

## BROWSE LNG DEVELOPMENT ENVIRONMENT

May 2011

Woodside's proposed Browse LNG Development will be a world-class LNG project that will deliver significant financial, employment and other benefits for Indigenous and non-Indigenous people of the Kimberley.

### Overview

James Price Point was chosen as the site for the development by the State Government after an extensive site selection process involving consultation with a broad range of stakeholders and a comprehensive review of environmental, heritage, social, economic and technical criteria.

We are working closely with stakeholders in the West Kimberley, as well as State and Federal Government regulators to deliver a socially and environmentally responsible LNG development.

Woodside is committed to sustainable development and has demonstrated itself as a safe, reliable and responsible operator of LNG projects.

### Environmental Impacts

In addition to the State Government's Strategic Assessment which will identify the environmental values of the James Price Point area and recommend appropriate mitigation strategies, we are conducting our own comprehensive environmental, social and health assessment of the proposed development activities.

So far we have spent more than \$80 million and propose a further \$25 million in 2011 for environmental studies on- and offshore the Kimberley coast to make sure we get this project right. We are focussed on designing our facilities and preparing for construction and operational activities that consider and manage the full range of environmental impacts.

We will keep the local community well informed of our activities and plans, including those concerning our environmental studies, any environmental impacts and proposed mitigation strategies.

### Cleaner Energy

LNG is regarded internationally as a lower-emission conventional fuel with a prominent role in helping the world transition to a lower carbon future.

Natural gas emits less greenhouse gas per unit energy basis when burnt, than coal or diesel oil. The combustion of coal emits in excess of 80% more greenhouse gasses than LNG per unit of energy produced as electricity. The lower greenhouse gas emission rate of natural gas makes it a comparatively clean energy source relative to other fossil fuels.

The LNG produced by the Browse Development will offer an alternative to coal in customer countries, thereby helping to reduce global greenhouse emissions. This has been independently validated.

### Air Quality

Atmospheric emissions associated with the Browse LNG Development will be contained within the area of the LNG Precinct and are unlikely to give rise to adverse air quality or amenity issues beyond the Precinct buffer zone, taking into account other sources (fire being the dominant source of air pollutants in the region). Emissions will be monitored and best available technologies used to minimise air emissions from the LNG facilities during its operation.



Western Australia

0 100 200  
kilometres  
Datum: GDA 1994



## Whales

Woodside has funded the most significant humpback whale study ever undertaken in Western Australia, in order to gain the best possible understanding of whale migration patterns and behaviour off the Kimberley coast. Research shows that the coastal water off James Price Point is neither a breeding nor feeding area for humpback whales.

Aerial and vessel-based surveys undertaken in 2009 recorded the migratory patterns of 5000 adult whales and 430 calves from July to mid-October. Humpback whales predominately travel through the area (rather than resting or breeding) and most remain offshore.

Off James Price Point, the bulk of the migration occurs in waters approximately 30 kilometres from the mainland, with less than five per cent of humpback whales travelling within eight kilometres of the coast. (Figure 1)

During the humpback whale migration, an estimated 21,000 humpback whales migrate up and down the Western Australian coastline each year passing through the shipping lanes from very large ports and numerous small ports on the way. More than 11,000 ships per year, or 30 ships per day, arrive and depart from ports in Western Australia. Injuries to whales resulting from collisions with ships are rare.

The number of shipping movements from the James Price Point LNG Precinct will be small and restrictions will be placed on vessel speeds and routes to minimise potential effects associated with the Browse LNG Development.



## Turtles

Turtles are seen in the waters all the way along the Dampier Peninsula. They are also widely dispersed throughout the Kimberley and throughout the year. Green and flatback turtles are the most common turtles in the area, however loggerhead and hawksbill turtles have also been observed.

Medium to high numbers were seen around shoals offshore from Willie Creek and Carnot Bay. Low to medium numbers were recorded at James Price Point in all surveys.

The Lacepede Islands support significant green turtle nesting population (thousands) and some flatback turtle nesting. However the James Price Point coastal area does not support significant levels of turtle nesting, with only three tracks and one potential nest found over the 2009/2010 nesting season.

## Fish

Our studies show that the combined effect of all impacts resulting from the proposed development will not lead to any significant direct or indirect impacts on fish population.

The waters off James Price Point are part of the broader Canning marine bioregion, and the fish that occur here are representative of the wider region. Impacts to fish are likely to be limited to temporary behaviour responses on a local scale during the construction, and limited loss of habitat as a result of the Development's marine infrastructure.

There is the potential for provision of new habitat from the new port facilities which is likely to encourage the settlement of new marine life by providing additional habitat and/or sources of food and subsequently increase populations.



## Water

Potential effects on vegetation that is dependent on surface water will be managed through an Ecological Surface Water Requirements Management Plan and a Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance.

Preparation and implementation of long term monitoring and environmental management plans including a Hydrocarbon and Chemical Spill Contingency Plan and Groundwater Abstraction Management Plan will provide for assessment and control of impacts during construction and operation of the Browse LNG Precinct.

## Dredging

One of the key objectives for the Northern Development Task Force was to identify a location for the Precinct that minimised impacts on significant marine habitats. Extensive sediment dispersion modelling, baseline monitoring and benthic habitat surveys have provided greater certainty that James Price Point is an appropriate location for the Browse LNG Precinct.

The modelling and impact assessment concluded that the impacts from dredging and spoil disposal activities are largely temporary, and that changes to water quality are not likely to extend to areas such as the northern Dampier Peninsula, Broome, Lacepede Islands or Roebuck Bay.

A Dredging and Spoil Disposal Management Plan will be developed and implemented by Woodside. This plan will detail how the dredging program will be managed to ensure environmental objectives are achieved.

## Joint Venture Participants

BHP Billiton Petroleum (North West Shelf) Pty Ltd  
BP Developments Australia Pty Ltd  
Chevron Australia Pty Ltd  
Shell Development Australia Pty Ltd  
Woodside Energy Ltd

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