

PIPELAY AND DREDGING MANAGEMENT



Image: Greater Western Flank Phase 1 pipeline installation in 2014

The Burrup Hub vision

Woodside, with relevant Joint Venturers, is progressing opportunities that will develop an integrated, regional LNG production centre on the Burrup Peninsula. 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: Scarborough¹; Pluto Train 2²; Browse to NWS Project³; NWS Project Extension⁴ and the Pluto–NWS Interconnector⁵.

As we prepare to enter a growth and construction phase, we are committed to operating responsibly, working sustainably and engaging transparently. We are investing in understanding and managing actual and potential impacts of our proposed activities and consulting with our wide range of stakeholders.

Scarborough and Browse

The proposed development of the Scarborough and Browse gas fields, as part of the Burrup Hub, will require the development of two separate export pipelines to tie offshore facilities back to existing onshore infrastructure. The Scarborough pipeline is proposed to tie in onshore at the Burrup Peninsula. Woodside's preferred concept for Scarborough, is to tie in to a brownfield expansion of the Pluto LNG facility. The Browse pipeline will connect near the North West Shelf (NWS) Project's North Rankin complex.

Installation of these pipelines will require pipelay activities along each of the pipeline routes. The offshore pipeline route for Scarborough to Pluto will also require some dredging for pipelay activities along the shallower, near-shore sections of the route.

Browse to NWS Project will not require near-shore dredging activities.

Extensive baseline studies are underway along the proposed pipeline routes to understand the marine environment and how activities can be best managed to ensure minimal effects on marine habitat in the area.

Monitoring data and research associated with the Pluto LNG foundation project dredging program in Mermaid Sound off the Pilbara coast, will also help inform impact assessment and management planning.

1. Scarborough JV - Woodside Energy Ltd and BHP Billiton Petroleum (NWS) Pty Ltd.
2. Woodside 100%
3. Browse JV - Woodside Browse Pty Ltd, Shell Australia Pty Ltd, BP Development Australia Pty Ltd, Japan Australia (MIMI Browse) Pty Ltd and PetroChina International Investment (Australia) Pty Ltd.

4. NWS Project JV - Woodside (operator), BHP Billiton Petroleum (NWS) Pty Ltd, BP Development Australia Pty Ltd, Chevron Australia Pty Ltd, Japan Australia (MIMI) Pty Ltd and Shell Australia Pty Ltd.
5. Woodside 100%

Scarborough and Browse pipelay

Pipelay activities will include the use of special pipelay vessels to install the two offshore export pipelines, Scarborough approximately 430 km and Browse approximately 900 km, connecting the offshore facilities to existing Woodside operated, but separately owned, infrastructure.

Typically, sections of pipe are transferred from a platform supply vessel to the pipelay vessel where they are consecutively welded together to form a pipeline. The pipelay vessel continues moving slowly forward as sections are added, and the completed pipeline is carefully lowered off the back of the vessel to the seabed.

During the pipelay activity, exclusion zones around the slow moving pipelay vessel may temporarily affect other marine traffic.

On completion, the pipeline procurement and installation process will be assured to confirm the integrity. Following pipelay activities, a second vessel will install other subsea infrastructure near the offshore platforms, such as mattresses which help stabilise the pipeline. During these activities, other vessels will provide construction support, such as supply and refuelling.

A post-lay survey of the pipelines along the entire route and other subsea infrastructures will be conducted when pipelay activities are completed.

Scarborough dredging

Dredging is primarily required in shallower waters associated with the Scarborough pipeline to create a pipeline trench. The proposed pipeline trench will be about 3 m deep and 30 m wide, extending approximately 50 km from the shoreline.

The dredged material will be disposed of at nominated locations, yet to be determined. After the pipeline has been laid in the trench, it will be backfilled with coarse sand and/or rock to stabilise and protect the pipeline.

Some of the hard rock sections of the Scarborough pipeline route were pre-dredged as part of the Pluto LNG foundation project. This means that blasting and cutter suction works will not be required. The Scarborough dredging program will only be 20% of the previous Pluto volume and will be shorter in duration. The new pipeline will be laid within the previously disturbed corridor.

The pre-lay dredging for the Scarborough pipeline will extend through State and Commonwealth waters and will be regulated by both jurisdictions.

Regulatory assessments for near-shore dredging must consider:

- + a description of why dredging is required and how it could be minimised
- + a review of other options available (e.g. on land, reuse, other sea locations)
- + protection of any nearby sensitive environmental habitats such as coral and seagrasses
- + sediment contamination testing
- + consultation with potentially affected stakeholders.

The disposal of dredged material will be the subject of a separate permit application to DoEE and managed under a Dredging and Spoil Disposal Management Plan (DSDMP). The DSDMP provides details on the environmental management procedures to limit impacts.

Research and monitoring

The impact assessment for Scarborough pipeline activities is informed by the extensive research and monitoring that has been undertaken as part of Pluto LNG foundation project dredging and through the WAMSI Dredging Science Node. This information will enable Woodside to confidently predict and manage the minimal impacts on the marine environment throughout dredging and pipelay activities to deliver best-practice sustainable environmental outcomes.

More information about WAMSI Dredging Science Node is available at the WAMSI website: <https://www.wamsi.org.au/dredging-science-node>

Environmental approvals

Where required, offshore activities are assessed and granted approval before work can proceed. This can consist of assessment under the State Environmental Protection Act 1986, Commonwealth Environment Protection and Biodiversity Conservation Act 1999, the Offshore Petroleum and Greenhouse Gas Storage Act 2006 and the Environment Protection (Sea Dumping) Act 1981 where sea dumping is required.

These assessments examine the extent of the direct and indirect impacts associated with the activities, and how environmental risks and impacts can be managed.

Proposals for the Browse to NWS Project and State water components were submitted to the Western Australian Environmental Protection Authority (WA EPA) and the Commonwealth Department of Environment and Energy (DoEE) in October 2018.

A referral for Scarborough to Pluto activities in State waters was submitted to the State and Commonwealth regulators in December 2018. The referrals can be viewed at the relevant regulator's website.

A proposal for Scarborough activities in Commonwealth waters was submitted as an Offshore Project Proposal (OPP) to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) in February 2019. Adjacent Thebe and Jupiter reservoirs were included.

Our engagement approach

Woodside has been part of the Pilbara community for more than 30 years. In our relations with communities and stakeholders, we are engaged, responsible and focused on building long-term, sustainable operations. As Woodside prepares to enter a growth and construction phase, we are committed to continue to invest in understanding and managing actual and potential impacts of proposed activities.

More information about Burrup Hub activities is available at the Woodside website: <https://www.woodside.com.au/our-business/burrup-hub>

Providing feedback and further information

This fact sheet, along with other information on Woodside's proposed Burrup Hub developments and operations, is available at www.woodside.com.au

All information is current as at May 2019. Proposed timing may be subject to change. Proposed developments are subject to joint venture approvals, regulatory approvals and relevant commercial arrangements.