

# Pluto Pulse

## Pluto LNG Project

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## Pluto LNG Project update

With more than one third of the Pluto LNG Project now complete, it is an exciting time for Woodside and the project team.

The Burrup LNG Park is rapidly taking shape with site works for the LNG gas plant, or train as it is sometimes called, nearing completion and initial civil works for loading and storage sites underway.

The first LNG tank roof was lifted into place by industrial fans in late September. This was followed by the

installation of the roof of the second tank in October.

Pluto's LNG train is being built in Thailand and is being shipped to site in about 250 pieces, known as modules. In a major milestone for the project, the first six modules safely arrived at the Dampier Port Authority in late October. The modules were set in position on the storage and loading site in November.

While the Burrup LNG Park is a hive of activity, the Atwood Eagle began drilling

Pluto's first development well 190km off the coast of Karratha in September. Construction of the offshore processing unit is also well underway in Malaysia, along with the assembly of the offshore platform in China.

The Burrup Materials Facility, which is located near the Dampier Port, is nearing completion. The facility will support the offshore and marine requirements of the project during the construction phase and moving into operations.



*The first modules for Pluto's LNG train are unloaded*

### Recent milestones:

#### Pluto Offshore:

**3 November** - First LNG modules installed at Burrup LNG Park

**27 October** - The first modules arrived at the Dampier Port from Thailand

**17 October** - Joining of the Burrup Materials Facility southern and western reclamation seawalls

**25 September** - Successful installation of the first LNG tank roof at the Burrup LNG Park

**11 September** - Drilling started on Pluto's first production well

## Gap Ridge rolls out the welcome mat

It's no secret that securing accommodation in Karratha is a challenge. As the Pluto LNG Project rapidly gains ground, the issue of how to accommodate more than 3000 construction workers starts to resemble a Rubik's cube.

Luckily Woodside's Gap Ridge Accommodation Village in Karratha is nearing completion, with more than 1200 construction workers now calling the village home during their shifts on the project.

The Pluto LNG Project building



*Action in the Gap Ridge diner*

engineer Lindsay Weir explains that the village is the largest worker accommodation facility in Karratha.

"With the ability to house more than 1600 people by the end of the year, Gap Ridge also has a number of first-rate amenities to help workers wind down at the end of a long shift," he says.

"Gap Ridge also boasts one of the largest commercial kitchens in the southern hemisphere, with more than 4500 square metres of floor space – it's bigger than 10 basketball courts."

The first phase of Gap Ridge Accommodation Village is expected to be complete by the end of 2008 and expansion plans are already underway for a further 480 rooms.



### Beyond Gap Ridge, Woodside is:

- Building 60 site-built homes
- Installing 20 demountable homes
- Leasing up to 180 one bedroom, self contained units at the Aspen Village



## Raising the Roof

Months of careful planning and preparation paid off recently when the first roof of Pluto's LNG tanks was installed without a hitch in late September, followed by the raise of the second roof just three weeks later.

Due to their immense size, the 600 tonne roofs were constructed inside each of the LNG storage tanks and airlifted into place using industrial strength fans.

It took just over three hours, or 180 minutes, to raise each roof 37 metres into position - that's about the same height as a 12 storey building.

The air pressure and volume were controlled by using a venting manhole and equipment to ensure a constant, equal pressure. Once each roof was pinned into position, it took a team of around 20 welders to permanently secure it into place.

Woodside tank and infrastructure engineer Craig Edwards explains the advantages of using this construction method is not only the elimination of costly and heavy equipment but also it allowed the roofs and the exterior shell to be built simultaneously.

"This construction method eliminated the need for the roof to be constructed at the top of the tanks, making it much safer and quicker – each roof can be positioned and secured in just a day."



*Pluto's LNG storage tanks take shape*

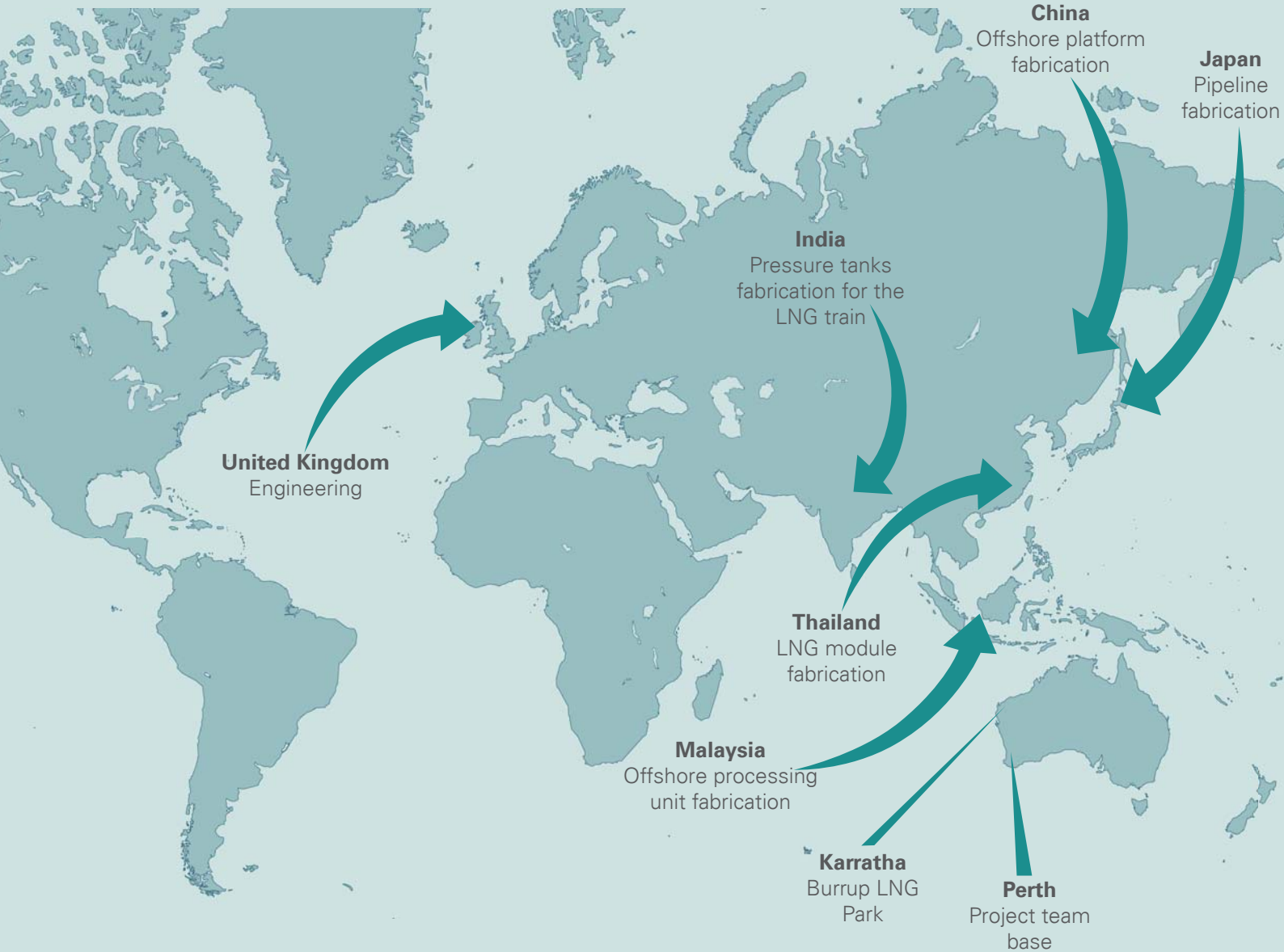


# Global reach

The Pluto LNG Project is a worldwide project, with operations spread over three continents and seven countries. At last count more than 10,000 people

were working on the project in the United Kingdom, India, Thailand, Malaysia, China, Japan and of course Australia. And that doesn't even

take into account all the equipment suppliers!



# energy that's building

## Thinking outside the pipeline

The Pluto team challenged industry thinking on the design of a 180 kilometre pipeline - a move that ultimately saved Woodside more than \$100 million.

In the North Sea or the Gulf of Mexico, pipelines are generally laid in soft silica sands, which means they self bury and naturally stabilise.

It's a different story on the North West Shelf. The ocean floor is covered with calcarenite limestone and coarse sands. It means the pipeline sits on top of it and can therefore snake around in rough weather. And rough weather is not uncommon in the Pilbara, particularly in the summer when the region has its fair share of cyclones.

One option for Pluto was to stabilise the pipeline with about 1800 concrete gravity anchors. With each anchor weighing 40 tonnes; it would have required an area more than twice the size of Subiaco Oval to store them before installation. It quickly became clear that another



Morgan Harland, Jason McConochie, Andrew Pearce, Masa Brankovic and Hammam Zeitoun (JP Kenny).

solution was needed.

Pluto's trunkline and flowline manager Morgan Harland explains the engineering team had the foresight to challenge industry assumptions on how to calculate loads on a dual pipeline.

"We used second order wave theory to get a more accurate picture of forces exerted by waves," he says.

"Extensive research revealed that the impact of a depression created

by a big wave led to a reduction in force on the ocean floor.

"With the new data, we recalculated the predicted forces on the Pluto pipeline and found it would move only 25 metres in a big storm - an acceptable amount - in the area that was of particular concern to us.

"This meant no additional measures were required. We spent about \$5 million on that research, an investment that ultimately saved Woodside considerably more."

## Buckle up for safety

At Woodside we have a pretty simple health and safety value - "no one gets hurt, no incidents." So that means maintaining a safe working environment 24 hours a day, 365 days a year.

In an effort to extend this value beyond Woodside's workplaces, we buckled up alongside Rio Tinto to roll out a joint Road Safety campaign to our workforce and community in the Pilbara.

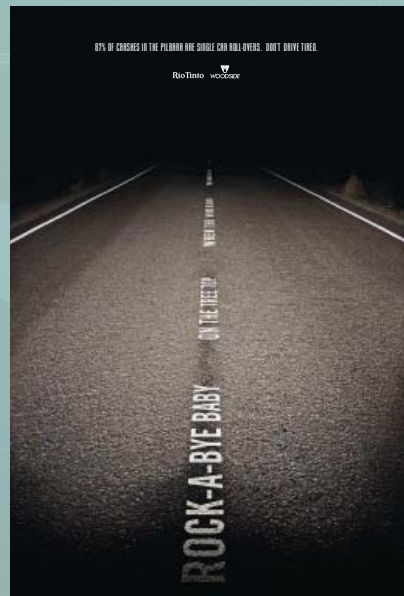
Fatigue, seatbelts and drink driving are the focus of the campaign that will run over peak holiday periods in 2008 to raise awareness of the increased risks

during this time.

The Pluto initiative has been adopted by the Woodside community with posters distributed to the Burrup LNG Park, Burrup Materials Facility, Karratha Gas Plant and the King Bay Supply Facility. A series of radio advertisements have been created and will be used alongside newspaper advertisements.

It is hoped that the campaign will encourage employees to carry their high safety standards beyond the workplace, to ensure their personal safety and the safety of others when on the road.

*Photo Right: The advertisement used for the Road Safety Campaign.*



## Pluto Takes to the Sky

The Pluto LNG Project navigated its way into new territory when a contract was recently awarded for two purpose-built helicopters for offshore operations.

Helicopters New Zealand (HNZ) are constructing the AW139 helicopters at the AgustaWestland facility in Italy.

The helicopters will be used to transport passengers and freight between Pluto's offshore platform, drilling site and the Burrup LNG Park. Whilst Pluto's offshore platform is not normally manned, crews will regularly be taken out to the platform to ensure a smooth start up and operation.

In addition to project-related activities, the helicopters will be equipped with a 270kg hoist and stretcher to assist Karratha's Search and Rescue and Medivac operations if required.

Upon completion in early 2009, the helicopters will be flown to Karratha as part of the pilot training program.



*The AW139 under construction*

## Lending a hand

The Perth-based Pluto team has been busy volunteering this spring as part of an ongoing community initiative.

A team of about 20 did their bit for the environment in October by planting 6500 grasses on the banks of the Canning River for Gosnells Landcare group. Another group took part in a volunteering a day to tend to maintenance and gardening at Parkerville Children and Youth Care east of Perth. And Riding for the Disabled in Wanneroo also received a helping hand as another team members donned their rain gear and spent a day repairing fencing, clearing fire breaks and painting.



*Pluto volunteers at Riding for the Disabled Capricorn Centre*



*Pluto team members Frank Cotton and Jason Flutter at Gosnells*

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# Indigenous Snapshot

## Roebourne artists in the spotlight

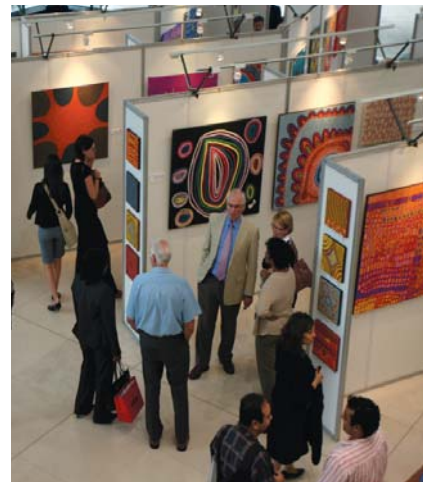
Emerging artists from the Roebourne Art Group showcased their talents at the Ngurra Nyingu (We are from this country) art exhibition from 11 to 25 November.

Sponsored by the Pluto LNG Project, the exhibition at Woodside Plaza in Perth featured more than 100 Indigenous artworks by members of the Roebourne Art Group.

Roebourne Art Group Exhibition co-ordinator Sharmila Wood said that the artists aim to share their culture, country and stories through their artworks.

"This event was a great opportunity for people to view a diverse collection of Aboriginal art," she says.

The exhibition was a success with the majority of the artwork selling in the first few days of the exhibition and all proceeds being returned to the artists and Roebourne Art Group.



## Rock art project submissions flood in

There has been strong interest in the Rock Art Foundation Committee's call for projects to recognise, protect and conserve the National Heritage values of the Dampier Archipelago (including Burrup Peninsula), in Western Australia's Pilbara region.

The committee was established under the Conservation Agreement

Woodside signed with the Australian Government in 2007 when the Dampier Archipelago was placed on the National Heritage List.

As part of the agreement, Woodside will invest up to \$34 million on four objectives through the Rock Art Foundation.

Woodside Executive Vice President of the Pluto LNG Project Lucio Della Martina said the Conservation Agreement represents the largest

single investment by an Australian company to a National Heritage place.

"The response to the call for projects has been overwhelming and we look forward to supporting some exciting initiatives in the years to come," he says.

With more than 20 submissions received by the closing date in late October, Woodside expects to announce successful projects in early 2009.

## Open for business

It was only fitting that Woodside's new office in Roebourne was opened by Fred Chaney AO from Reconciliation Australia during NAIDOC Week – a national



*Pluto Indigenous affairs advisor Brian Hayes chats to the locals.*

event which celebrates the history, culture and achievements of Aboriginal and Torres Strait Islander people.

Woodside General Manager Indigenous Affairs Meath Hammond said that while there has been a Woodside office in Karratha for some time, the opening of the Roebourne office is considered an important milestone.

"The office provides a platform for running our local programs and will build closer links with the community," he said.

"It will also be a focal point to recruit local people."



*Brian Hayes and Meath Hammond with Ngarluma Elder Violet Sampson and Reconciliation Australia's Fred Chaney.*