Project's Business Development team continues to focus on mentoring identified representative Lancos with the support of services provided by the Enterprise Centre. Lancos are providing key sources of labor supply (particularly across catering, camp maintenance, and security) and vehicle hire. Lancos are also providing boat and truck hire, heavy equipment rental, construction machinery, timber, wooden pallets and spare parts, as well as facilitating the supply of fresh produce for camp kitchens. During this quarter, the Project spent 227.6 million Kina (US$106.4 million) with Lancos. This brings the total Project spend-to-date with Lancos to more than 1.7 billion Kina (US$790 million).

The Project also contracts other Papua New Guinean businesses for support services, such as equipment hire and camp rental.

Together, these additional services and Lanco services brought the total in-country in-Kina spend to more than 8.2 billion Kina (US$3.8 billion) for the Project-to-date.

## 4.2 Enterprise Centre

A milestone was achieved this quarter with the 15,000th Papua New Guinean entrepreneurs benefitting from the Enterprise Centre's workshops, use of workstations, business meetings or provision of information. The Centre has also provided the equivalent of more than 7,100 training days and over 880 advisory and mentoring days to Papua New Guinean businesses.

### 4.2.1 Business assessments and training

By the end of the first quarter, 20 business assessments were completed and 11 finalized assessment reports were provided to Papua New Guinean businesses to support their continuous improvement. This included six on-site assessments with businesses in Lae. As shown in Figure 4.1, the Enterprise Centre has assessed 266 Papua New Guinean businesses to date.

During this quarter, the Centre also delivered the equivalent of 399 training days as shown in Figure 4.2.

Among those involved in training this quarter were 21 participants of the International Organization for Standardization (ISO) course. The course attracted participants from businesses both in Port Moresby and from regional areas outside the capital.

Another 28 participants were involved in Employee and Industrial Relations training. This included a presentation from the University of Papua New Guinea's Acting Pro-Vice-Chancellor and Dean of the School of Business Administration, Professor Subba Rao.

**Figure 4.1**

Number of Enterprise Centre assesments for Lancos and non-Lancos

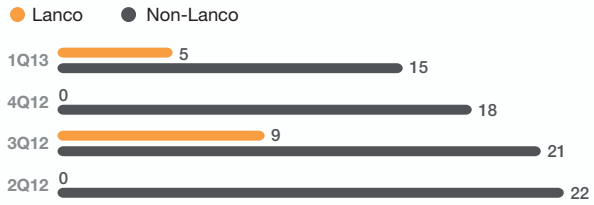
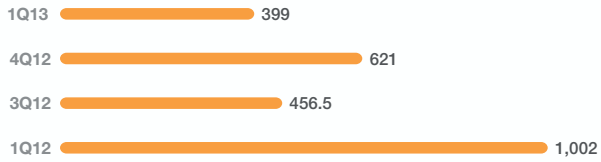



**Figure 4.2**

Number of capacity building training days




### 4.2.2 Advisory services

Over 200 Papua New Guinean entrepreneurs and senior bank managers attended a workshop in March to launch the Enterprise Centre's Financial Advisory Service.

This Service was established to help Papua New Guinean business owners gain access to finance. It assesses their businesses against the standard loan criteria used by commercial banks and identifies weaknesses, such as: inadequate business plans; unrealistic forecasts; a lack of cash flow; and poor budgeting. For any identified weaknesses, mitigation actions are recommended.

*ISO training participants*


***Enterprise Centre Senior Financial Advisor, Eric Chong, addresses participants at the Financial Advisory Service workshop***

The Financial Advisory Service workshop contributed to an overall achievement of 432 days of advisory services provided by the Enterprise Centre to Papua New Guinean businesses during this quarter.

### 4.2.3 PNG Supplier Database management

More than 1,400 Lancos and other Papua New Guinean businesses have registered with the PNG Supplier Database to date, with more than 70 people using the online dashboard during this quarter.

With demobilization activities occurring across Project sites as construction activities complete, the requirement for suppliers is significantly decreasing. This was reflected in the PNG Supplier Database, with only two new business opportunities posted this quarter.

To date, 279 business opportunities have been posted on the PNG Supplier Database, with 791 suppliers contacted. However, no new contracts were awarded during this quarter, leaving the total at 151 contracts awarded to date.

# 05 COMMUNITIES

To deliver long-term benefits to local communities, the Project actively supports the development of community health, safety and local business initiatives within the Project impact area. This includes the development of infrastructure for local communities.

## 5.1 Structure and relations

A set of community impact and engagement management plans is used to address the Project's interactions with communities and manage potential impacts caused by construction activities. These plans are shown in Figure 3.1.

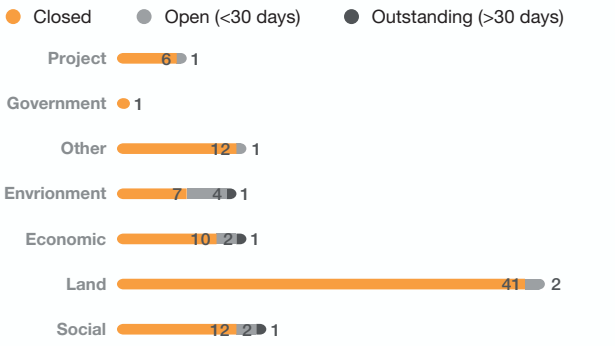
### 5.1.1 Community grievance management

The Project continues to focus on building and strengthening community relationships by addressing and closing grievances in a timely manner. This is achieved by maintaining alignment with the Socioeconomic field teams through ongoing grievance management process training and the effective registration and categorization of grievances.

During this quarter, the Project registered 104 grievances as shown in Figure 5.1 and closed 103 grievances (raised in this quarter and preceding quarters). There was an increase of approximately 70 percent in grievances recorded compared with the 61 registered during the fourth quarter 2012. This reflects increased levels of communication with communities about the Project's activities.

**Figure 5.1**

Number of grievances registered during the first quarter by closure status




Of grievances captured during the quarter, 41 percent related to land concerns, which was also the main category of grievances received in the previous quarter. More than half these grievances were regarding land compensation, including claims for land access to gardens and structural assessments. Another 14 percent accounted for social grievances, with almost half of these related to resettlement claims.

Economic-related grievances comprised over 12 percent of the total recorded within this quarter, with most concerning employment opportunities and some demanding participation in local business development opportunities.

Almost 12 percent of grievances regarded environmental concerns, particularly about erosion and sediment control, cultural heritage sites, ecology and water. Water grievances predominantly related to claims for alternate water sources.

The Project's focus on effective grievance management resulted with almost 80 percent of grievances closed in less than thirty days and only 15 cases remaining open to be carried forward to the next quarter.

*A Socioeconomic team member going through the resolution and closure process of a grievance in the Hides/Nogoli area*

### 5.1.2 Project Induced In-Migration

The Project Induced In-Migration team has finalized a desktop review of in-migration data collected through the Papua New Guinea Institute of Medical Research (IMR's) demographic surveillance program in the LNG Plant site villages. This information is being used to develop an in-migration work plan. In addition, the Project continued in-migration awareness raising activities in the Upstream North area.

### 5.1.3 Fisheries

During this quarter, the Enterprise Centre and the LNG Plant site Business Development team helped 14 fishers successfully apply for National Fisheries Authority grants. The Enterprise Centre conducted a workshop for local fishers to provide information about the application process, while the Business Development team helped fishers to complete their applications. The National Fisheries Authority advised that the applications received were professionally presented, with all the required supporting information provided.

The second phase of the fisheries feasibility study was conducted this quarter, with the National Fisheries Authority and contractor Devads Limited involved in stakeholder engagement activities with eight tribes in Kikori. The stakeholder engagement process was used to assess the type of fishing project that would be viable for improving the economic opportunities of barging route waterways communities.

Training for fisheries assistants from the LNG Plant site villages continued, with 23 assistants trained-to-date. The fisheries assistants supported the Project Fisheries team with catch landing surveys in Caution Bay and Omati.

From 142 interviews conducted in Caution Bay, the Fisheries team recorded 2,684 kilograms of fish caught during this quarter, compared with 15,476 kilograms recorded in the fourth quarter 2012. The sharp decline in fish caught was attributed to poor weather conditions, with strong winds and rough waters. In Omati, 123 fisher interviews recorded 1,051 kilograms of fish caught, which is almost double the 574 kilograms of fish caught in the fourth quarter 2012.

### 5.1.4 Social considerations for logistics activities

The Barging Route Waterways Memorandum of Understanding Committee's first quarterly meeting for 2013 was held with the Project and resulted in priority community projects being identified and subsequently approved. These include a classroom project at Bisi Elementary School and a water tank and school desks for Veraibari Community School.

Another outcome was the coordination of the stakeholder engagement phase of the fisheries feasibility study. Stakeholder engagement is being conducted through the National Fisheries Authority and contractor Devads Limited.

From this quarter, the Project is sponsoring 17 students from communities surrounding the barging route waterways to attend numerous training institutions including St. Joseph Catholic Vocational School, the University of Goroka, Sacred Heart Teachers' College and the Regional Aviation Academy. The Project has also committed to sponsoring additional students for short training courses in the second quarter 2013.

## 5.2 Infrastructure, services and resources

The Project is working together with Papa villagers to build lasting infrastructure for their community. During this quarter, Hiri Rural Local Level Government President and Papa Councillor, Ieviri Ova, signed an agreement with the Project on behalf of the Papa community for the construction of a boardwalk from Koita to Kauka, near Papa Village. The new boardwalk will replace an older, deteriorated structure. It will improve convenience and access for villagers to inland freshwater fishing, hunting, gardening and wood collection areas, and will reduce an over two-hour walk to 20 minutes. The new boardwalk will be built by a local workforce, with engineering and construction support from the Project. Work is scheduled to commence in June 2013.

## Project scholarships open doors

Michael Adam and Aileen Baretta are among many students given the opportunity to gain new skills through Project-provided scholarships. Michael and Aileen are both recipients of scholarships provided as part of the Barging Route Waterways Memorandum of Understanding.

Michael, from the Kerewo tribe, has completed a Level 1 Safety Certificate through the Papua New Guinea Occupational Health and Safety Training Institute in Port Moresby. He said his new skills helped him to promote a safety culture with his employer, Bioma Ekamo Holdings Limited, which is owned by his fellow tribesman. The company works on community infrastructure projects, such as water catchment projects and water facility maintenance.

Aileen Baretta is a former primary school teacher from Kikori who is in her final year of Papua New Guinea Studies and Journalism at the Divine Word University in Madang. Aileen, from the Porome tribe, said she appreciated the scholarship, which gave her a rare opportunity to study at a higher education institution. Once she graduates, Aileen plans to seek employment appropriate for her newly developed skills.

*Michael Adam*

*Aileen Baretta*

***Signing of the agreement to construct the new boardwalk in Papa Village***

During this quarter, schools continued to receive infrastructure and resource support through the Project. In particular, Para Primary School was given new desks built by trainees from the fifth intake of the Juni Construction Training Facility. This adds to the school desks already built and donated by the previous four intakes of trainees from the Facility, bringing the total number of desks provided to the Para Primary School to

82 to date. The Project has also supported the school with other materials, including mattresses, blankets, bed sheets, mosquito nets and bags of cement.

Students and teachers from primary and elementary schools in the four LNG Plant site villages of Boera, Papa, Lea Lea (also known as ReaRea) and Porebada also received supplies of stationery and sporting equipment from one of the Project's contractors this quarter.

*Students from Lea Lea Elementary School receiving donations of sporting equipment*

Communities along the pipeline route received new infrastructure this quarter with support from the Project. Working with local communities who provided labor and land access, the Project assisted with construction of facilities including: a community hall in Homa; a shared market area for Aiio/Manu and Hedinia Villages; a new classroom in Aiio Village; water supply improvements at Tubagi Village; and a meeting shelter with water tanks at Hedinia Village.

*New classroom at Aiio Village*

In Komo, construction started on a permanent community market facility for villagers. The facility will contain purpose-built covered market structures within a fenced area. It will also incorporate a bus stop at the entrance and is expected to become one of the central features of the developing Komo town center. Construction of the new market facility is scheduled to be completed during the second quarter 2013.

*Community members commence work for the Komo community market*

The last two water catchment projects for Komo were also completed during the first quarter.

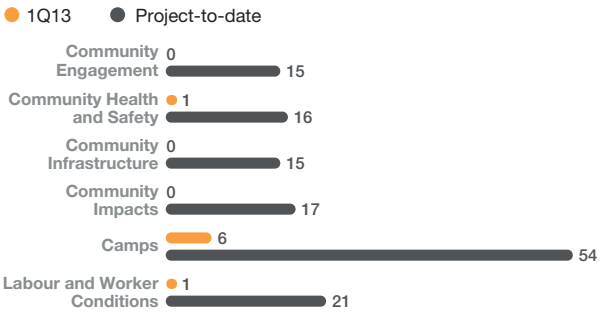
## 5.3 Verification, monitoring, assessment and audit

Project compliance is monitored in accordance with commitments made under six social management plans: Camp, Labour and Worker Conditions; Community Engagement; Community Health and Safety; Community Impacts; and Community Infrastructure. Given that many worker camps are at peak capacity, the focus of monitoring during this quarter was on camp management.

Monitoring involved a review of camp policies, procedures and their implementation, with several positive observations recorded. As shown in Figure 5.2, eight 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, 19 field observations and 21 positive field observations were recorded, as shown in Figure 5.3. Positive field observations covered areas such as worker training, wages and improved recreational facilities in worker camps. Of the field observations recorded during this quarter, three were closed, while 16 remained open at the end of the quarter, as shown in Figure 5.4. Two non–conformances, recorded in the fourth quarter 2012, were closed during this quarter. No new non-conformances were raised.

**Figure 5.3**

Number of non-conformances and field observations raised during the first quarter

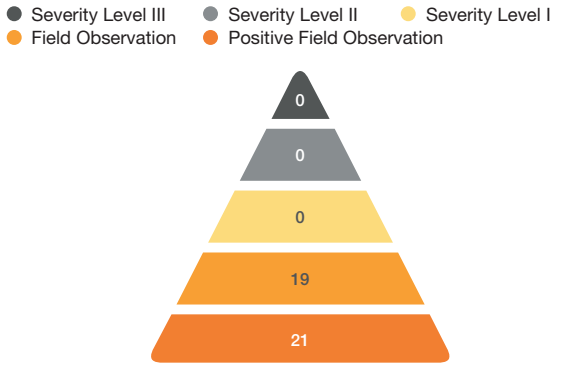



**Figure 5.4**

Closure status of non-conformances and field observations raised during the first quarter


## 5.4 Community health

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

The Program is aligned with ExxonMobil's Corporate Citizenship objectives and based on a framework developed by the International Petroleum Industry Environmental Conservation Association (IPIECA) – the international oil/gas trade association – and follows the International Finance Corporation's guidance notes on Performance Standard No. 4 Community Health, Safety and Security.

The Program is implemented through two major partners; the IMR and Population Services International (PSI). To further emphasize the Project's commitments under its National Content Plan, the IMR and PSI engage local non-government organizations on-the-ground to strengthen Program activities. As a result of the Project's support, the IMR has established the 'Partnership for Health' program and PSI has developed the Enhanced Community Health Program.

These programs and their related activities are discussed in the following sections.

### 5.4.1 Integrated Health and Demographic Surveillance System

The Integrated Health and Demographic Surveillance System (iHDSS) was established by the IMR under the 'Partnership for Health' program with the Project. It collects population and household level data from key Project areas and two control sites to monitor and assess the Project's potential health impacts.

The iHDSS is significant in that it can be used by Government health and social policy makers to strengthen the National Department of Health's ability to analyze critical community trends across Papua New Guinea.

During this quarter, the IMR was officially recognized by the National Department of Health for its work with optimizing molecular laboratory methods for detecting outbreak-prone pathogens. This enhanced capability enables the National Department of Health to confirm chikungunya outbreaks across Papua New Guinea. Chikungunya is a mosquito-borne virus that causes an illness with symptoms similar to dengue fever.

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

Clinics in the four LNG Plant site villages are involved in ongoing morbidity and mortality surveillance conducted by IMR personnel as part of the iHDSS. During this quarter, the IMR team commenced a maternal and child health pilot study. An additional sanitation and hygiene survey of the LNG Plant site villages was completed by the end of the quarter.

**Hides area**

The Hides component of the iHDSS focuses on three geographical areas: Haliago, Hibiria and Gigiria. The two primary sources of health care in this area are Malanda (also known as Mananda) Health Centre in Komo and Para community health centers. During this quarter over 4,500 individuals were interviewed as part of a baseline health survey in Haliago.

In preparation for the start of the IMR's Healthy Pregnancy study, a midwife from the Malanda Health Centre completed a three-week training program about the study. The Healthy Pregnancy study is a clinic-based surveillance program designed to evaluate and properly diagnose sexually transmitted infections as well as cervical cancer present in pregnant women within the community.

Follow-up surveys were also conducted this quarter for vaccination coverage, socioeconomic status, morbidity and mortality in communities located in the Project impact area.

**Asaro Valley and KarKar Island comparison sites**

In the first quarter, the Project assisted with refurbishment of the Asaro Health Centre to enable effective iHDSS implementation in this control site. Survey work continues in the area, with a vaccination coverage study more than 80 percent complete.

To support iHDSS efforts in KarKar Island, a physician was recruited during the quarter and began critical clinic-based surveillance. At the same time, two key personnel from the IMR facility in Madang were trained in data management according to the International Network for the Demographic Evaluation of Populations and Their Health (INDEPTH) Network protocols in partnership with the Chest Research Foundation and King Edward Memorial Hospital in Pune, India.

### 5.4.2 Tuberculosis

Ongoing Project support is enabling the IMR to provide state-of-the-art tuberculosis diagnostics using the GeneXpert® diagnostic machine at Kikori Hospital. To date, more than 200 individuals from communities in the Gulf Province have participated in the IMR's tuberculosis study, which involves social mapping of tuberculosis cases. Dr. Paul Harino, who is managing the study in the Kikori Hospital, is the first Papua New Guinean citizen to be certified in the use of GeneXpert® technology.

In March, to improve medical care for children with tuberculosis, a team of 17 Papua New Guinean medical practitioners from hospitals and the IMR received specialized tuberculosis training. Prof. Stephen Graham, Associate Professor of International Child Health with the University of Melbourne delivered the training. It covered induced sputum and gastric aspirate sampling to help build the capabilities of health professionals with collecting adequate sputum samples from children under the age of five living in close contact with individuals who have tuberculosis.

### 5.4.3 Support to non-government organizations

The Project continues to support PSI with implementing public health initiatives in the Project impact areas and along the Highlands Highway. To achieve its objectives, PSI works with local non-government organizations – Maries Stopes Papua New Guinea, the Evangelical Church of Papua New Guinea and Susu Mamas.

The PSI program aims to deliver health awareness training to communities about the prevention of sexually transmitted infections including Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome, malaria and soil, water, waste and sanitation related illnesses.

During this quarter, PSI conducted hygiene awareness sessions with over 230 participants about diarrheal illness and safe practices to prevent its occurrence. To complement these sessions, over 250 Water, Hygiene and Sanitation kits were distributed in the Hides and Komo areas. To date PSI has conducted hygiene awareness training with almost 6,500 participants and distributed over 6,000 Water, Hygiene and Sanitation kits. Each kit contains a 20-litre bucket with tap, soap, water purification tablets, oral rehydration solution, zinc tablets and health information brochures.

In an effort to reduce sexually transmitted infections, the Marital Relationship Training program continues in villages near Project sites. This quarter, 97 participants attended the program, which focused on reproductive health and gender-based violence prevention.

***Dr. Paul Harino, Tuberculosis Physician, Kikori Hospital reviewing data with Suparat Phuanukoonnon, Supervisor for the IMR tuberculosis study***

***A PSI-led community awareness session near the HGCP site***

## 5.5 Community safety

To further address traffic safety, during this quarter, contractors in Hides and Komo formed the Hides Area Traffic Safety Committee. The Committee aims to review existing traffic management risks and plan mitigation measures within key areas surrounding Project sites, in particular where schools and markets are located. Potential mitigation measures include the installation of speed bumps, segregated pedestrian pathways and traffic wardens stationed in critical locations to address existing traffic problems and promote safety ahead of the Project's heavy haul operations.

The Komo Airfield contractor is continuing its road safety program, which involves traffic controllers acting as an interface between community and Project traffic at populated and blind spot areas along the Construction Logistics Route. During the quarter, the program was enhanced with the introduction of community and driver safety flash cards in Tok Pisin to help the traffic controllers deliver key safety messages to drivers and pedestrians.


*Traffic controllers displaying a driver safety flash card*

## 5.6 Community investment

The Project continues to progress its work with individuals and organizations who are able to lead initiatives that will bring long-term benefits to their communities.

### 5.6.1 Community Development Support Plan

The Project is progressing its Community Development Support Plan through initiatives that help with Strengthening Social Resilience, supporting Local Economic Development and developing Community Capacity Building and Partnerships.

**Strengthening Social Resilience**

A milestone was achieved this quarter with the 1,000th participant successfully completing Personal Viability training. This was achieved within 14 months since the training sessions began in November 2011. The aim of the training is to empower communities to drive their own development and help individuals manage their changing lifestyles. By the end of the quarter, 1,253 people had completed the training.

Developing educational resources remains a priority, with 19 schools receiving resource packs, Toea children's books, Toea safety shirts and sporting equipment during this quarter. Project personnel visited another 25 schools as part of ongoing monitoring and support to functioning schools. These activities continue to shape and inform the Support to Schools Plan.

**Local Economic Development**

Since the development of the community-led Agricultural Development Plan in the third quarter 2012, the Project has implemented a support program that involves the National Agricultural Research Institute providing 4,000 seedlings of assorted drought-resistant food crops to the LNG Plant site villages.

During this quarter, the seedlings were distributed among the four villages for planting ahead of the end of the wet season. The seedlings consist of 11 different crops of mango, coconut, yams, cassava, bananas, corn, pumpkin, star fruit, breadfruit, guava and citrus. The crops were specifically selected for their tolerance to dry conditions and resistance to pests and aggressive diseases.

*Seedlings for distribution to the LNG Plant site villages*

Over 615 planting tools including spades, garden forks, cutting tools and sharpening steels were also distributed to the villagers. The Project is working with villagers to educate them about strategies for successful crop planting.

**Community Capacity Building and Partnerships**

Targeted leadership training continues with clans, churches, women's groups and educational organizations along the pipeline ROW. During this quarter, two Personal Viability training sessions focused on women's groups were conducted in Homa and Benaria. Ninety-nine women completed their training and graduated on International Women's Day. These women will be able to take lessons learned from the training back to their homes, clans and communities.

## 5.6.2 Strategic community investments

As part of its support for schools, the Project is working collaboratively with schools in the Project impact area to introduce the ExxonMobil Science Ambassador Program. The Program will help to educate students about science topics relating to the petrochemical industry. These one-day lessons teach school children about topics such as: rocks and minerals; the origins of oil and gas; chemicals; and oil refining. The Program will be implemented throughout 2013.

The Project has also committed to spending over 1 million Kina (US$467,500) on upgrading school facilities, including toilet upgrades, and providing solar lighting in Tugupawi, Malanda, Juni, Idauwi and St. Paul's primary schools in Hides. The commitment was made after the Project found that schools in Hides lacked some basic educational infrastructure. The upgrades to the Hides primary schools will be completed in accordance with the UNICEF Child Friendly Schools program.

**International Women's Day**

Messages of empowerment, gender equality and the inclusion of women in public policies permeated Project offices during International Women's Day on March 8. The Project joined International Women's Day celebrations with a series of events including a panel discussion organized by the Women in Energy Network.

The panel featured Papua New Guinean dignitaries including Nerrie Eliakim, the newly appointed and first female Chief Magistrate of Papua New Guinea; Ambassador Lucy Bogari, Acting Secretary for Foreign Affairs and Trade; and Alethia Jimenez, Program Specialist, United Nations Women.

Esso Highlands Limited's Project Executive Decie Autin said many of the women working on the Project had benefitted from hearing the panel's thoughts on the International Women's Day theme of 'Gender Agenda Gaining Momentum'. "The perspectives of these three influential women provided a real insight into the country's approach to gender issues," Decie said.

The panel discussion attracted over 100 female and male Project workers, many of whom wore purple to show their support for the advancement of women.

In the spirit of International Women's Day, *Case Study One – Celebrating women* profiles three of the many outstanding professional women working on the PNG LNG Project.

## 5.6.3 Volunteer programs

In March, Project volunteers were involved in sorting, categorizing and labeling over 500 books for the Buk Bilong Pikinini organization. Buk Bilong Pikinini (books for children) is a non-profit organization that specializes in increasing literacy outcomes in Papua New Guinea through community libraries and child/adult outreach programs.

Project volunteers were involved in sorting books sourced from around the world to be placed in Buk Bilong Pikinini libraries, which are located close to villages and market places.

***Children enjoying the books of the Buk Bilong Pikinini community library in Koki***

At Caritas Secondary School for girls in Port Moresby, Project volunteers painted school handrails and sanded back 40 desks for laminating in time for the new school year. As a result of their efforts, students started the year with freshly painted school desks.

***The volunteers assisting with the Caritas Secondary School upgrades***

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# CASE STUDY ONE
# CELEBRATING WOMEN

## To commemorate International Women's Day, presented below are profiles of three of the many amazing PNG LNG Project women.

### Kim Hahn: Building the Producing Organization (BTPO) Operations Superintendent

Kim Hahn has a key role in building the long-term Esso Highlands Limited organization in Papua New Guinea. She is responsible for ensuring the organization has the correct people, equipment, processes, software and other tools required for long-term success.

"While the Project's construction team builds the physical assets, my team is responsible for building an efficient and successful long-term business. My role involves liaising with experts from around the world to review organizational plans. I also coordinate activities with the production team to ensure operational processes and procedures are on track for a successful start-up in 2014," Kim said.

"The highlight of my day includes working with a bright group of Papua New Guinean citizens and helping them in their careers, while they teach me to speak Tok Pisin and provide Papua New Guinea travel advice." Kim said that once the production phase begins, she hopes to transition into a permanent role in Papua New Guinea as part of the business she has helped to establish.

Kim's current role is the culmination of an extensive career, which started when she was a project engineer with Esso Australia in 1998. Since joining the company, she has worked in numerous engineering, advisory and management roles in Australia, Africa, the United States and Europe. In addition to her work experience, Kim holds a Bachelor of Engineering (Honors) and Bachelor of Law (Honors) from Monash University in Australia and a Masters in Business Administration from the University of Texas in Austin. She joined the Project as the BTPO Operations Superintendent in May 2011.

"I chose a career in engineering because I always enjoyed mathematics and science at school, but I wanted a job that allowed me to travel internationally and not be based in a classroom or research laboratory," Kim said. "Engineers have the opportunity to work within a team of interesting people to solve challenging problems every day. It's a great feeling to be able to point to something (usually very large) at the end of a project and say 'I did this'."

Kim said her goal was always to be recognized for her abilities and not for her gender. "To succeed in any career, you need to focus on doing the best job you can do. Having the support of friends and family will help you get through the more challenging times," she said.

For other women wanting to succeed in business, Kim advises to treat every opportunity as a learning experience. "Develop a network of colleagues and establish your willingness to help. Most importantly, show initiative and demonstrate that you are ready for that next step," she said.

### Dr. Jane Mogina: Biodiversity Advisor

As Biodiversity Advisor to the Project, Jane Mogina is responsible for leading the implementation of the Project's biodiversity offset program. This involves engaging with multiple stakeholders, including Government departments, non-government organizations and local communities, to help protect Papua New Guinea's rich biodiversity within the Project impact area.

Before joining the Project, Jane was Executive Director of Papua New Guinea's Mama Graun Conservation Trust. The Trust provides funding through a grant program to 12 protected areas in Papua New Guinea and five priority sites in the Solomon Islands.

*Kim Hahn, BTPO Operations Superintendent, Esso Highlands Limited*

*Dr. Jane Mogina, Biodiversity Advisor, Esso Highlands Limited*

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# CASE STUDY ONE
# CELEBRATING WOMEN

Jane also has experience as the former Deputy Dean of the University of Papua New Guinea's School of Natural and Physical Sciences and as a senior academic in the University's biology department.

Jane said her work philosophy was a firm belief in hard work and prioritizing tasks to achieve a good work-life balance.

"I also have a strong belief that everyone should actively seek improvements at a personal level and in improving systems and processes where there is a need," she said.

Jane said the best advice she could provide to others wanting to achieve their goals was to have a clear vision about life goals and work hard to achieve them.

"Make use of opportunities and invest in personal development so that your short-term achievements grow into lifelong achievements. Most importantly, you have to enjoy your work," she said.

In addition to her career experience, Jane holds a PhD degree through the Australian National University, a Masters in Educational Studies from Monash University in Australia, and a Diploma in Education and Bachelor of Science from the University of Papua New Guinea.

## Sisa Kini: Social Impact Manager

Sisa Kini's role involves managing four different teams who engage with communities throughout the Project impact area every day.

"It is not black and white when working with communities," says Sisa. "There is no easy solution to a development issue that a community faces and the best answers always come from within the community. Our role is to facilitate; and this can be a challenge to remain in that role and not get too involved."

*Sisa Kini, Social Impact Manager, Esso Highlands Limited*

Sisa's experience in rural development started in 1996 when, as a first year student at the Papua New Guinea University of Technology, she worked with the first petroleum project to be developed in the country. Since then, her entire career has involved addressing the rural development challenges faced in petroleum resource development communities. Her work with the Project began in August 2010 after she completed a Masters degree in Social Science through Lincoln University in New Zealand. Starting as a part-time consultant, Sisa worked in various Project roles before becoming the Social Impact Manager in 2012.

"Success to me is about knowing what you want – setting that goal and getting out there, challenging yourself to attain and build your experience," she said. "You cannot get anywhere by sitting and thinking about it. You need to get out there and do it, and of course you may fail, but you will learn and build your experience and with that comes the sharpening of your ability."

With regard to opportunities for women in Papua New Guinea, Sisa believes the sky is the limit. "When I first joined the industry back in 1996, there were hardly any women. Today you walk into our office and there is a woman breaking new ground in every field," she said.

Prior to her work with the Project, Sisa held other influential positions as the Executive Director of the Community Development Initiatives Foundation in Papua New Guinea, the Planning and Communication Coordinator for Chevron Texaco in Papua New Guinea and as a Gender Officer for the World Wide Fund for Nature. She has also consulted to the World Bank with regard to the assessment of women's groups in mining and petroleum impacted areas and worked as a consultant to numerous AusAID programs in Papua New Guinea, as well as facilitated organizational development opportunities with Papua New Guinean non-profit organizations.

In addition to her Masters degree, Sisa holds a Bachelor of Communication for Development from the Papua New Guinea University of Technology and has completed training through ExxonMobil's Global Women in Management program.

# 06 COMPENSATION AND RESETTLEMENT

The Project compensates landowner clans for land impacted by Project activities in accordance with requirements of the *Oil and Gas Act 1998*. Ongoing monitoring of livelihood restoration activities is also conducted to help physically and economically displaced people restore their livelihoods and standards of living.

## 6.1 Compensation

During the first quarter, more than 100 annual deprivation payments were made to clans from Hides to Kopi for the use of customary land. These annual payments cover access to land for the HGCP, Komo Airfield, the onshore pipeline ROW (Tamadigi to Omati) and other assets such as laydown areas and camps.

Following two years of negotiation with Komo clans, two additional clans signed clan agency agreements and one accepted compensation payments during this quarter. This resulted in 75 percent of the land used for the Komo Airfield being compensated to date. The Project continues to engage with the remaining subclans in Komo.

Negotiations also continue with the Tuguba subclans at the HGCP site, with clan agency agreements to be signed and compensation to be paid once the subclans agree to the division of their land.

Statutory compensation payments were paid to three remaining clans in the Gobe area for the onshore pipeline ROW during this quarter. These payments were made under a consent agreement provided by the clans and endorsed by the Papua New Guinean Department of Petroleum and Energy. Due to two decades of land disputes in this region, these payments were the first received by landowners for any oil and gas project. With compensation paid for these 22 kilometres of the ROW, the Project has compensated approximately 50 percent of the onshore pipeline ROW. Four clan agency agreements were also signed for 14 kilometres of the ROW south of Moro. Additional compensation agreements and payments will be made as construction progresses along the pipeline ROW.

Work is underway to complete compensation payments to clans regarding land for the Hides Wellpad Access Road and Hides Spineline through Wellpad B. Six additional clan agency agreements were signed and compensation was paid for the road corridor, spoil sites and quarries. Formal engagements were also conducted with the landowner clans for Wellpads D and E.

In the Upstream South area, six additional clan agency agreements were signed in the Kantobo to Mubi area, which included the Kantobo to Mubi River Road. With onshore pipeline construction completed for the Gobe to Omati sections, the Socioeconomic team is working with clans in this area to complete land assessments and finalize clan agency agreements.

## 6.2 Resettlement

Resettlement activities continue to focus on obtaining land access for the Angore Wellpads A and B and Access Roads, as well as securing the remaining sections of land for the proposed pipeline ROW between Kilometre Points 0 and 80. Livelihood restoration activities and resettlement monitoring also continue in the Homa and Paua areas.

### 6.2.1 Milestones and progress

Milestones achieved this quarter included:

- The completion of census and survey activities for Kilometre Points 19 and 20 on the pipeline ROW and the signing of agriculture compensation agreements for that section of the pipeline.
- The completion of video surveys and community engagement about the video surveys for additional work spaces and spoil sites along the existing brownfield section of the Angore Wellpad Access Road.
- Completion of resettlement activities along the pipeline ROW between Kilometre Points 5 and 8, 24 and 37, and two pipeline re-route areas near Kilometre Points 34 to 37 and 42 to 45.

Figure 6.1 shows the status of key resettlement activities during the first quarter. Nineteen areas are in the longer-term monitoring and evaluation and livelihood restoration phases and as such are not shown in Figure 6.1.

### 6.2.2 Highlights, achievements and lessons learned

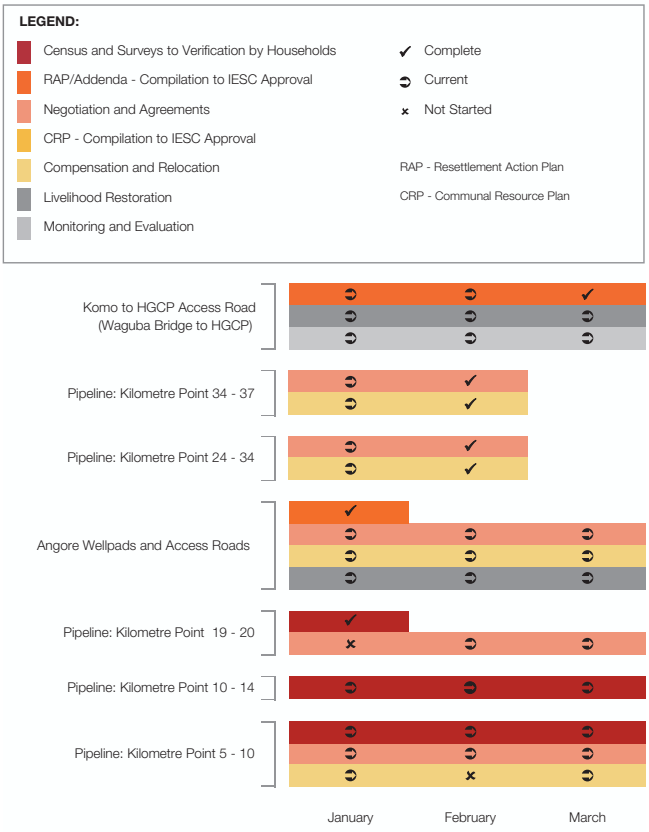
Key activities during this quarter included:

**Livelihood restoration:** Food crops in high demand, including better yielding varieties of the staple sweet potato, were distributed to 835 households in Upstream locations during this quarter. This included 9,700 cuttings of pathogen-tested sweet potato, 1,814 cuttings of high yielding cassava and 360 seed tubers of African yam.

***Distributing sweet potato cuttings to resettled households in Homa***

## Figure 6.1

**Status of key resettlement activities**




Eighty-five percent of the sweet potato cuttings and 32 percent of the cassava cuttings were distributed to resettled households in Upstream North locations. The remaining cuttings were distributed to resettled households in Upstream South communities. The Project continues to purchase sweet potato cuttings and African yams from three small enterprises in the Upstream North area. These enterprises receive ongoing support from the Livelihood Restoration team to help them build the skills and technical capability to propagate and sell a variety of plant materials.

The Project has also distributed 198 kilograms of open-pollinated corn seed, with 66 percent going to households at Upstream North communities who had not received corn seed from earlier distribution rounds in 2012. The remaining 34 percent of corn seed was distributed to resettled households at Upstream South locations. In addition, the Project distributed 34 kilograms of peanut seeds to resettled households across Upstream locations this quarter, bringing the total quantity of peanut seeds distributed to over 1,560 kilograms (over 1.5 tonnes) since June 2011. Growing peanuts has become an important source of income for resettled households.

Many local farmers have already achieved increased income through the Livelihood Restoration Program; including Kojuba Muka who has become the largest peanut grower in the Project area (see *Case Study Two – Fresh ideas for farmers*).

***A large peanut garden in the Upstream North area belonging to Aite Ako***

During this quarter, another 500 bud-grafted citrus seedlings were distributed primarily to resettled households in Homa and Paua. This brings the total number of citrus seedlings to around 1,000 distributed to date in Upstream South locations.

To diversify household gardens and diets; and provide households with the chance to sell more fresh produce at local markets, the Project is promoting the production of temperate climate vegetables in Upstream locations. During the first quarter, about 3.8 kilograms of temperate climate seed (15 grams per household) was distributed to 253 households in Hides, Komo and Angore. Plant propagation training continued with women's and church groups, with ten groups learning how to grow seedlings in nurseries for sale during this quarter.

In support of the Project's community training activities, 27 fact sheets were produced for a range of crops being grown by farmers in Upstream locations. These fact sheets, written in both Pidgin and English, provide the farmers with information about simple methods that can be used to grow healthy crops.

***Vegetable seedling production group activity at Nigiria, Nogoli***

This quarter, advisory and mentoring services were also provided to 85 households in Komo, Hides, Angore and Kutubu with regard to poultry and pig husbandry. Another 50 households in Upstream North communities were given refresher training on mixing fishmeal and local food staples to produce a local stockfeed that can be used as a substitute to buying the more expensive imported stockfeed formulations.

The Project's food processing and nutrition education program has become a very popular community development initiative, providing training to women and enabling them to engage in income-generating activities to support their families. During this quarter, 550 people (92 percent of them women) participated in food processing training.

These women have learned how to prepare nutritious meals made from local ingredients and also how to bake and sell goods at local markets. Since the opening of the Australia and New Zealand Banking Group Limited branch at Hides in December 2012, 30 women's groups have opened savings accounts to deposit money from the sale of their baked products.

**Monitoring of vulnerable individuals:** Monitoring of vulnerable individuals continued across the Hides and Komo areas and along the pipeline ROW. Ten vulnerable households were assessed and another 17 households were identified as needing support with gaining access to clean water. Of those 17 households, one received a water tank and another four received approval for water tanks, while the remaining 12 households were undergoing assessments regarding their water needs at the end of the quarter.

**Komo and HGCP:** As monitoring of resettled households scales down in the Komo and Hides areas, the focus is shifting toward collating lessons learned from resettlement and monitoring activities in this area and applying those to the pipeline ROW and Wellpad Access Roads. With the scaling down of activity, monitoring in Hides and Komo predominantly focused on vulnerable individuals this quarter.

**Pipeline ROW and Wellpad Access Roads:** Significant progress was made during the quarter, with resettlement activities completed in the four remaining sections of the ROW between Kilometre Points 0 and 80. Work continues with the signing of household resettlement and agricultural compensation agreements for Kilometre Points 8 to 9 and 19 to 20, as well as for the Angore Wellpads and Access Roads. Mapping of community resources (water sources, health, education and market locations) was conducted in the Angore, Homa, Paua and along the pipeline ROW from Kilometre Points 0 to 5. This survey was used to establish a baseline for resources supporting communities along the northern pipeline ROW sections to enable a better understanding of the community resources households depend upon and need to be considered if the households are displaced. The implementation of such surveys follows lessons learned from other Project locations.

In Homa, household monitoring access was limited during the quarter for security reasons.

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# CASE STUDY TWO
# FRESH IDEAS FOR FARMERS

## Kojuba Muka, his wife and nine children have joined the growing list of families who are reaping and sharing the rewards of the Project's Livelihood Restoration Program.

Kojuba is originally from the Pina clan in North Koroba. He is married to a woman from the Kawi clan and as a result of this marriage lives at Tapaya Tangi Village about 4 kilometres from Juni.

He first learned about the Livelihood Restoration Program through Yorobi Uga whose story was featured in the PNG LNG Quarterly Environmental and Social Report – Fourth Quarter 2012. Yorobi and his family are among four families from the Hides and Komo areas selected as service providers for the Livelihood Restoration Program.

Kojuba said he observed with keen interest the healthy crops and the many piglets Yorobi had cultivated with support from the Program.

"One day Yorobi invited me to come visit and he shared with me peanut seeds given to him by the Livelihood Restoration Program and also advised that I could come with my local sows and cross-breed them with his breeding boar also provided by the Project," Kojuba said.

"I jumped at the opportunity and planted a huge garden of peanuts and took two sows and cross-bred them with the boar."

*Kojuba and his children in their corn and pumpkin garden*

Kojuba is already benefitting from the Livelihood Restoration Program by selling the peanuts he harvests back to the Program for redistribution to the community. The money he makes from the peanuts goes into raising broiler chickens. Kojuba also has 18 piglets from the two sows he bred with Yorobi's improved breeder boar.

"I am excited, this is guaranteed money from hard work in which I plan to offset outstanding school fees for my children," he said.

The improved income has also greatly benefitted Kojuba's family's capacity to meet their basic requirements of soap, oil, salt and protein. Kojuba said the Livelihood Restoration team visits him regularly and provides valuable advice in food crop production, animal husbandry and soil conservation.

"I am embracing this opportunity. I am thankful and appreciate the Project's Livelihood Restoration Program for providing me with this opportunity," he said.

### Future in a nutshell

Peanut *Arachis hypogea L*, sometimes called groundnut was introduced to Papua New Guinea in 1870. Almost a century later, in the 1960s it was grown as an export cash crop. Peanut farming is now done by about one third of the country's rural farmers as an alternate cash crop. The crop is only grown in large areas in partially mechanized operations in the Markham Valley.

Peanut crops have been adapted to a wide range of geographical and climatic conditions to suit the Papua New Guinean environment. The crop was promoted by the Livelihood Restoration team in Project impact areas in 2011.

Kojuba has emerged as the largest peanut grower in the Project area to date.

*Peanuts harvested from Kojuba's garden, being sun dried prior to sale*

# 07 WORKFORCE

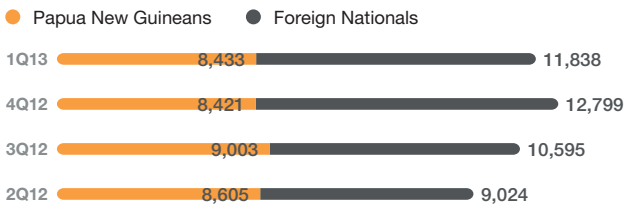
The Project continues to deliver training programs aimed at preparing Papua New Guinean citizens for the global workforce while maximizing their employment opportunities within the Project. At the same time, the Project remains committed to a best practice approach to achieving a healthy and safe work environment.

## 7.1 Development

By the end of the quarter, the total Project workforce was more than 20,270, which is a slight decrease compared with the 21,220 workers at the end of 2012 (as shown in Figure 7.1). This decline is an expected result of demobilization activities at some worksites following completion of work scopes. Of the total Project workforce, 66 percent are assigned to roles within the HGCP and LNG Plant site.

**Figure 7.1**

Project workforce numbers




At this stage of construction, some activities require specialist technical skills that are not available in the domestic workforce. Therefore, the numbers of foreign national workers are temporarily higher than that of Papua New Guinean citizens.

The Project remains committed to giving employment preference to Papua New Guineans wherever possible. Papua New Guinean citizens comprise 42 percent of the total Project workforce.

During the quarter, Project contractors met with clan leaders to source more Papua New Guinean workers for employment at drilling sites.

## 7.2 Workforce training

The Project is focused on building the skills of many Papua New Guinean citizens for future production roles. Key programs include Operations and Maintenance training in Papua New Guinea and Malaysia, a graduate development program in Australia and Above Field workforce training for office-based workers. Skills development is offered through a blend of classroom training at the Juni and Port Moresby Construction Training facilities and site-based training across Project worksites.

### 7.2.1 Construction training

The Project has delivered 1.7 million hours of training to date, which includes approximately 120,000 hours provided during this quarter.

**Project-provided training**

In February, the fifth intake of trainees graduated from the Juni Construction Training Facility. Also in February, the sixth intake of 20 new students began training at the Facility. The Juni Construction Training Facility provides programs that are Australian Quality Training Framework certified and delivered through formal classroom training supported by on-the-job training. The Juni Construction Training Facility also holds mandatory courses such as safety, health, environment and cultural awareness for Project employees.

**Contractor-provided training**

In January, a Supervisor Incident Prevention Program and supporting leadership courses were undertaken at the LNG Plant site. The Program aims to build leadership skills in management. Contractors also increased programs for crane and rigging training, as well as working in confined spaces and at-heights, to reflect the changes in construction needs. Other courses provided during the quarter included: business catering; tradecraft; environment; inductions; quality; health; security and safety.

### 7.2.2 Contractor workforce training

In total, 1,043 Papua New Guinean trainees have attained their internationally recognized Technical and Further Education (TAFE) Australia Certificate Level I or Statement of Attainment after completing classroom training through the Port Moresby Construction Training Facility and on-the-job training at the LNG Plant site. Another 392 workers attained a TAFE Statement of Participation. During the quarter, 171 of these trainees were presented with their respective TAFE awards.

*Trainees with their respective TAFE awards*

The Port Moresby Construction Training Facility was also used to deliver refresher training to LNG Plant site medical workers. The refresher training encompassed topics such as: injury illness hazard loss case management; serious illness event diagnosis and management; and an update of advanced cardiac life support certification.

During 2013, a series of Women's Health Awareness Programs is being conducted to raise health awareness among female Project employees. The first of these monthly programs, Nutritional Awareness, was held in January. This was followed by programs targeting women's awareness of personal hygiene and herbal products misuse.

### 7.2.3 Graduate programs

Four new engineering graduates are preparing for training assignments in Melbourne, Australia, after joining the Operations Technical team during this quarter. As part of their preparations, the graduates are assisting experienced engineers with developing a technical monitoring program for Esso Highlands Limited.

The original six engineering graduates, who returned from Melbourne in September 2012, continue to prepare for production operations. During this quarter, some of these graduates were involved in assisting with commissioning activities at the LNG Plant site. The graduates were also involved in developing long-term equipment maintenance plans.

In addition, the second group of engineering graduates, recruited early in 2012, completed approximately half their training assignments in Melbourne. They continue to learn day-to-day surveillance and troubleshooting requirements in a producing affiliate.

### 7.2.4 Operations and Maintenance training

During this quarter, the Project's second intake of Operations and Maintenance trainees began Advanced Skills training in Malaysia, after graduating from the Basic Skills Training Program in Port Moresby.

As part of their preparation for Advanced Skills training, the trainees participated in a two-day Personal Development Workshop designed to equip them with the skills to improve both their professional and personal lives.

The trainees will spend this year developing operations, mechanical, instrumentation and electrical skills in preparation for their roles in the Project's production phase. They will also experience Malaysian culture, spending their spare time participating in sporting activities and visiting local communities.

Meanwhile, the first intake of Operations and Maintenance trainees commenced on-the-job training with experienced personnel at the LNG Plant. They are in the process of completing computer-based training modules, classroom sessions and field familiarization.

***Second intake of Operations and Maintenance trainees prior to their departure to Malaysia***

### 7.2.5 Above Field workforce training

The Project is using a Continuous Improvement Framework training tool to help employees develop and improve their skills in order to be qualified for positions of increasing responsibility. The training is helping develop the capabilities of employees in areas such as: communication and influencing skills; assertive behavior; and increasing the individual's awareness of their own communication style and needs. Using workplace examples and scenarios, the training focuses on early career development needs, those new to working in a western organization and those starting out in their careers with minimal workplace experience.

## 7.3 Health management

As construction activities advance at the LNG Plant site and in the Hides area, the Health team is providing assistance with commissioning new camps and medical facilities. The Health provided health guidance in preparation for demobilization of the Offshore Pipeline contractor. During this quarter, there was a continued focus on water safety and clinical operations, as well as infectious disease outbreak management. As shown in Figure 7.2[1], all health activities planned for the quarter were completed. These included monitoring of the Malaria Control Program, the Tuberculosis Control Program, food and water safety, vector control, hygiene and sanitation, and clinical operations.

### 7.3.1 Camp and contractor health support

Potable water safety, hygiene and sanitation were priorities for camps in the Hides area and along the pipeline during this quarter, due to the expansion of construction and increase in personnel in these areas.

Monitoring of health performance continues as part of the health program, which is conducted through joint Project and contractor assessments, as shown in Figure 7.3[1]. These observations indicate that all health program areas are maintaining a high level of compliance with Project standards, building on improvements achieved during 2012.

1 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.

**Figure 7.2**

Number of planned and completed health activities during the first quarter

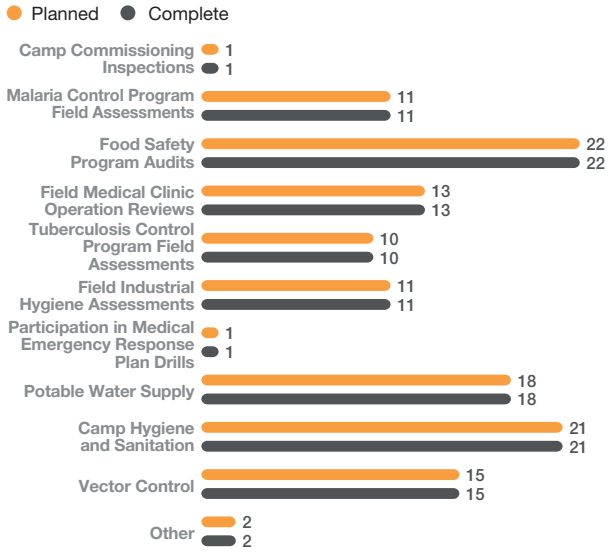
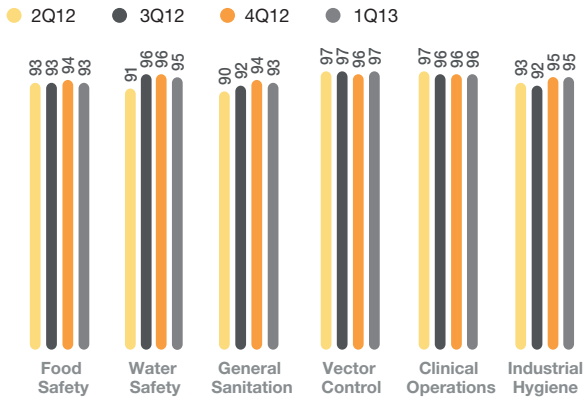



**Figure 7.3**

Percentage of camp adherence to Project specifications by health category




## 7.3.2 Leading and lagging indicators

The Project uses leading and lagging health indicators to monitor the effectiveness of its health programs. Leading indicators show how the Project is proactively managing worker health in areas such as the Malaria Chemoprophylaxis Compliance Control Program, which is intended to reduce the risk of malaria infection in Project non-immune workers through verification of worker use of chemoprophylaxis. Lagging indicators track actual cases of illness to enable the Project to monitor the effectiveness of control programs. 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[2] worker reported this quarter. Upon diagnosis, the worker was provided appropriate treatment and recovered quickly. An investigation revealed that this case originated from outside of Papua New Guinea. This brings the number of non-immune malaria cases contracted in Papua New Guinea to seven, while the number of cases imported from outside Papua New Guinea totals six for the Project-to-date.

There were another 11 malaria cases involving semi-immune[3] personnel recorded during this quarter, which is consistent with the previous quarter. Overall, there has been a downward trend in the number of semi-immune cases recorded since mid-2012. This reflects the Project's ongoing commitment to mitigate the risk of malaria to workers.

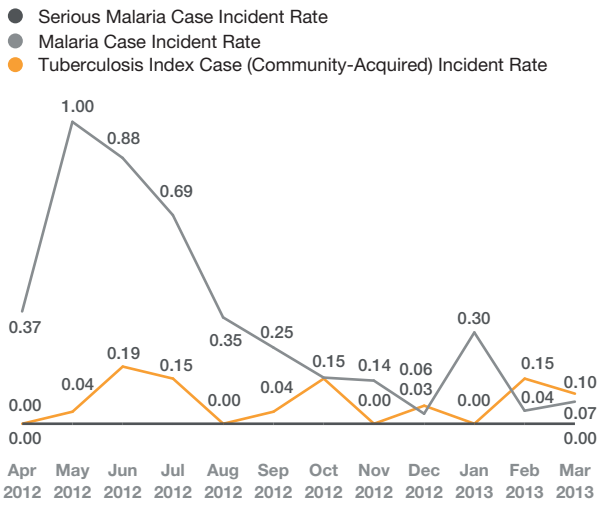
The Health team continues to monitor malaria cases and is engaging with workers and contractors to maintain a high level of awareness about mosquito bite prevention measures, especially during the wet season.

The Project recorded seven tuberculosis Index cases (community-acquired) during this quarter. The number of in-camp tuberculosis transmission cases remain at zero for the Project-to-date, which means that no community-acquired case has infected any worker inside a camp or Project worksite. This is largely due to the effective management of tuberculosis at worksites, including early detection, isolation, diagnosis and referral off-site for the treatment of identified tuberculosis cases.

Malaria and tuberculosis incident trends are shown in Figure 7.4[1].

**Figure 7.4**

Malaria and tuberculosis case incident rates per 200,000 work hours




2 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.
3 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.

### *Malaria*

Project compliance with the overall Malaria Control Program remains high at 96 percent, which is consistent with previous quarters. During this quarter, the Malaria Chemoprophylaxis Compliance Control Program was adjusted to address lessons learned from introduction of Tetrapal® field testing, optimize work processes to accommodate a large non-immune workforce, and address worker non-compliance. Although worker compliance remains high (averaging over 95 percent over last two quarters), the Project continues to explore methods to ensure high levels of worker compliance with chemoprophylaxis use in order to mitigate malaria risk.

### *Tuberculosis*

Compliance with the Project's Tuberculosis Control Program remains consistent with previous quarters at 94 percent. During this quarter, QuantiFERON® testing for tuberculosis, which was trialed in the fourth quarter 2012, was implemented at the LNG Plant site. Logistical challenges for samples taken from the remote Hides area for QuantiFERON® testing were resolved during the quarter. This enables accurate tuberculosis analysis to be provided to workers in the Hides area. In addition, the Health team introduced an improved process for sputum sample collection for suspected cases of tuberculosis during this quarter.

### Food and water safety

The Project's food safety compliance score remains high at 93 percent. To maintain high standards of food quality and safety, the Health team is focusing on improving the skills and knowledge of food handlers and kitchen staff, as well as continued improvement to processes for the maintenance and cleaning of kitchen facilities.

Water safety compliance also remains high at 95 percent for the quarter. During this quarter, the Project focused on providing adequate potable water for the Hides area to meet the increased needs of workers involved in drilling operations. The Health team is also providing technical support to adequately treat the bore water supply for drilling sites and wellpads.

### Camp hygiene and sanitation

A compliance score of 93 percent was recorded for camp hygiene and sanitation during this quarter. The Health team is monitoring cleaning and sanitation, especially in hand-washing facilities. The team is also ensuring laundry procedures are adequate to manage the peak camp residence populations.

### Vector control

Vector control compliance increased to 97 percent this quarter compared to 96 percent in the fourth quarter 2012. Improved vector surveillance techniques were introduced, with the addition of carbon dioxide to attract mosquitoes, in combination with new types of mosquito traps to complement existing surveillance equipment.

This resulted with an immediate increase in capture rates of adult mosquitoes at some sites. These new techniques are providing enhanced information that will be used to understand and communicate the risk profile for vector-borne diseases across the Project area.

## Happy Group shares serious health messages

The Project has enlisted the *Moale Oreana* (Happy Group) drama team to help impart key health messages to workers during toolbox talks.

The drama team's regular performances at the LNG Plant site are supporting educational campaigns about topics including: the importance of hand washing to prevent the spread of disease; the need for appropriate temperature control for food handling and storage; and the correct procedures for manual lifting.

As part of raising health awareness, the drama team has also delivered performances to the four LNG Plant site villages about: the criteria required for passing medicals to work on Project sites; mosquito-borne disease awareness and prevention; and health and hygiene to prevent the spread of tuberculosis and other air-borne illnesses.

The drama performances and Project educational campaigns are proving valuable with reducing the risk of potential health and hygiene impacts. They are also proving successful with raising worker awareness on promoting safety while at work.

*One of Moale Oreana's drama performances at the LNG Plant site*

### Clinical operations

Clinical operations compliance ratings remained consistent with the previous quarter at 96 percent. During this quarter, the Project medical provider's performance metrics indicated an overall improvement in diagnostics.

### Industrial hygiene

The Project's industrial hygiene compliance score remains at 95 percent. During 2013, the Project is focusing on radiation safety and respiratory requirements for all activities across Project sites.

As work progresses at the LNG Plant site and the HGCP, there is the potential for increased industrial hygiene risks, such as: exposure to welding fumes; high noise levels; confined space; hot work; and chemical exposure. To minimize these risks, the Health team is raising worker awareness and monitoring worksites.

### General illness events

There were two dengue cases reported on the Project this quarter. Investigations revealed one case was most likely contracted in one of the villages surrounding the LNG Plant site and the other case in Port Moresby.

### Medevacs and medical transfers

During the quarter, 17 medevacs were recorded. This was a decrease from the fourth quarter 2012. Three medevacs were Project work-related, nine were Project non-work-related, and five medevacs were community-related.

The number of medical transfers during this quarter was 105, compared to 130 during the fourth quarter 2012. Three transfers were provided for work-related injuries, while the remaining 102 transfers were for personal health issues.

## 7.3.3 Other strategic initiatives

In recognition of World Tuberculosis Day on March 24, the Project hosted a lunch with employees to increase awareness about tuberculosis transmission, prevention and treatment.


*A poster display at the World Tuberculosis Day lunch*

The Health team is planning for demobilization activities by assisting contractors with clinical stock management; medical equipment donation protocols to hospitals and community clinics; and the transfer and retention of medical records.

During this quarter, a workshop for Health Managers was organized for the second quarter 2013. This is the third annual health workshop facilitated by the Health team for all contractor health workers to update and discuss health issues and assist contractors to achieve alignment with the Project's health requirements. The focus of this year's workshop will be to share and document lessons learned to date by the Project and its contractors.

## 7.4 Safety management

Regrettably, two separate fatal incidents occurred during this quarter. The Project is greatly saddened by these tragic events and expresses deepest sympathies to the families and friends of the individuals involved.

The first incident involved a pedestrian who was fatally injured in Semin Village near Mendi when struck by a contractor's third party convoy escort vehicle. Police were immediately notified and attended the scene. The second incident involved a tipper truck employed by a contractor's third party supplier, which rolled into a gully at Hides Hill resulting in the fatal injury of the driver and a passenger. Incident investigations were conducted and recommendations are being implemented to minimize the risk of these types of incidents recurring. The Project continues to support contractors in their initiatives to reinforce programs dedicated to safe driving.

These events have further underlined the Project's firm resolve for all workers and contractors to promote safety consciousness at work and in the communities associated with the Project. Project workers and contractors who show a strong commitment to safety are recognized for their contributions and achievements.

At the tenth Safety, Security, Health and Environment (SSHE) leadership workshop held in March, several Project contractors were recognized for their safety performance. The Hides Gas Conditioning Plant and Hides Wellpads contractor received the annual Project Executive SSHE Award for best performing major contractor on the Project. The marine and jetty subcontractor to the LNG Plant and Marine Facilities contractor received the Subcontractor of the Year Award, which is awarded annually to the best performing subcontractor on the Project. The Upstream Infrastructure contractor received the Finishing Strong Award to commemorate its SSHE achievements during the life of the Project.

The SSHE workshop was attended by over 100 Project and contractor leaders. They addressed topics such as: SSHE focus areas for 2013; the status of contractor fatal risk mitigation plans; the application of risk tolerance reduction tools; and the safe transition from the Project's construction phase to the production phase.

## A mission for safety

The LNG Plant site's only female Flagman comes to work every day with one mission in mind – to keep her colleagues safe.

Iru Miria from Boera Village started work with the Project in 2011 as a housekeeper, but was soon given the opportunity to take on a key safety role as Flagman at the LNG Plant site.

The Flagman's job is essential for safety because they direct the operation of a crane or larger vehicle from the point where loads are attached and detached.

Iru's job involves controlling traffic around Backhoe Operator Sarvjeet Verman, whom she has been working with for over six months.

"I feel good to be working in this role. I am proud to be the only female Flagman on the site," Iru said.

Iru's next ambition is to become a Backhoe Operator with the Project.

"I want to learn how to be a Backhoe Operator because I have the confidence to learn and perform the job safely," she said.

*Iru Miria, the first female Flagman at the LNG Plant site*

A safety milestone was achieved this quarter with the 1,100th worker graduating from the Safety Champions initiative. This successful initiative continues to attract high levels of interest from workers and contractors.

Also during this quarter, the LNG Plant site celebrated one year of its Incident and Injury-Free® program, with a new workshop format aimed at empowering field supervisors to establish their own personal safety commitments to improve worker safety. Targeting individuals with the greatest capacity to directly influence workers in the field, the workshop discusses some of the practical tools supervisors can use to help improve their team's safety performance. The first workshop was well received by the participants. To date, more than 12,400 LNG Plant site workers and supervisors have graduated from the Incident and Injury-Free® program.

As the Project moves to the production phase, implementation of the workforce Risk Tolerance Reduction Strategy continues. The Strategy includes the use of existing tools and resources to address risk tolerance in a manner that is culturally appropriate, multi-lingual field communication tools to facilitate risk tolerance discussions and field team training sessions.

To support the existing Risk Tolerance training program, the Project has translated the training materials into three Papua New Guinean languages (Huli, Motu and Tok Pisin). Work is underway to also translate the materials for foreign workers.

In addition, the construction and production teams are performing detailed planning regarding the use of the Esso Highlands Limited Work Management System at production worksites. As part of this process, simple field communication tools are being developed to enhance worker understanding of higher consequence hazards that are covered by the System. To ensure worker understanding of key risks related to the production phase, the Project is also deploying a set of Life Saving Actions that outline critical rules for working in a live production environment. This will supplement the existing Life Saving Rules that focus on working in a construction environment.

### 7.4.1 Leading indicators

Participation in core safety processes has again exceeded Project targets, with Job Safety Analyses exceeding the target by 87 percent and Observations and Interactions reporting at 93 percent above target. This achievement is shown in the statistics in Figures 7.5[4] and 7.6[4]. Also during this quarter, there was a seven percent increase in near miss reporting relative to the fourth quarter 2012.

**Figure 7.5**

Number of Job Safety Analyses conducted by quarter

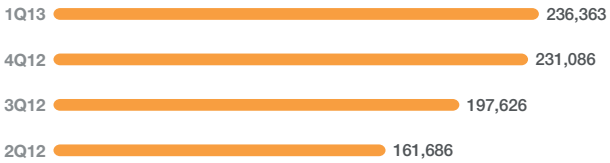
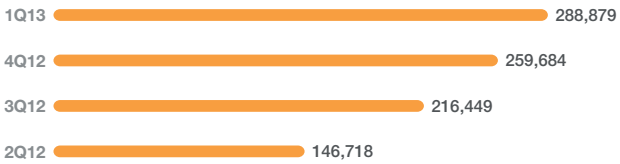



**Figure 7.6**

Number of Observations and Interactions conducted by quarter




4 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

Effective implementation of the Project's safety programs and safety improvement initiatives continues to have an impact on incident rates (as shown in Figure 7.7[4]). The Project's construction work hours are also decreasing as a result of demobilization activities at some worksites (as shown in Figure 7.8[4]).

**Figure 7.7**

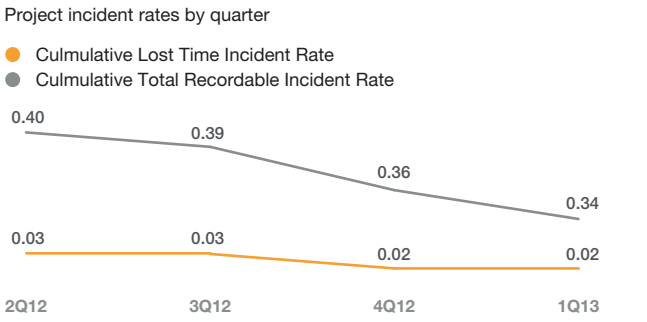
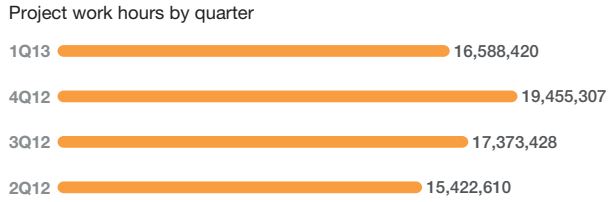



**Figure 7.8**




NOTE: Project-to-date work hours totalled 130,200,188.

## 7.5 Worker welfare and conditions

The Project is delivering high standards of worker welfare and conditions to promote a healthy work environment and meet commitments made under the Labour and Worker Conditions Management Plan and the Camp Management Plan.

### 7.5.1 Camps

The Komo Camp Facilities Management Committee and the recently formed Hides Camp Management Committee continue to provide workers with a forum to address their concerns in consultation with contractor representatives and the Project. Committee representatives provide a critical link to workers to ensure they are regularly updated with the progress of enquiries. These meetings have enabled workers' concerns to be addressed and closed within 30 days.

In January, LNG Plant site housekeepers won the first camp awards in recognition of LNG Plant site facilities workers. Project management representatives, who visited all camps, judged the awards. Workers were assessed for: safety, attendance, proactive and skillful work, clean and tidy work and a friendly and cooperative manner.

***Atwell Goins, Construction Manager, Esso Highlands Limited congratulates Edith Mea Vaburi, one of the winners of the first camp awards***

The winners were announced at an awards ceremony and each received a certificate and a 50 Kina phone card.

### 7.5.2 Labor and worker conditions

The Project continues to take a collaborative approach with communities to support and manage demobilization impacts. For example, at the LNG Plant site and in Komo, a series of demobilization workshops is being conducted with community leaders. During this quarter, the workshops identified community-wide concerns regarding demobilization activities. These concerns will be addressed through tailored community engagements and the Project's Community Development Support Plan initiatives. One such initiative is the Bright Futures training outlined in *Case Study Three – Building a bright future*.

In March, demobilization activities began at the Komo Airfield site. The Komo Airfield contractor conducted a comprehensive worker awareness campaign. The campaign included training sessions for field supervisors on key points and responses to demobilization questions, along with community awareness sessions held in cooperation with the Komo Community Issues Committee. Lessons learned from this process will be applied to future demobilization activities.

***Mavis Kusunan, Chairperson of the Papa Community Development Committee, presenting at a demobilization workshop***

*Discussing demobilization during a toolbox talk with field supervisors*

*Workers using the automatic teller machines in Hides*

Meanwhile, at the LNG Plant site, drama is being used to support the delivery of demobilization and key health and safety messages to workers.

*Drama performances on demobilization and key health and safety messages*

Also during this quarter, the Hides Gas Development Company Limited payroll Lanco began preparing for employees' wages to be deposited directly into their bank accounts. The move has been welcomed by workers and the community in the Hides region.

CS

# CASE STUDY THREE
# BUILDING A BRIGHT FUTURE

**The Project and its contractors are implementing initiatives designed to help Papua New Guinean workers build long-term employment and investment opportunities once Project construction is complete.**

One such initiative is the Papua New Guinea National Training Council-accredited Bright Future training program offered at the LNG Plant site. Bright Future training is conducted over five days and is specifically designed to help Project workers prepare for their transition from Project-related work to new opportunities. It aims to make Papua New Guinean workers aware of their own abilities and to inspire thoughts and develop realistic plans of 'where to next'. The training program focuses on helping participants develop planning and saving skills they can use in all aspects of their lives.

More than 1,800 Papua New Guinean LNG Plant workers from Boera, Papa, Lea Lea, Porebada and Port Moresby completed the Bright Future training program during the fourth quarter 2012. The training program has continued through drama performances in this quarter to remind workers of key messages, such as the need for workers to save their income for the future. Ongoing Bright Future messages continue to be delivered through worker bulletins and the *PNG LNG Plant Site Newsletter*.

Some Papua New Guinean employees are already taking advantage of employment opportunities outside of the Project, including securing longer-term roles with Project contractors.

*Some of the graduates of the Bright Future training program*

## New skills bring new opportunities

Training provided by the Project is helping open up new opportunities for demobilized Project workers. For example, former LNG Plant site workers Jason Wai and Heni Sega have secured new roles with a mining project as a result of the skills they gained from working with the PNG LNG Project.

Following approximately 18 months of working at the LNG Plant site, Jason Wai from Mt. Hagen has secured a new job as a Quality Assurance Engineer for the Wafi-Golpu Copper Gold Project in Morobe, near Lae.

"It's another exciting opportunity to work, learn and earn," Jason said.

While Jason is very happy in his new job, he will not forget his time working on the Project.

"I loved my time at the LNG Plant site. I learned a lot about quality standards and construction. It was a great learning opportunity for me," Jason said.

When asked what message Jason had for others as they decide their future in the industry, he recommended they "maintain a focus on skills development and finish every job safely, on time and with quality."

When Heni Sega from Boera Village started working at the LNG Plant site, he had a simple goal: to make money and make his parents proud. From the skills and experience he gained through working with the Project, Heni has secured a role as a heavy equipment operator at the Morobe Gold Mine. Heni said that before working with the Project he was a grade ten dropout.

"My friends were working and making money, while I was struggling as a fisherman". "It helped me a lot," Heni said. "From my hard work, I am now someone my parents can look up to".

Heni's father, Sega Ase, works at the LNG Plant site as a Safety Champion. He said he was proud of his son and grateful to the Project for the work and training opportunities it provided. Heni believes the Project has opened up future opportunities for him. "The knowledge, skills and experience you receive from the site, you can always carry with you to other jobs," he said.

*Jason Wai*

*Heni Sega*

# 08 CONFORMANCE

The Project uses verification, monitoring, assessments and audits to ensure its activities conform to environmental commitments outlined in the ESMP.

## 8.1 Verification

The Project Field Environmental team drives verification of the Project Environmental Management Plan. During the first quarter, the Field Environmental team focused on the core responsibilities of verification and monitoring, which primarily means raising field observations then collaborating with contractors on corrective actions and closing out identified issues. As part of this approach, positive field observations are highlighted to promote ongoing improvements and best practices.

Field Environmental Advisors have gained extensive experience as the Project has progressed, enabling the Field Environmental team to increase support for construction activities and share lessons learned across all Project worksites, rather than just undertaking verification activities.

## 8.2 Monitoring

Both the Field Environmental team and individual contractors undertake monitoring, which is conducted in accordance with area-specific management plans. The following sections outline results from monitoring conducted in the first quarter.

## 8.3 Assessments and audits

In addition to the Project's verification and monitoring activities, contractors conduct their own assessments and audits to comply with requirements of the ESMP and of their own site-specific Environmental Management Plans.

The Komo Airfield contractor is one example of a contractor who assesses environmental performance through weekly inspections and monthly audits. In January alone, the Komo Airfield contractor conducted 32 weekly inspections and eight audits, which covered areas such as: waste, wastewater treatment plants, hazardous goods, weeds and cultural heritage.

The report from the eighth IESC visit, conducted in October 2012, has also been published on the Project website.

Visit the Project website at
www.pnglng.com

## 8.4 Incidents, non-conformances and corrective action

### 8.4.1 Incident summary

During this quarter, 36 environmental incidents, all classified as Severity Level <0 were recorded by the Project. All but one of these incidents were related to minor hydrocarbon or chemical spills (average spill <15 litres). No environmental incidents greater than Severity Level 0 were reported during the quarter, so the Project was not required to notify the IESC or the Papua New Guinean Department of Environment and Conservation (DEC). Increased drilling activity contributed to 21 environmental near misses recorded this quarter. These related primarily to spills, but the impermeable drilling pads used were able to contain spilled materials. Investigations were undertaken during the quarter to determine and correct the causal factors of all incidents and near misses recorded. Figure 8.1[5] shows incidents classified by severity, while Figure 8.2[5] groups incidents by their cause.

**Figure 8.1**

Number of environmental incidents during the first quarter by severity level

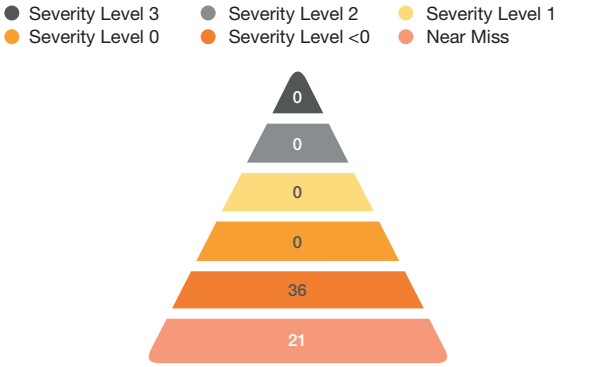
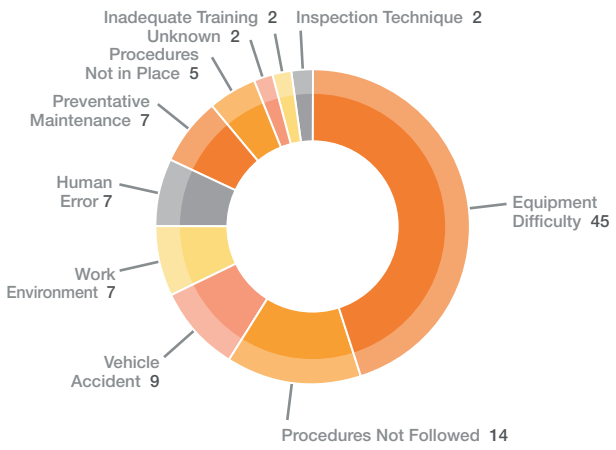



**Figure 8.2**

Percentage of environmental incidents during the first quarter by causal factor




5 Data adjustments may be reported by contractors after the Report is released, and as such conformance data may be revised in the future.

## 8.4.2 Non-conformance and field observation performance

Verification of the Project's environmental performance is conducted through measures such as non-conformances and field observations. A field observation requires intervention and/or corrective action to prevent it from becoming a non-conformance. A non-conformance is a situation inconsistent with ESMP requirements. Good environmental practices are recorded through positive field observations.

The Project recorded 41 positive field observations during this quarter. These related to: the application of management plans for waste management; spill prevention and response; and erosion and sediment control.

Also during the quarter, 149 field observations and two Severity Level I non-conformances were raised by the Project. Most field observations recorded were in relation to waste, erosion and sediment control, spill prevention and response management.

One Severity Level I non-conformance was raised for exceeding the approved ROW width, related to a contractor who cleared areas outside the standard 30-metre ROW. Corrective actions involved physically marking and re-marking worksite boundaries and a toolbox talk to reinforce that areas must only be cleared within the approved worksite boundaries.

The second Severity Level I non-conformance involved the clearing of 0.2 hectares of an old ROW alignment at Hides. Since a deviation from the old alignment had been approved by the Project, the contractor involved was not authorized to clear the old ROW alignment. Corrective actions included toolbox talks conducted with supervisors and workers. The contractor's survey team was required to remove any remaining old alignment markings and conduct physical demarcations of the ROW centerline and boundaries.

All environmental non-conformances and field observations from this quarter are outlined in Figure 8.3[5], while Figure 8.4[5] shows the closure status for non-conformances and field observations.

**Figure 8.3**

Number of non-conformances and field observations during the first quarter by severity level

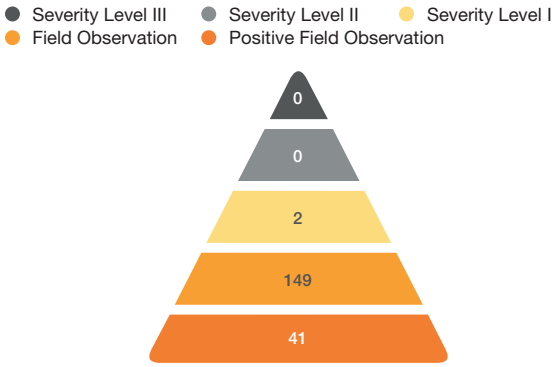
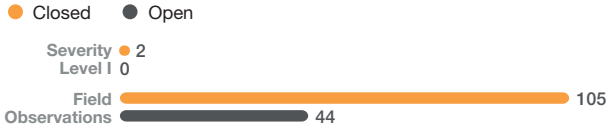



**Figure 8.4**

Number of environmental non-conformances and field observations during the first quarter by closure status



# 09 POLLUTION PREVENTION AND ABATEMENT

The Project actively encourages recycling and implements measures to prevent and/or minimize pollution at every worksite.

## 9.1 Air emissions

Sources of air emissions across the Project include dust from exposed earthworks and vehicle movements, exhaust gases from equipment and incinerators and greenhouse gas emissions from direct fuel combustion.

In Komo, water trucks were used to control dust along the road between Timalia Quarry and Komo Airfield this quarter. Water abstraction points at both the quarry and the Komo Airfield meant the water trucks could re-load at each end of the road. On some occasions, when the dedicated water trucks were unavailable because of maintenance, tipper trucks were filled with water and utilized to help suppress dust.

The Drilling organization began using their own water trucks to supply camps and for other operational needs, including dust suppression, when required. Drilling cuttings, which can be a potential source of dust, are wet down before transportation to the Hides Waste Management Facility for disposal.

At the HGCP site, five temporary construction incinerators operate day and night to incinerate perishable and non-regulated waste. Routine smoke observations early in the quarter identified two units with combustion efficiency issues. The two units were taken off-line to repair the refractory lining and associated electrical problems. When the HGCP's permanent incinerator begins operation, the temporary construction incinerators will be shut-down or used for specialized or overflow waste.

The Project's greenhouse gas emissions rose this quarter due to the increase in drilling operations and the offshore Fiber Optic Cable installation.

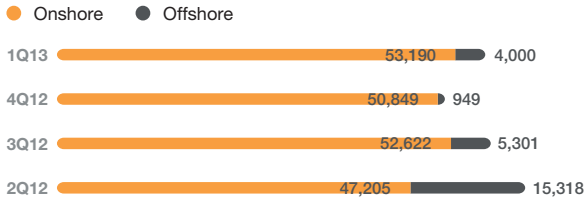
Greenhouse gas emissions for the Project are calculated on direct fuel use only. Indirect sources, such as purchased electricity, are not included. During the first quarter, the Project's onshore and aviation fuel use equated to a greenhouse gas emissions value of 53,190 tonnes of carbon dioxide equivalent, with marine operations contributing an additional 4,000 tonnes of carbon dioxide equivalent.

Figure 9.1 shows Project-related greenhouse gas emissions.

Air quality measurements continue at four monitoring locations throughout the LNG Plant site and all remain well below the criteria adopted for the Project.

**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, 2012.

## 9.2 Noise and vibration

Although not required by the Project Environment Permit, the Project monitors noise associated with temporary construction activities.

For example, at the HGCP site, noise monitoring was conducted at 20 locations during March. Noise and vibration considerations were also addressed before blasting a borrow pit near Kobalu. As part of a pre-blast condition assessment, the location of sensitive receptors within a 400-metre radius were identified. Community awareness sessions were also conducted to communicate what noise communities could expect from blasting activities.

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

## 9.3 Waste management

Waste management for the Project involves recording waste volumes and disposal methods. Most of the waste generated this quarter was from waste oil, as illustrated in Figure 9.2. Solid waste disposal methods used by the Project are shown in Figure 9.3.

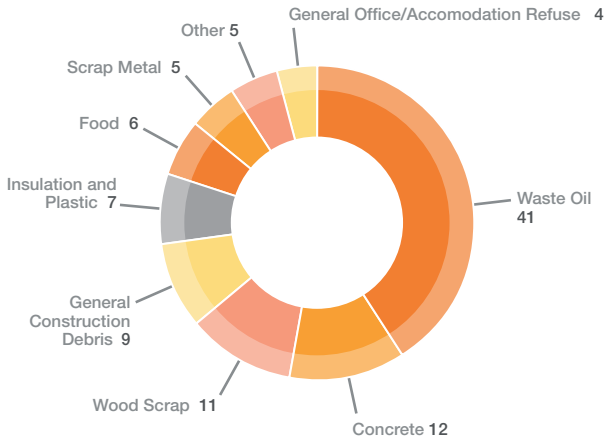
The implementation of a Project-wide waste metric in 2012, based on kilograms per person, is providing an accurate monthly measure of the Project's waste management performance. The Project is using this metric to support and encourage efforts to reduce landfill waste through implementing the waste management hierarchy of *avoid, reduce and reuse*.

At the Hides Waste Management Facility, the second of the two landfill cells was completed with the installation of two liners. Further waste processing equipment, including the tire debeader, shredder, drum crusher and weighbridge, was delivered to complete the processing facility. Commissioning of the high-temperature incinerator also commenced.

*Hides Waste Management Facility showing completed landfill cells*

Figure 9.2

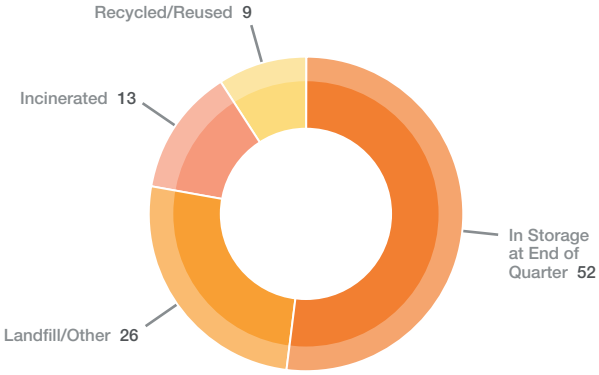
Percentage of solid waste during the first quarter by type




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

Figure 9.3

Percentage of waste during the first quarter by disposal method




The Hides Gas Conditioning Plant and Hides Wellpads contractor is preparing stockpiled waste in temporary waste processing areas for transfer to the Hides Waste Management Facility.

Also during the quarter, the Drilling organization commissioned a cutting processing unit to remove residual drilling fluid from drill cuttings prior to their disposal at the Hides Waste Management Facility. Fluid recovered from the drill cuttings is reused to make new drilling fluid. Water used in the treatment process is also reused for worksite needs such as dust suppression.

Waste from onshore pipeline activities continues to be processed at waste management facilities in strategic locations along the pipeline, with the primary facility at Moro Camp 5.

This quarter, a dedicated and bunded waste oil storage area was established at Komo Airfield to store waste oil drums for transfer to a sugar factory for reuse in firing furnaces. Construction of the airstrip at Komo generated empty drums that could not be recycled or reused through normal channels as they contained remnant bitumen. Many alternative waste disposal options, including reuse, were considered through a formal risk assessment. The best solution was considered to be shipping the flattened drums overseas as scrap metal through an Australian recycler. The first shipment, consisting of 11 shipping containers with 7,130 crushed bitumen drums, was sent during this quarter.

*Bitumen drums prior to crushing*

*Crushed bitumen drums ready for shipping to recyclers*

At the LNG Plant, the constructed sanitary landfill is operational, along with two biodigester units and three incinerators that are treating food waste from camps. Treated compost from the biodigester units is reused within the LNG Plant site as fertilizer. Wastewater treatment facilities were desludged at the site during the quarter, creating approximately 235 tonnes of dewatered sludge. The sludge was sent to the spoil area to be mixed with soil and used as conditioner.

During this quarter, the Project began implementing the outcomes of a waste management workshop conducted in the fourth quarter 2012. For example, a risk assessment was conducted on the potential disposal of incinerator ash, with support from a specialist waste management advisor. As a result of the risk assessment, the Project will bury incinerator ash within Project sites. The ash will be sent for leachate analysis before being integrated into the subsoil during reinstatement of Project worksites. Also during this quarter, two Papua New Guinea-based waste management companies received permits for the international shipping of hazardous waste. The permits enable the responsible recycling of hazardous wastes at approved facilities, instead of using landfill. Scrap metals and plastics, such as pipeline end caps, were segregated in recycle categories, packaged for offsite transport and then sent to the Papua New Guinean or affiliated waste management companies for appropriate shipment and recycling.

***Recyclable waste segregated and packaged for transport and disposal***


***Segregation of waste for recycling***

### 9.3.1 Wastewater

Wastewater treatment plants are routinely monitored and treatment systems modified to maintain treated wastewater quality. During the past six months, the Project has invested in on-site capabilities for testing water quality parameters to improve response times to treatment plant operations.

For example, in Hides routine monitoring this quarter indicated that the main wastewater treatment plant was approaching capacity. Mitigation actions included upgrading the discharge and installing a second discharge pump and irrigation line.

The Onshore Pipeline contractor conducted desludging of wastewater treatment plants at the Gobe Camp 3, Tamadigi Camp 4, Moro Camp 5 and Paua Camp 6 during the quarter. Sludge from the systems was dried and incinerated. Aeration was increased in Paua Camp 6 to reduce the amount of froth generated.

The LNG Plant and Marine Facilities Contractor wastewater monitoring results complied with the discharge criteria, except for a fecal coliform count at one wastewater treatment plant at the LNG Plant Camp A in February. The increased fecal coliform count was due to an accumulation of excess sludge in the membrane bioreactor chamber of the wastewater treatment plant. Excess sludge was removed with a vacuum truck and sent to an on-site treatment plant for dewatering. Chemical cleaning was also carried out on the membrane bioreactor chamber filters. Follow-up laboratory results showed values returned to acceptable levels.

## 9.4 Hazardous materials

The Project avoids using hazardous materials where possible, particularly those subject to international bans or phase-outs. No materials subject to bans or phase-outs were reported on any Project site this quarter.

## 9.5 Spill prevention and response

The hydrocarbon spill rate recorded in this quarter was lower than the spill rate recorded in the previous quarter, providing the lowest spill rate since substantial works began in January 2010.

Spill kit stocks are replenished monthly at the HGCP site, with empty and partially stocked kits stored at the waste recycling area to either be restocked or removed for disposal of waste contents. Routine inspections of spill kits continue at all HGCP worksites, while a complete spill kit register is kept on record within the site office. Temporary spill trays have also been replaced with new plastic spill trays at the site.

Ongoing spill response training and drills continue at Project sites, with the Onshore Pipeline contractor conducting a desktop exercise for the upcoming Angore Access Road scope of works.

*Spill response drill debrief*

The contractor also conducted a full simulated spill response drill at Homa Quarry. The drill simulated a spill scenario of 400 litres of diesel. The simulation was intended to allow teams to test their readiness for incident response.

In February, a damaged hose on an offshore pipeline cable plough resulted in 68 litres of leaked hydraulic fluid. The hydraulic fluid used was a type that easily dispersed in water to minimize environmental damage. The damaged hose was repaired and an incident report provided to the Project.

The fourth oil spill preparedness audit was conducted at the LNG Plant site. Three minor observations were closed within two weeks.

## 9.6 Dredging and offshore trenching

Installation of the offshore telecommunications Fiber Optic Cable was completed during the quarter. A Remotely Operated Vehicle was used to verify the underwater installation was successful.

# 10 BIODIVERSITY

The Project is implementing mitigation and management measures to help protect Papua New Guinea's rich biodiversity. These measures include the effective management of biodiversity resources and ongoing monitoring of biodiversity activities across all work areas.

## 10.1 Ecological management

Training continues to be an important element of biodiversity management. During toolbox talks this quarter, the Onshore Pipeline contractor emphasized the Project's wildlife management policy (no hunting, no fishing, and no collection of flora or fauna), giving way to animals crossing roads, and the need to work within demarcated limits. Newly recruited Field Environmental Advisors were provided with training about the Project's environmental requirements.

The Onshore Pipeline contractor continues to reinforce best practice behaviors for pipeline activities in the sensitive Lake Kutubu Wildlife Management Area (WMA).

Following concerns raised by local communities in late December 2012, an investigation was conducted by the DEC into the cause of fish deaths in Lake Kutubu. Preliminary results indicate that the concerns are not Project-related, but rather due to naturally-occurring low oxygen levels in the Lake and possibly both internal and external parasites. Final results from the DEC's investigation are expected during the second quarter 2013. The Project shares the concerns of local communities about the ongoing health of Lake Kutubu and continues, as always, to practice the safest possible construction methods in the region.

***Kick-off meeting on environmental sensitivities within the ROW prior to clearing and grading***

The Project is reinforcing Environmental Management Plan requirements through site communications placed on notice boards and in common areas. For example, this quarter communications focused on the no fishing requirement on Project sites and raising environmental awareness at worksites for the Hides Ridge and along the Wellpad Access Road.

Project staff members are always watchful for native fauna and flora, and daily inspections are made to check for animals that may be stranded in the onshore pipeline trench.

During this quarter, an Ornate Fruit Dove *Ptilinopus ornatus* was released back to the wild after having been found on the ground at Wellpad E by a member of the Hides Gas Conditioning Plant and Hides Wellpads contractor team. In addition, an unknown species of python was captured and released from the worksite at Kilometre Point 73.

***Ornate Fruit Dove found at Wellpad E***

Pre-construction surveyors found the odd-looking Pitcher Plant *Nepenthes* spp. on the Hides Spineline ROW.

Onshore pipeline work remained within the permitted workspace this quarter, with the exception of some sidecast material falling outside the workspace at four locations.

There were a number of sightings of marine mammals and turtles during this quarter. The LNG Plant and Marine Facilities contractor observed one New Guinea Snapping Turtle *Elseya novaeguineae* near the LNG jetty. Along the offshore pipeline route in the Gulf of Papua, the Offshore Pipeline contractor noted: one pod of six Common Dolphins *Delphinus* spp.; one pod of 40 Bottlenose Dolphins *Tursiops truncatus* and a second pod of two; a Green Turtle *Chelonia mydas*; and another unidentified turtle.

## 10.2 Quarantine management

Contractors have been working diligently to reduce the level of re-fumigation required by the National Agriculture Quarantine and Inspection Authority on cargo entering Papua New Guinea. This effort has resulted in a reduction of re-fumigation levels to three percent of inspected items. The Project continues to work with the National Agriculture Quarantine and Inspection Authority to further improve re-fumigation levels and provide data for improved risk analysis of imports and clearance processes.

## A predatory pitcher

The remarkable Pitcher Plant *Nepenthes* spp. is one of Papua New Guinea's most resourceful plants, having adapted to living in nutrient poor environments by eating animals.

The plants use their attractive colors, sugary nectar and sweet smells to lure insects and other small prey into a cavity full of liquid known as a pitfall trap. Once inside, waxy sides and downward pointing hairs – as well as the plant's 'lid' – make it difficult for prey to climb out. The prey falls into the liquid held in the bottom of the plant and drowns. The plant then uses acids in the liquid to digest the animals, while glands in the plant absorb the nutrients. There are over 100 species of Pitcher Plants in the tropics, with larger species able to digest frogs, mice and lizards.

*Pitcher Plant found on the Hides Spineline ROW*

## 10.3 Weed, plant pathogen and pest management

Weed inspections occurred at worksites including the Komo Airfield, the Hides Waste Management Area, along the Wellpad Access Road batters, at Wellpads D and G, and along the main onshore pipeline ROW during this quarter. Random inspections of vehicles were undertaken to ensure vehicles were not being decorated with plants that have the potential to spread weeds.

A number of weeds were identified at the LNG Plant site, including the Priority 1 weed Buffel Grass *Cenchrus ciliaris* and non-priority weeds Forest Blue Grass *Bothriochloa ewartiana*, Kangaroo Grass *Themeda trianda*, Guinea Grass *Panicum maximus* and Silver Cock's Comb *Celasea argentia*. All of these weeds were cleared by cutting. Although the Hides Gas Conditioning Plant and Hides Wellpads contractor did not report seeing any priority weeds on-site, they implemented control measures for other weeds. No new Priority 1 weed outbreaks were noted at onshore pipeline worksites. Weeds previously noted on the Homa Ridge Access Road were chemically treated, as were the weeds Elephant Grass *Cenchrus purpureum* and Molasses Grass *Melinis minutiflora* at Homa Quarry 2. At Komo Airfield, chemical control was used on the Priority 1 weed Singapore Daisy *Tithonia diversifolia*.

Training continues across the Project to enable worker identification and management of weeds. For example, the Onshore Pipeline contractor provided training to 80 Papua New Guinean workers and eight expatriate workers during the quarter. The compulsory Hides Ridge Environmental Induction was also given to new Project workers who had access to Hides Ridge. The Hides Gas Conditioning Plant and Hides Wellpads contractor has developed a toolbox training program for workers who will travel along the Wellpad Access Road, while the Onshore Pipeline contractor is providing general awareness training about weed management and control.

***Weed identification and management training for Onshore Pipeline contractor workers***

The Hides Permanent Vehicle Washdown Facility (fleet wash station) became operational at Homa Quarry 2 this quarter and will help minimize the risk of vehicles transporting weeds to the Homa Ridge. Washdown Facility operators were trained to complete weekly and monthly environmental maintenance checklists, in weed identification and in general vehicle inspection and washdown procedures. The Project's Field Environmental team is working closely with Washdown Facility operators.

A temporary washdown facility is being used by the Hides Gas Conditioning Plant and Hides Wellpads contractor. Meanwhile at Komo Airfield, 17 washdown certificates were issued to vehicles and heavy equipment this quarter.

As a result of plant pathogen management activities, the Project reported no outbreaks of dieback at any worksite this quarter.

*A low loader under inspection at the Hides Permanent Vehicle Washdown Facility at Homa Quarry 2*

## 10.4 Induced access

The Project has not opened any new access roads for onshore pipeline activities. Security checkpoints are being maintained at the main junction where onshore pipeline access roads link to existing community roads. An assessment by the Project on the efficiency of access controls at Homa Ridge showed that only Project-related traffic and the Government's law enforcement vehicles were using the Homa Ridge Access Road during the quarter.

The Production team has reviewed ongoing requirements for road access to key infrastructure along the onshore pipeline ROW. The review indicated a number of temporary access roads built by the Onshore Pipeline contractor would need to be retained. The Project is considering long-term measures to control access along these roads.

The Onshore Pipeline contractor controls admittance to the Hides Wellpad Access Road through worker inductions and site identification cards.

## 10.5 Reinstatement

The Onshore Pipeline contractor undertook reinstatement activities on the Hides Wellpad Access Road, between Wellpads D and G. Vegetation regrowth on the Wellpad Access Road was less than expected, leading to the development of alternative planting methods for the dry season.

Reinstatement of the ROW by the Onshore Pipeline contractor generally continued in a northward direction, with the terrain being contoured, subsoil graded, topsoil spread and permanent erosion control measures installed. Reinstatement was also undertaken south of the Kutubu main line valve station at Kilometre Point 107 and on the Kutubu Spurline towards the Kutubu Central Processing Facility. The Onshore Pipeline team is monitoring final reinstatement, permanent erosion control and natural regeneration of the ROW.

*Reinstatement and installation of erosion control berms on the Kutubu Spurline from the Kutubu Central Processing Facility bypass road*

As construction nears completion at Komo Airfield, the contractor is focusing on reinstatement activities. Reinstatement of almost 10 hectares of land occurred by the end of the first quarter, including the western slopes of the Northern Diversion, Zone D and drainage lines on slopes north of Zone E and south-west of Zone B. The provision of stock for reinstatement works from the Komo Main Camp and Timalia nurseries continued throughout this quarter.

*A reinstated area following topsoil spreading, seeding and application of turf reinforcement mat*

***A toolbox talk highlighting the importance of topsoil preservation at Kilometre Point 52***

The importance of topsoil management and reinstatement was stressed through training provided to onshore pipeline workers during daily toolbox talks this quarter.

## 10.6 Biodiversity Strategy

The Project has made significant progress across all components of the biodiversity offset program. For example, meetings were held with the DEC and other key stakeholders to evaluate options for protected area planning in the Kikori River Basin and for the support needed for Papua New Guinea's National Biodiversity Strategy and Action Plan.

During this quarter, an agreement was signed with the Mama Graun Conservation Trust Fund and the University of Papua New Guinea for the Enhancing Conservation Capacity Program. Further details about this agreement are provided in the *Case Study Four – Building conservation capacity*.

The Project is also developing, in partnership with Oil Search Limited, the Lake Kutubu WMA Enhancement Program to strengthen operation of the Lake Kutubu WMA. During this quarter, initial work plans were drafted.

To enhance existing protected areas, the Project is consulting with community stakeholders and evaluating options for a resource use management program in the Lower Kikori region.

CS

# CASE STUDY FOUR
# BUILDING CONSERVATION CAPACITY

## The Project is working in partnership with Papua New Guinea's communities, Government and private sector organizations to enhance the nation's capacity for sustainable conservation management.

As part of the Project's Biodiversity Offset Delivery Plan, Esso Highlands Limited has signed an agreement with non-government organization Mama Graun Conservation Trust Fund to finance a conservation training program through the University of Papua New Guinea. The agreement involves the Trust Fund implementing a new Enhancing Conservation Capacity Program, in partnership with the University and other Papua New Guinean non-government organizations.


*Peter Graham, Managing Director, Esso Highlands Limited, signing the agreement with Leo Bualia, Executive Director, Mama Graun Conservation Trust Fund with Dr. Jane Mogina, Biodiversity Advisor, Esso Highlands Limited*

The Program has three key components: a Conservation Management Course; scholarships; and work placements.

The new Conservation Management Course will be offered at Postgraduate Diploma and Masters levels through the University of Papua New Guinea.

The Course is designed to benefit the practice of biodiversity conservation in Papua New Guinea by providing suitably skilled practitioners. It is based on educational material developed as part of the Strengthening Conservation Capacity Program – an international initiative for stakeholders to collaborate on strengthening capacity in conservation management.

Significant contributions have been made to the eight modules of the Strengthening Conservation Capacity Program by the: John D. and Catherine T. MacArthur Foundation; University of Papua New Guinea; World Wildlife Fund; Nature Conservancy; Foundation for People and Community Development; Bismarck-Ramu Group; Partners with Melanesians; Research and Conservation Foundation of Papua New Guinea; and Wildlife Conservation Society.


*At the signing of the Enhancing Conservation Capacity Program agreement*

*From left to right: Dr. John Duguman, Senior Lecturer, University of Papua New Guinea; Peter Graham, Managing Director, Esso Highlands Limited; Dr. Tyler Colberg, Environmental and Regulatory Supervisor, Esso Highlands Limited; Dr. Jane Mogina, Biodiversity Advisor, Esso Highlands Limited; Prof. Frank Griffin, Executive Dean – School of Natural and Physical Sciences, University of Papua New Guinea; and Leo Bualia, Executive Director, Mama Graun Conservation Trust Fund*

**The eight modules of the Strengthening Conservation Capacity Program**

CS

# CASE STUDY FOUR
# BUILDING CONSERVATION CAPACITY

Competitive scholarships will be offered for the Conservation Management Course, along with work placements within conservation organizations for course graduates. This will allow participants to gain valuable on-the-ground experience, as well as mentoring from technical experts.

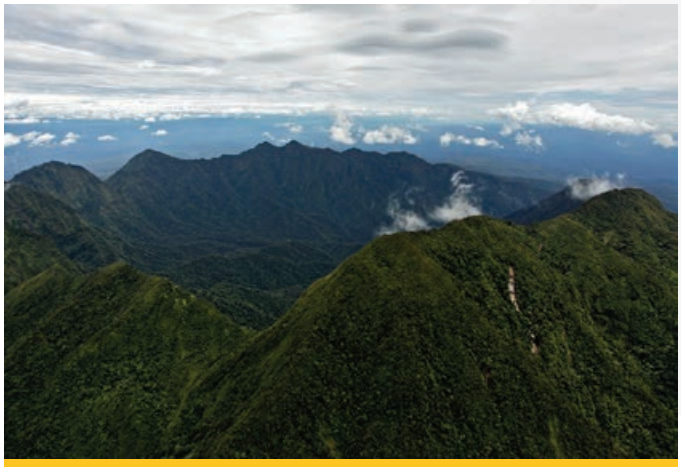
The partnership with the Mama Graun Conservation Trust Fund and non-government organizations is a key element of the Biodiversity Offset Delivery Plan, which consists of five components:

- Protected Area Planning – Involves working with the DEC to develop a protected area system for the Kikori River Basin.
- National Biodiversity Strategy and Action Plan – Supports the DEC with enhancing the national plan.
- Conservation Capacity Program – Builds skills for conservation management including funding for the new university course.
- Existing Protected Areas – Strengthens the operations of existing protected areas in the Upstream Project area.
- New Protected Areas – Establishes new community-based protected areas in the Upstream Project area.

Each of these components involves close partnerships with communities, Government and private organizations to deliver sustainable conservation outcomes.

Peter Graham, Managing Director, Esso Highlands Limited said the university training was a vital part of the overall Biodiversity Offset Delivery Plan because it would deliver skilled professionals to manage conservation programs into the future.

The Conservation Capacity Program component will also provide specific communities and community-based organizations with the knowledge and skills to effectively participate in conservation activities. This will be achieved by adapting some of the course modules for community-based organizations and offering this training to them as certified courses. The certified training courses will be conducted in the provinces, bringing the training to local communities.



*Mount Bosavi area © Ulla Lohmann*

# 11 RESOURCE MANAGEMENT

The Project is sustainably managing the use of resources, such as quarry materials, timber, water and soils, to help preserve their social, economic and cultural value to the people of Papua New Guinea.

## 11.1 Water management

### 11.1.1 Usage

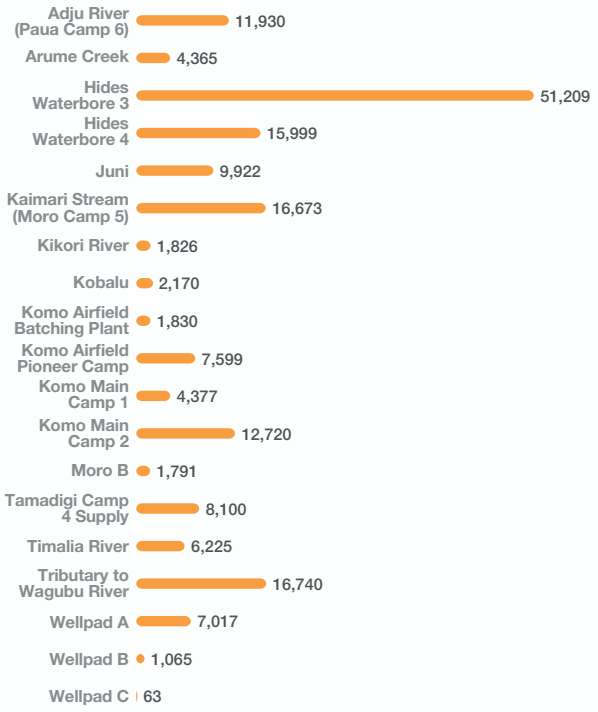
Water is used by the Project for drinking, domestic camp needs, dust suppression and construction activities. During the first quarter, an estimated 167,149 kilolitres of freshwater was extracted from ground and surface water sources. At the LNG Plant site, 640,097 kilolitres of seawater was extracted for the generation of freshwater through desalination and for hydrotesting of the LNG tanks.

Water extraction volumes remain within permitted limits, with no additional water extraction permits obtained during this quarter.

The volume of water used by each extraction source is illustrated in Figure 11.1[6]. Figure 11.2[6] shows use by water type.

**Figure 11.1**

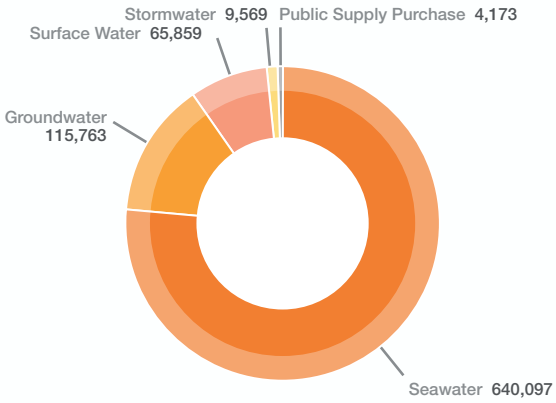
Volume (kilolitres) of water used during the first quarter by extraction source




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 first quarter by type




### 11.1.2 Quality

Monitoring of the quality of surface waters, groundwater and seawater surrounding Project activities continued, with the aim of detecting any changes that result in a potential environmental impact.

Baseline surface water sampling to the north-east of Hides Ridge was initiated in the fourth quarter 2012 and completed during this quarter. The baseline sampling aimed to define pre-existing conditions prior to drilling operations. Twenty-four sampling sites were established in water bodies predicted to be potential receiving environments during the planned drilling operations. Samples extracted from these sites were tested in-situ for physical parameters and then sent to an Australian accredited laboratory for testing of other parameters, including inorganics, microbiological content, metals and organics. Results will be kept for comparison with future sampling events.

*Water sampling in a watercourse near the Awatangi Quarry*

6 Water usage adjustments may be reported by contractors after the Report is released.

Onshore pipeline construction activities, such as welding, coating, trenching, lowering and backfill continue within the Lake Kutubu WMA. Water samples are collected and tested frequently in this area, while stream crossings traversed by the ROW northward to Kilometre Point 60 are monitored for physical parameters related to stream health. As construction activities move along the ROW, water quality monitoring is also conducted in creeks that cross the ROW work areas. Monitoring is conducted before ground disturbance to establish a baseline level and then, after temporary waterway crossings are installed, to determine any variation in levels.

Particular attention was paid to monitoring and sampling of watercourses in close proximity to the horizontal directional drilling activities at Kilometre Points 89 to 90 this quarter. During these drilling operations, drilling mud was observed to be seeping into several underground streams, which flow from the Kilometre Points 89 to 90 ridges and eventually into the Kaimari River. Sediment control measures were immediately implemented and a robust water quality monitoring program undertaken during drilling operations. As a result of this mitigation work, turbidity of the Kaimari River remained within the levels of natural variation.

At the HGCP site, some areas were unable to be sampled due to insufficient water run-off. Surface water sampling locations were expanded to reflect the change in Project activity in this area. Baseline sampling in these locations included Pangube Creek at the Tagari Access Road worksite and creeks at the Angore Access Road. Results of this sampling were recorded in the Project's water quality database.

Water monitoring at the Komo Airfield showed elevated levels of turbidity in some locations, particularly when sampling after high levels of rainfall and from areas with significant earthworks. The Project continues to deploy extensive erosion prevention and sediment control measures at this site. Meanwhile, at the LNG Plant site, sediment pond water monitoring in March recorded elevated turbidity due to high rainfall, along with the impact of dewatering activities at Trains 1 and 2 and in the utilities areas. However, a comparison made against baseline levels found the discharge for all sediment ponds was well below the Project's baseline levels for measuring turbidity.

Surface water quality monitoring, both upstream and downstream of the LNG Plant site, was conducted this quarter to assess pH, temperature, dissolved oxygen, turbidity, electrical conductivity and visible oil levels. Results for both the upstream and downstream areas were similar – demonstrating no measureable impacts from the LNG Plant site stormwater.

Commissioning activities, including hydrotesting, continued at the LNG Plant site during this quarter. Due to the large size of the LNG tanks, seawater was used for hydrotesting instead of the usual treated wastewater or desalinated water. Because of this, a biocide was added to the seawater to help protect the tank structures.

## Environmental team brings local expertise

A team of Esso Highlands Limited water advisors from Kulu Village, Pupa Village and Koroba District are using their local expertise to conduct environmental monitoring of Project activities.

Field Environmental Advisors Andrew Agiru and Rebecca Lovi are applying their knowledge of the local geography, including creeks and landscape formations, to collect water samples near Project drilling sites for review. They supervise a team of Field Environmental Assistants, as well as Waste Stewards who manage waste requirements such as waste segregation and pre-treatment on Project drilling sites.

The team includes local clan members, who bring to the Project ancestral knowledge of local streams and their importance to the communities. Often the streams form clan boundaries, and the Project's samplers are able to access areas easily because of their blood relationship to the clans.

Trained by the Project to comply with requirements of the ESMP, and the Drilling Environmental Management Plan; Andrew, Rebecca and their team are proving invaluable with enabling rapid and effective sampling and monitoring of surface waters, stormwater, processed water, wastewater and bore water around drilling sites.

As part of their work, the team also interacts with local communities to educate them about the importance of environmental sampling and monitoring activities.

*The team of water advisors led by Andrew Agiru and Rebecca Lovi*

*From left to right (back row): John Tamita,Hokaria Goa and Saba Hibulu, Waste Stewards; John Dinago, Environmental Driver; and Wini Elara, Waste Steward. From left to right (front row): Sally Ongai, Environmental Driver; and Andrew Katia, Field Environmental Assistant.*

*Team members not pictured: Purawi Male and Hengebe Payawe, Waste Stewards; Nicky Adali, Waste Coordinator; Thomas Mandika, Field Environmental Assistant; and Andrew Agiru and Rebecca Lovi, Field Environmental Advisors.*

Monitoring is being conducted to detect any remnant biocide discharge from the tanks as the hydrotest water is released into onsite sedimentation ponds.

Sampling of the microbiology of streams and rivers proposed as hydrotest water abstraction points was undertaken in 2012, with the results published this quarter.

The results showed that water sources used for hydrotesting did not require chemical dosing to meet industry-accepted microbial induced corrosion criteria, with the exception of two locations. Of these, the water source at one location, near Gobe, had already been used for hydrotesting (without the addition of chemicals) while alternative water sources were being investigated at the other location, near Dagia. By the end of this quarter, hydrotesting was completed for over 189 kilometres of the 294-kilometre main onshore pipeline.

## 11.2 Raw materials

All Project resources, such as quarry materials, timber, water and soils, are used sustainably, with aggregate and timber sourced through Project-approved local suppliers or from a reputable external source.

During this quarter, the Onshore Pipeline contractor completed geotechnical investigations at Awatangi Quarry 2 and completed a quarry management plan before opening the quarry for Project use.

At the HGCP site, all raw materials were obtained from existing quarries, with no new quarries opened during the quarter.

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 first quarter**

| Area/quarry name | Volumes extracted (cubic metres) |
|---|---|
| LNG Plant site | 110,087 |
| Hides | 30,589 |
| Komo | 178,218 |
| Onshore Pipeline | 297,645 |

During this quarter, 20 cubic metres of timber was also purchased for Project use.

## 11.3 Erosion and sediment control

As onshore pipeline activities continue to move north into volcanic soils with steep terrain, significant measures are needed to manage erosion and sediment control.

After tree felling and prior to clear-and-grade activities, a walkthrough is conducted by a multidisciplinary team of engineers and environmental specialists to review site mitigation measures. Mitigation planning includes measures to reduce erosion, sedimentation and potential landslip. It incorporates the location of appropriately sized spoil stockpiles; the use of sidecasting where unavoidable; the identification of sinkholes for spoil disposal rather than stockpiling; and the installation of sediment barriers along riverbanks where practical.

### Traditional and modern techniques enhance soil erosion control

During construction of a running track for the main pipeline at Hides, a number of challenges were faced in protecting streams within worksites from erosion and sedimentation. To help manage these challenges, the Onshore Pipeline contractor hired ten local workers to combine their knowledge of local materials and traditional techniques with engineering best practices.

The result was a mix of both traditional and modern practices including '*huli*' style fence barriers, hay bales, jute matting, standard silt traps, and check (rock dams). This combined approach has reduced sediments reaching local streams by up to 90 percent.

*A traditional method of sediment control*

*A more modern method using hay bale rolls*

*Onshore Pipeline contractor Erosion and Sediment Control team*

The Project is using lessons learned from the Homa Ridge Access Road construction to effectively manage erosion and sediment control in this area.

Ongoing erosion and sediment control improvements are being conducted at the HGCP site. Coconut coir silt control logs were installed at selected locations during the quarter to trial their effectiveness to control sediment and erosion.

The site Erosion and Sediment Control team also conducted de-weeding and maintenance of silt fences and minor drainage structures; along with the clean up of wastewater treatment polishing dams, as well as installing sediment fencing along the main wastewater treatment diffuser field.

The Komo Airfield contractor continues to focus on erosion prevention at the source, as well as standard sediment mitigation measures. Prevention at the source involves techniques implemented by the construction crews to reduce erosion. These include: compacting fill material and spoil stockpiles; and installing slope breakers and drains to channel surface run-off to a particular point. Mitigation measures include constructing silt fences and sediment ponds and the use of specially selected Floc Logs to enhance sediment retention at the site.

## 11.4 Acid sulfate soils

At the LNG Plant site, pH monitoring of water collected in the feed gas pipeline trench was conducted early in the quarter and ceased once the trench was backfilled. The results showed the pH was slightly alkaline due to the natural presence of coral rocks; therefore, there was no concern with regard to acid sulfate soils in the area.

# 12 CULTURAL HERITAGE

The rich cultural heritage resources of Papua New Guinea are well recognized by the Project and activities are managed in such a way as to ensure the protection of these resources. At this stage of construction, activities are focused on the protection of known cultural heritage sites and implementation of the Chance Finds Protocol.

To protect and avoid impacts to cultural heritage sites this quarter, the Onshore Pipeline contractor worked within a reduced ROW footprint between Kilometre Points 64 and 65.

***Clearing and grading activities along the reduced ROW width between Kilometre Points 64 and 65***

Since ground disturbance activities present the greatest potential for chance finds, the Onshore Pipeline contractor conducted daily cultural heritage 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.

Cultural heritage training continues for workers, with the Onshore Pipeline contractor conducting training on the Chance Finds Protocol and cultural heritage sensitivities identified during pre-construction surveys. Awareness training is also provided to new employees about the prohibition of disturbance to cultural heritage features.

An archaeologist was brought to the Hides Spineline ROW during this quarter to re-assess the site ahead of more earth grading works by the Onshore Pipeline contractor.

Also during this quarter, more than 1,400 artifacts recovered from previous salvage operations at the HGCP were sent to Monash University, Australia, for analysis. Another six charcoal samples from salvage activities at an onshore pipeline site were sent to Waikato University, New Zealand for radio carbon dating.

## 12.1 Pre-construction surveys

The Project conducts pre-construction surveys before construction activities commence to identify sites that may require preservation, or mitigation measures to be developed in partnership with local landowners. Two individual burial sites at Kilometre Point 94 were protected and monitored this quarter.

## 12.2 Salvage excavations

No salvage excavations were undertaken during this quarter.

## 12.3 Incidents of disturbance to known cultural heritage sites

No incidents of Project-related disturbance to known cultural heritage sites were recorded this quarter.

## 12.4 Chance finds

Inspections to identify the presence of chance finds revealed two artifacts during this quarter. The first was an axe adze found at the northern end of the Komo Airfield runway. The axe adze is considered to be of medium significance based on its use in festivals and for cutting and trading. The axe adze was found in a soil stockpile, so the context from its original location had been lost and searches did not reveal additional artifacts at the locality. The second find was a sacred site located at Japalia Creek near Angore. The site contained an image of a face carved on the light brown clay soil and painted red. It also contained an item made from hard material (bone or wood), painted red and black and bound together by bush vines with moss. This site is used for talking to spirits for protection against enemies.

***Axe adze found at the Komo Airfield***

# 13 STAKEHOLDER ENGAGEMENT

By proactively engaging with Papua New Guinean communities, the Project and its contractors aim to build and maintain relationships based on trust, collaboration and mutual understanding.

## 13.1 Government

The Project is maintaining its commitment to effectively engage with all levels of government, community members and other stakeholders to keep them informed of Project activities.

### 13.1.1 People processes

Government policy changes and sustained process improvements are enabling more efficient visa processing times. For example, Papua New Guinea's Immigration and Citizenship Service Authority has approved 191 Restricted Employment Facility visas since they were introduced in the third quarter 2012. To date, 95 percent of the Project's total non-national workforce has been mobilized, with over 14,000 work permits and visas approved. Regular consultation is continuing between Government agencies, the Project and contractors.

### 13.1.2 Materials and tax

The Goods and Services Tax 2009 – 2011 Audit was completed this quarter with no retrospective Goods and Services Tax or penalties for contractor goods imported for the Project.

### 13.1.3 Infrastructure and Government support

The Project has committed to providing funding to Papua New Guinea's Department of Works for further repairs and maintenance to sections of the Highlands Highway between Lae and Hides. The scope of these repairs includes maintenance of bridges and emergency repairs to the Highway.

During this quarter, the Project conducted a joint workshop with the Department of Works to develop work programs for the Highlands Highway. In addition to funding support, the Project will continue to assist the Department with design, supervision and contractor management.

### 13.1.4 Advocacy

Over 80 dignitaries attended six advocacy workshops held for Foreign Missions and Papua New Guinean Government officials at the LNG Plant site this quarter.

### 13.1.5 Benefits assurance delivery

During this quarter the Project provided support, where required, to the Papua New Guinean Department of Petroleum and Energy clan vetting program. Outcomes of clan vetting program will inform the Government distribution of Project royalties and other benefits. The Department of Petroleum and Energy has advised that it is also preparing field officers to provide support in key areas during the Project's construction and production phases.

## 13.2 Communities

As the Project moves toward the production phase it aims to maintain and enhance constructive and mutually beneficial relationships with communities. This will be achieved through a program of ongoing community engagement.

### 13.2.1 Engagement activities

During the first quarter, the Socioeconomic team conducted 126 formal engagements across 36 communities. This brings the number of formal engagements conducted to date to nearly 1,000. In addition, 28 communities were reached through 79 informal engagements conducted during this quarter. Engagements with communities covered topics such as safety during pipeline commissioning activities, safety during aircraft landing at Komo Airfield and awareness-raising about drilling operations. Traffic and pedestrian safety messages were also distributed to schools and communities.

Throughout this quarter, the Socioeconomic team implemented an improved process to more accurately capture the number of people attending engagement activities. This process involves recording the exact number of individuals who attend each engagement in the Project's Information Management System, rather than just those who raise issues or lodge grievances during the engagement. Using this improved process, it has been determined that 7,740 people attended formal engagements during this quarter.

In all community engagements, the Socioeconomic team is reinforcing messages about how individuals can raise issues and grievances with the Project.

**Hides and Komo**

Toea, the character from the Project's children's book series, visited schools in Hides and Komo this quarter to deliver road safety awareness messages. He also presented over 1,000 local school children with Toea books and road safety shirts.

*Toea during a visit to the Waru Primary School*

During this quarter, to raise awareness about drilling activities commencing in Hides, engagement activities included communities living east of the Wellpads. In addition to formal engagement activities, the Drilling organization formed a Community Drilling Committee with subclan leaders in Hides to exchange information and discuss community concerns about the drilling operations. Where a particular concern is raised, such as safety with regard to the drilling foam used, the Committee organizes a targeted awareness campaign with the communities involved.

*Members of the newly established Community Drilling Committee*

In Komo, the Socioeconomic team continues to keep communities informed about the completion of the Komo Airfield and demobilization of construction crews. Messages are also being delivered to communities about the arrival of the first aircraft at the Komo Airfield.

### Pipeline (north and south)

As the pipeline construction progresses towards Upstream North, the Socioeconomic team continues to convey pipeline safety messages to communities. Pipeline testing processes were explained this quarter to residents located near the Gobe main line valve station. Discussions covered information about pipeline purging activities and the process used to ensure pipeline safety during the production phase.

Toea safety shirts were also distributed to schools in this region, while traffic and pedestrian safety messages were conveyed to communities.

### LNG plant site

Ongoing education seminars with primary students from the four LNG Plant site villages are focusing on the importance of a safety culture on-site and at home. These seminars highlight both Project and community-based measures for traffic, personal and job safety.

*LNG Plant site education seminar with Porebada Elementary School*

Drama is being used to support the delivery of key safety messages. In particular, plays held at the LNG Plant site this quarter incorporated messages about hand and eye safety, hand hygiene, and slips, trips and falls. Drama is also being used to help address demobilization concerns with Papua New Guinean workers.

In preparation for the introduction of fuel gas to the LNG Plant site, the Project is advising local communities about commissioning activities; in particular flaring, LNG Plant site lighting patterns and operational noise.

*Community engagement session in Lea Lea*

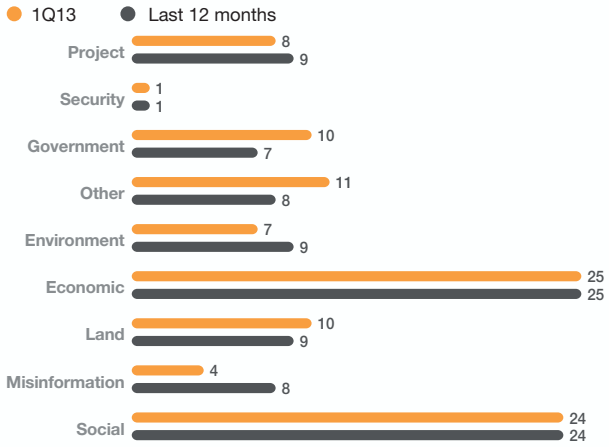
### Issues identification

During this quarter, stakeholders continued to raise primarily economic and social-related issues with 49 percent of all issues received relating to these two categories, as shown in Figure 13.1. Employment and business opportunities continue to dominate economic-related issues, while most social-related issues were focused on community health and safety.

In addition to economic and social-related issues, ten percent of issues raised during this quarter regarded Government-related concerns, such as Government commitments regarding roads and a desire for increased Government presence in the field. Another ten percent of issues related to land concerns primarily focused on compensation. Eleven percent of issues raised during this quarter were related to other types of concerns.

**Figure 13.1**

Percentage of issues received by issue category




## 13.2.2 Media

In March, the Project hosted a media workshop about national content initiatives, particularly supplier development and the Enterprise Centre's role in supporting Lancos and other Papua New Guinean businesses. A background briefing about the Project was also provided to the new editor of the *Post Courier* newspaper.

The latest edition of the *PNG LNG Toktok*, a four-page supplement for local newspapers, featured articles about successful women in the Project area to commemorate International Women's Day on March 8.

Also during this quarter, Esso Highlands Limited presented at the Communication Arts Professional Association conference in Port Moresby about communication tools used for the Project.

Project leaders continue to provide milestone updates to the Papua New Guinean media. For example, Esso Highlands Limited Project Executive, Decie Autin, was interviewed for an FM100 radio news update that covered the Project's status, including milestones planned for 2013.

Esso Highlands Limited Managing Director, Peter Graham, provided updates about Project activities planned for 2013 through his monthly newspaper column. The column, which is also published in Tok Pisin in the *Wantok Nius*, highlighted an example of how the Project was helping build the skills of Papua New Guinean citizens.

The Project's twelfth PNG LNG Quarterly Environmental and Social Report – Fourth Quarter 2012 covering activity during October to December 2012 was published on the Project's website and made available in hard copy to many Project stakeholders.

Read the Quarterly Environmental and Social Report series at
**www.pnglng.com**

The Report's Executive Summary was also distributed in Tok Pisin and English through national newspapers such as the *Post Courier*, *The National* and *Wantok Nius*.

# 14 ACRONYMS

| | |
|---|---|
| BTPO | Building the Producing Organization |
| DEC | Papua New Guinean Department of Environment and Conservation |
| EITI | Extractive Industries Transparency Initiative |
| ESMP | Environmental and Social Management Plan |
| HGCP | Hides Gas Conditioning Plant |
| IESC | Lender Group's Independent Environmental and Social Consultant |
| iHDSS | Integrated Health and Demographic Surveillance System |
| IMR | Papua New Guinea Institute of Medical Research |
| ISO | International Organization for Standardization |
| 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 |
| TAFE | Technical and Further Education |
| WMA | Wildlife Management Area |

# A1 APPENDIX 1 – PROJECT CONTRACTORS AND WORK SCOPES

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

| Contract | Description of work scope |
|---|---|
| Upstream Infrastructure<br>Clough and Curtain Brothers Joint Venture | • Infrastructure upgrades supporting main construction activities in the Gulf Province and Southern Highlands Province.<br>• Camps for Esso Highlands Limited and to support construction activities.<br>• Construction of a landfill site at Hides.<br>• Bulk earthworks for the HGCP and Hides Wellpads. |
| LNG Plant Early Works<br>Curtain Brothers Papua New Guinea Limited | • Upgrade of existing road from Motukea Island to LNG Plant site.<br>• New Bypass Road (re-routing of existing public road, which transects with the LNG Plant site). |
| Telecommunications<br>TransTel Engineering | • Installation of a telecommunications system to support construction and production. |
| Offshore Pipeline<br>Saipem | • Construction and installation of the offshore pipeline from Omati River landfall to LNG Plant landfall site.<br>• Pipeline tie-in at Omati River landfall and shore crossing at the LNG Plant landfall site.<br>• Installation of near-shore Fiber Optic Cable in the Omati area. |
| Offshore Fiber Optic Cable<br>Alcatel-Lucent Submarine Networks | • Installation of the offshore Fiber Optic Cable from the Omati delta to the LNG Plant landfall. |
| LNG Plant and Marine Facilities<br>Chiyoda and JGC Joint Venture | • LNG facility engineering and construction, including LNG process trains, condensate storage tanks, LNG storage tanks, utilities, permanent accommodation, heliport, and telecommunications.<br>• Marine facilities including the jetty and LNG/condensate export berths. |
| Hides Gas Conditioning Plant and Hides Wellpads<br>CBI and Clough Joint Venture | • Engineering and construction of the HGCP processing facilities and associated wellpads, including permanent accommodations and maintenance facilities. |
| Onshore Pipeline<br>SpieCapag | • Installation of the onshore gas and condensate pipelines, and associated valve and metering stations.<br>• Installation of the pipelines for the Hides gathering system including flowlines, spineline, utility lines, and associated power and telecommunications cables. |
| Komo Airfield<br>McConnell Dowell and Consolidated Contractor Group Joint Venture | • Airfield and supporting infrastructure. |
| Associated Gas Development<br>Various | • Upgrades and modifications to Kutubu Central Processing Facility and Gobe Production Facility including gas dehydration, metering, and condensate handling. |
| Nabors Drilling International Limited | • Drill and complete 11 new wells. |
| Permanent Facilities Compound<br>Leighton (PNG) Limited | • Construction of offices and associated service facilities. |

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

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