SCARBOROUGH AND PLUTO TRAIN 2
WOODSIDE: PIONEER OF AUSTRALIAN LNG

+ Focused portfolio, recognised for our world-class capabilities as an integrated upstream supplier of energy.
+ More than 30 years of safe, reliable LNG operations.
+ Production from 8 LNG Trains.
+ 21 million tonnes per annum (Mtpa) operated LNG capacity.
+ More than 5,000 LNG cargoes delivered from the North West Shelf Project since 1989.
+ Our strategy is focused on delivering new LNG supply to energy markets to meet growing regional LNG demand.

IN 2019, WE OPERATED 6% OF GLOBAL LNG SUPPLY

FOCUS AREAS

Gas Producing assets

Product type Phase

Appraisal and exploration Gas or oil

Developments Oil

* Denotes marketing office

Refer to the Asset Facts section on page 124 for full details of Woodside’s global interests.

Product contribution %

LNG 76

Liquids 17

Other 7

Woodside Petroleum Ltd | Annual Report 2019

13

12
Woodside, with our joint venture participants, is progressing opportunities that will develop an integrated, regional LNG production hub on the Burrup Peninsula in Western Australia. Utilising proven LNG facilities, the Burrup Hub will provide a long-term solution for processing gas resources to supply domestic and export markets for decades to come.

To realise the Burrup Hub vision a number of activities are being advanced simultaneously: North West Shelf (NWS) Project Extension; the Pluto–Karratha Gas Plant (KGP) Interconnector; Scarborough and Pluto Train 2; Woodside Power and Browse.

Woodside is committed to operating responsibly, working sustainably and engaging transparently. We are investing in understanding and managing actual and potential impacts of these activities and consulting with a wide range of stakeholders.

SCARBOROUGH AND PLUTO INFRASTRUCTURE

The Pluto LNG onshore facility is positioned to unlock Scarborough value.

- Scarborough reservoir characteristics are well matched to the Pluto LNG basis of design.
- Pluto LNG was originally designed to allow efficient brownfield development and third-party gas processing.
- Woodside is well-placed to deliver its preferred development concept, processing Scarborough gas through a brownfield expansion of Pluto LNG.
- Woodside is targeting a final investment decision (FID) on Scarborough and Pluto Train 2 in 2H 2021.
GREATER SCARBOROUGH RESOURCES

A significant resource base, underpinning a future offshore development hub.

- The Scarborough gas resource is located in the offshore Carnarvon Basin, approximately 375 km west-north-west of the Burrup Peninsula in Western Australia.
- Woodside assumed operatorship of Scarborough in April 2018, following the acquisition of an additional 50% participating interest in WA-1-R.
- The Scarborough field is estimated to contain 11.1 Trillion cubic feet (Tcf) (100%, 2C) of dry gas resources.
- Woodside operated gas fields Thebe 1.4 Tcf (100%, 2C) and Jupiter 0.5 Tcf (100%, 2C) provide opportunities for future tie-backs to Scarborough infrastructure.

Woodside share of Scarborough resource has increased from 5.5 Tcf to 8.3 Tcf.

SCARBOROUGH RESOURCES

A fully appraised world-class discovery.

- Discovered in 1979, Scarborough is the largest undeveloped gas accumulation in Western Australia’s Carnarvon Basin.
- The Scarborough gas resource is reservoired in a large low-relief anticline (800 km²).
- Reservoir sands are excellent quality and anticipated to support production rates of up to 250 million standard cubic feet per day (MMscfd) per well.
- Pressure support is expected from a large, regionally extensive aquifer.
- Scarborough gas is lean and dry. Produced gas is composed primarily of methane (95%) and nitrogen (4%) with very low levels of contaminants.
- In 2019, the Scarborough resource estimates increased significantly as a result of applying leading-edge seismic data processing technology and a comprehensive review of the extensive subsurface data set.*

* ASX announcement “Scarborough resource increased by 52%”, 8 November 2019. 2C, 100%. Woodside’s share of Scarborough resource has increased from 5.5 Tcf to 8.3 Tcf.
UPSTREAM DEVELOPMENT PLANS

Scarborough field development is complemented by Woodside’s regional expertise. Developing Scarborough offers an outstanding opportunity to deliver value to Woodside shareholders due to:

- Ideal reservoir characteristics.
- Location relative to existing operated facilities.
- Woodside’s expertise in LNG development and operations.

SCARBOROUGH PROJECT

Simple and reliable approach to design using proven technology.

- The proposed development of Scarborough, will initially include up to seven subsea, high-rate gas wells, tied back to a semi-submersible Floating Production Unit moored in 950 m of water.
- The proposed export pipeline route crosses the Carnarvon Basin in close proximity to undeveloped gas fields, providing opportunities for future third party developments via Scarborough infrastructure.

THE DEVELOPMENT CONCEPT

- A phased development drilling program is proposed
- Given the shallow depth below the mudline and anticipated strong aquifer support, a combination of horizontal and high angle wells have been designed with maximum well lengths of ~2500 m

SUBSEA INFRASTRUCTURE

- 3 x 16” gathering flowlines
- In-line tees
- Industry standard 7” trees
- 3 x import & 3 x export 14” flexible risers

RESERVOIR / WELLS

- 11.1 Tcf (100%, 2C)
- 7 wells at RFSU
- 15 wells over field life
- ~95.5% CH₄, ~4.5% N₂, <0.1% CO₂

EXPORT PIPELINE

- ~430 km carbon steel pipe
- 32” diameter
- Adjacent to Pluto trunkline (190 km)
- Operate dry/liquids free
- ~250 bar design pressure
Woodside’s preferred development option is to process Scarborough gas through a brownfield expansion of Pluto LNG.

The expansion will include:

- Construction of a second gas processing train with a capacity of ~5 Mtpa (100% Project).
- Installation of additional domestic gas infrastructure to increase capacity to approximately 225 TJ/d.
- Targeting a final investment decision on Pluto Train 2 in 2H 2021.

Scarborough and Pluto Train 2 are expected to provide significant direct contribution to the Australian economy across the life of the projects. The majority of these direct impacts will be realised in Western Australia, including in the Pilbara region.

Pluto site originally designed for efficient future expansion and third party gas processing.

SOCIAL AND ECONOMIC CONTRIBUTION

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A$125 BILLION

BOOST TO AUSTRALIA’S GDP TO 2063.

A$15.8 BILLION

CAPITAL EXPENDITURE IN WESTERN AUSTRALIA TO 2051.

~1,300 JOBS

CREATED PER ANNUM ON AVERAGE NATIONALLY TO 2063.

Source: Proposed Development of Scarborough Economic Impact Assessment (ACIL Allen, June 2019)
**ENVIRONMENTAL MANAGEMENT**

Scarborough spans both Australian and Western Australian jurisdictions.

- A proposal for Scarborough activities in Commonwealth waters was submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) in February 2019 as an Offshore Project Proposal (OPP). The OPP was accepted by NOPSEMA in April 2020.
- The OPP provides an assessment of potential environmental risks and impacts for the activities in Commonwealth waters, including the management of greenhouse gas (GHG) emissions across the life of the project.
- Onshore, existing primary environmental approvals for Pluto LNG allow for two LNG trains and supporting infrastructure. Preventative and management measures have been developed to apply throughout the life of Pluto LNG to ensure that significant environmental impacts are avoided or minimised.

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**NATURAL GAS - THE NATURAL STEP TO NET ZERO**

As a lower-carbon fuel, natural gas can supply energy the world needs while helping meet the Paris Agreement goals.

Independent expert analysis shows Woodside’s Burrup Hub projects, including Scarborough, could avoid 650 million tonnes of CO$_2$-equivalent emissions between 2026 and 2040, by replacing higher-emission fuels in countries that need our energy. This means for every tonne of GHG emitted in Australia from these projects, about 4 tonnes of emissions are reduced globally.

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1. Natural gas is an important part of the solution to meeting global energy demand while reducing GHG concentrations by displacing higher-emission-intensive fuel sources.
- Supported by IEA forecasts, which predict gas demand to continue to grow in our target markets, including in the Sustainable Development Scenario (SDS)
- The SDS is aligned with the Paris Agreement goal of keeping temperature change well below 2°C

2. Scarborough has a direct role to play in reducing net global atmospheric GHG concentrations.
- Renewables are expected to grow strongly
- Natural gas competes primarily with higher-emitting energy sources to meet the remaining demand
- Projects like Scarborough are necessary to fill the gas demand gap, avoiding higher-emitting energy sources

3. We will reduce Scarborough’s direct GHG emissions by incorporating energy efficiency measures in design and operations and through company-wide CO2 offsets.
- The Scarborough OPP details a range of energy efficiency measures in sections 4.5.4.1 and 7.1.3
- We have established a new business to develop and acquire carbon offsets at scale. This includes the A$100 million Australia-wide Pluto LNG tree plantations which have already delivered more than 850,000 tonnes of CO2 offsets.

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**HOW IS WOODSIDE CONTRIBUTING TO A LOWER-CARBON FUTURE?**

This brochure contains forward looking statements that are subject to risk factors associated with oil and gas businesses. It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, operational challenges, political risks, project delay or advancement, approvals and cost estimates.

All references to dollars, cents or $ in this presentation are to US currency, unless otherwise stated. Developments and targets are subject to finalisation of required joint venture approvals, regulatory approvals and commercial arrangements. Concept images shown are conceptual only, based on Woodside's preferred development concepts and not to scale. References to “Woodside” may be references to Woodside Petroleum Ltd. or its applicable subsidiaries.

NOTES ON PETROLEUM RESOURCE ESTIMATES

Unless otherwise stated, all petroleum resource estimates on this website are quoted as at the balance date (i.e. 31 December) of the Reserves Statement in Woodside's most recent Annual Report released to ASX and available at http://www.woodside.com.au/Investors-Media/Announcements, net Woodside share of standard oil field conditions of 14.696 psi (101.325 kPa) and 60 degrees Fahrenheit (15.56 deg Celsius). Woodside is not aware of any new information or data that materially affects the information included in the Reserves Statement. All the material assumptions and technical parameters supporting the estimates in the Reserves Statement continue to apply and have not materially changed. The Reserves Statement dated 31 December 2019 has been subsequently updated by an ASX announcement dated 26 February 2020 (in respect of Scarborough Participating Interest Alignment).

Woodside reports reserves net of the fuel and flare required for production, processing and transportation up to a reference point. For offshore oil projects, the reference point is defined as the outlet of the Floating Production Storage and Offloading facility (FPSO), while for the onshore gas projects the reference point is defined as the inlet to the downstream (onshore) processing facility. Woodside uses both deterministic and probabilistic methods for estimation of petroleum resources at the field and project levels.

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‘MMboe’ means millions (‘M’) of barrels of oil equivalent. Dry gas volumes, defined as ‘C4 minus’ hydrocarbon components and non-hydrocarbon volumes that are present in sales product, are converted to oil equivalent volumes via a constant conversion factor, which for Woodside is 5.7 Bcf of dry gas per 1 MMboe. Volumes of oil and condensate, defined as ‘C5 plus’ petroleum components, are converted from MMbbl to MMboe on a 1:1 ratio.

The estimates of petroleum resources are based on and fairly represent information and supporting documentation prepared by qualified petroleum reserves and resources evaluators. The estimates have been approved by Mr Ian F. Sylvester, Woodside’s Vice President Reservoir Management, who is a full-time employee of the company and a member of the Society of Petroleum Engineers. Mr Sylvester’s qualifications include a Master of Engineering (Petroleum Engineering) from Imperial College, University of London, England, and more than 20 years of relevant experience.