

STAKEHOLDER CONSULTATION

May 2021

GWA AND ANGEL OPERATIONS ENVIRONMENT PLANS CARNARVON BASIN, NORTH WEST AUSTRALIA

Woodside is submitting a revision of the Operational Environment Plans for the Goodwyn Alpha (GWA) and Angel operations in Commonwealth waters, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) (the regulations).

The Environment Plans are being resubmitted to account for the integration of planned production from the Greater Western Flank Phase 3 and Lambert Deep gas projects respectively into the GWA and Angel production systems. The Environment Plans will also include a number of exploration wells not linked to the production systems. The Environment Plans will cover the existing GWA and Angel Field Production Systems, both of which are operated by Woodside on behalf of the North West Shelf (NWS) Project, as well as a number of exploration wells not linked to the production systems. The Project participants are Woodside Energy Ltd (Operator), BHP Petroleum (NWS) Pty Ltd, BP Developments Australia Pty Ltd, Chevron Australia Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd and Shell Australia Pty Ltd.

Woodside is undertaking consultation activities for these Environment Plans as a combined consultation process, given the relative proximity of these operations and the common stakeholder set.

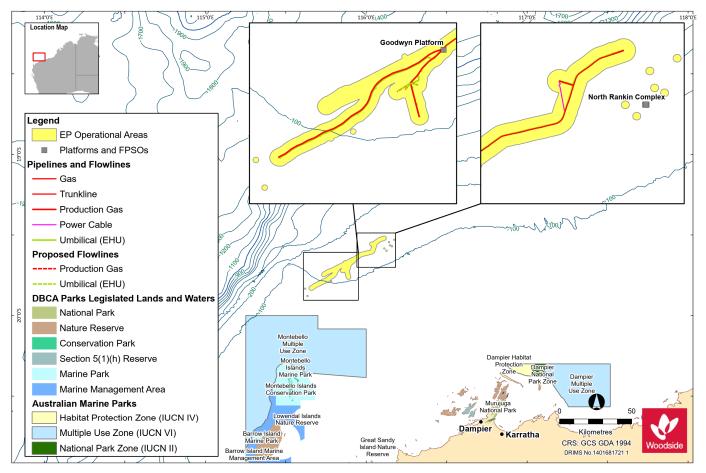


Figure 1. GWA Field Production Systems

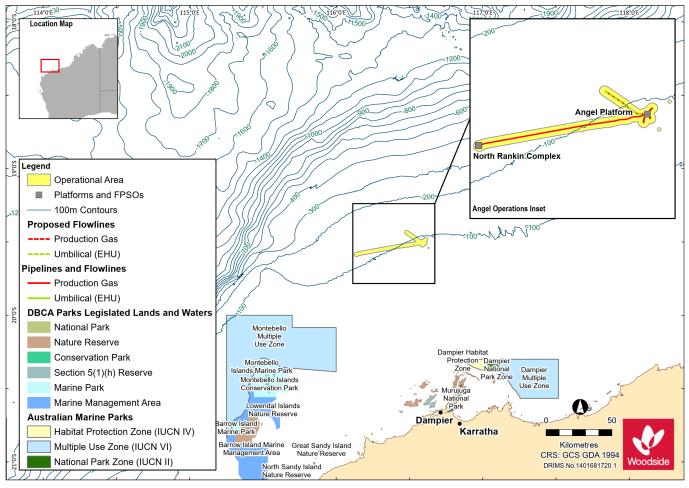


Figure 2. Angel Field Production Systems

Proposed Activity

Table 1. Activity Summary		
Activity	GWA	Angel
Facility location	19° 39' 12" S 115° 55' 42" E	19° 29' 55.144" S 116° 35' 53.066" E
Production Licence Areas	WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L	WA-3-L, WA-16-L
Pipeline Licences	WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL	WA-14-PLw
Facility type	Fixed platform, processing equipment, pipelines	Fixed platform, processing equipment, pipelines
Subsea infrastructure	Wells, Xmas trees, manifolds, flowlines/ pipelines and umbilicals, and explorations wells with wellheads	Wells, Xmas trees, manifolds, flowlines/ pipelines and umbilicals, and explorations wells with wellheads
Vessels	Platform support vessels, subsea support vessels, heavy lift vessels and others appropriate to nature of petroleum activities.	Platform support vessels, subsea support vessels, heavy lift vessels and others appropriate to nature of petroleum activities.
Distance from platform to the nearest port	~ 138 km	~ 128.5 km
Distance from platform to nearest marine park	~ 46.5 km	~ 90 km
Water depth at Field Production System	131 m	80 m
Field Production System commissioned	1995	2008

GWA Location and Operations

GWA produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

Two processing trains on the facility process the production fluids via a series of cooling, separation, compression and dehydration processes before being exported via a 23 km inter-field line to the North Rankin Complex (NRC) facility and then to the Karratha Gas Plant (KGP) for processing via one of the NWS Project's trunklines.

The facility was commissioned as an integrated drilling, production, utilities and accommodation platform. However, the GWA facility no longer has drilling capability and drilling does not form part of the scope of the revised Environment Plan.

Angel Location and Operations

Until late 2020 gas and condensate were produced from the Angel field via three wells tied back to the Angel facility by rigid flowlines. The wells were shut in following high water cut and are currently being monitored while assessment of long-term management plans for the wells is undertaken.

Angel topsides processing equipment and subsea infrastructure were subsequently placed in preservation mode, with topsides processing equipment scheduled to be recommissioned at the start-up of the Lambert Deep well tie-back in 2022.

Dry gas and condensate production from the Lambert Deep reservoir will be processed via the single train on the Angel facility. Condensate and gas will be comingled for export and transport along a 49 km export pipeline to the NRC and then to KGP for processing via one of the NWS Project's trunklines.

The Angel platform is a not normally manned facility, with the subsea system and processing equipment typically controlled from the NRC via an integrated power and control cable.

Proposed Activities GWA and Angel

Production - GWA

Production will continue from the GWA facility. Production will commence from new wells once construction and commissioning of the Greater Western Flank 3 (GWF-3) wells and associated subsea infrastructure have been completed under the accepted GWF-3 and Lambert Deep Environment Plan in Q2 2021 to Q2 2022.

Production - Angel

Production will commence from the Lambert Deep reservoir in approximately Q2 2022 following construction and commissioning of the LDA-01 well and associated subsea infrastructure have been completed under the accepted GWF-3 and Lambert Deep Environment Plan in Q2 2021 to Q2 2022.

Subsea Inspection

Inspection of subsea infrastructure is the process of physical verification and assessment of subsea components in order to detect changes compared to its installed state. Typical site inspection activities include visual surveys via a remotely operated vehicle, side scan sonar surveillance, cathodic protection measurements and ultrasonic pipe condition checks.

Monitoring

Monitoring is the surveillance of the physical and chemical environment around subsea infrastructure. Monitoring activities may include process composition, corrosion probes, corrosion mitigation checks, and metocean and geological monitoring.

Repair

Repair activities are those required when a subsea system or component is degraded or damaged as defined by design codes.

Maintenance

Maintenance of subsea infrastructure is required at regular and/or planned intervals to maintain performance reliability and prevent deterioration or failure of equipment. Maintenance activities may include cycling of valves and leak pressure testing.

Decommissioning - GWA

The Yodel-3 and Yodel-4 wells have been plugged and production is now suspended. All activities associated with final plugging and abandonment are provided for under the approval of the Echo Yodel and Capella Plugging for Abandonment Environment Plan (NOPSEMA ID 5488). The Echo Yodel pipeline is suspended and isolated. All activities associated with decommissioning are to be provided for under the Echo Yodel Decommissioning Environment Plan. Maintenance of the subsea infrastructure will be continued under the GWA Operations Environment Plan until decommissioning activity commences.

Decommissioning - Angel

The subsea infrastructure tying the three Angel wells back to the Angel facility are to be flushed of hydrocarbons. This will be completed in preparation for the permanent plugging for abandonment of the three wells, which will be the subject of a separate Environment Plan. Following plugging and abandonment the associated subsea infrastructure is planned to be decommissioned, with these activities also subject to a separate Environment Plan.

Activity Vessels

Operations support vessels will be used to undertake inspection, maintenance and repair of subsea infrastructure. The vessel size and type will be dependent on the work scope.

Implications for Stakeholders

Woodside is consulting relevant shareholders whose functions, interests or activities may be affected by the proposed activities. We will also keep other stakeholders who have identified an interest in the activities informed about our planned activities.

Woodside has undertaken an assessment to identify potential risks to the marine environment and relevant stakeholders, considering timing, duration, location and potential impacts arising from petroleum activities.

A number of mitigation and management measures will be implemented and are summarised in Table 3. Further details will be provided in the Environment Plan.

Table 2. Summary of key risks and/or impacts and management measures

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned	
Chemical use	 Chemical use will be managed in accordance with Woodside chemical selection and approval procedures.
Interests of relevant stakeholders including: • Defence activities	• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies will be conducted to inform decision making for the proposed activity and revision of the Environment Plan.
 Petroleum activities Commercial and recreational fishing activities 	• All vessels within the Operational Area will be required to adhere to the navigation safety requirements including the <i>Navigation Act 2012</i> (Cth) and any subsequent Marine Orders.
Shipping activities	
Marine discharges	 All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable.
Physical presence of infrastructure on seafloor causing interference/ displacement	 Flowline and well locations will be marked on nautical charts, which state that vessels should avoid anchoring, trawling or conducting other underwater operations in the vicinity of the infrastructure.
Vessel interaction	 Navigational aids and practices will be used as required by Maritime Regulations to minimise potential impact on other marine users.
	 A 500 m radius Petroleum Safety Zone (exclusion zone) will be implemented around the GWA and Angel facilities.
	 A 1500 m Operational Area will be implemented around the GWA and Angel Field Production System subsea infrastructure, including wells and flowlines/pipelines.
	• A 500 m Operational Area will be implemented around exploration wells with wellheads that do not fall within the above Operational Area for the production system.
	• Commercial fishers and other marine users will be permitted to use but should take care when entering the Operational Area.
	 Stakeholder engagement activities will be conducted as part of the Environment Plan.
Waste generation	• Waste generated on the vessels will be managed in accordance with applicable legislative requirements and a Waste Management Plan.
	• Waste will be managed and disposed of in a safe and environmentally responsible manner that aims to prevent accidental loss to the environment.
	Waste transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Underwater Noise	 Noise will be generated by support vessels. Due to the low acoustic source levels associated with vessel operations there is not likely to be any interaction or potential impact to fish hearing, feeding or spawning.
Unplanned	
Hydrocarbon release	 Appropriate spill response plans, equipment and materials will be in place and maintained.
	 Appropriate equipment will be used to prevent spills to the marine environment.
Introduction of invasive marine species	• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species.
	 Australian biosecurity requirements and guidance will be complied with.
Marine fauna interactions	 Vessel masters will implement interaction management actions in accordance with the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth).

Providing Feedback

Our intent is to minimise environmental and social impacts associated with the proposed activities, and we are seeking any interest or comments you may have to inform our decision making. If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **3 June 2021**.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

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Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.

