Woodside Energy

CONSULTATION

INFORMATION SHEET

April 2023

JULIMAR DEVELOPMENT PROJECT PHASE 3 (JDP3) DRILLING AND SUBSEA INSTALLATION ENVIRONMENT PLAN

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside consults relevant persons in the course of preparing an environment plan (EP) to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that could be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. This is the intended outcome of consultation.

Woodside's aim is to ensure the activity is carried out in a manner that is consistent with the principles of ecologically sustainable development (ESD), by which the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and of an acceptable level. We want relevant persons whose functions, interests or activities that may be affected by the proposed activity to have the opportunity to provide feedback on our proposed activity, in accordance with the intended outcome of consultation.

Activity overview

Drilling activities

Woodside is planning to develop the Julimar Development Project Phase 3 (JDP3) wells and subsea infrastructure, which will connect to the existing Julimar Field Production System, located around 160 km north-west of Dampier and adjacent to the Chevron operated, Wheatstone Platform.

Woodside plans to drill up to four wells (JUA1C, JUA1E, JUB1A and J-85 development well[1]) in the Julimar field and one well (JUB1B) in the Penfolds prospect, located in permit area WA-49-L. The wells are located at a water depth of between approximately 120 to 210 m (see **Table 2**).

If required, Woodside may intervene or workover any of the JDP3 development wells drilled under this EP, and the JULA or Brunello Manifold production wells to monitor and maintain their integrity.

Other contingent activities that Woodside may need to perform include well abandonment, re-spud, side-track, well suspension, well intervention, well work-over, leaving wellhead assembly in situ, sediment mobilisation and relocation, venting, well test/unload and emergency disconnect sequence.

Subsea installation and commissioning activities

Woodside also plans to install subsea infrastructure to connect the JDP3 wells to the existing Julimar Development Project Phase 1 and Phase 2 infrastructure and the third-party operated Wheatstone Platform and onshore LNG plant to process the gas. Subsea infrastructure includes Xmas trees, flowlines and umbilicals, and a manifold (see **Table 1**).

Proposed activities also include pre-commissioning and cold commissioning activities, including verification of subsea control systems and function testing of valves and instruments. The JDP3 production system is anticipated to have a design life of around 25 years.

Table 1 summarises the project activities, which involves connections of two wells (JUB1B and JUB1A) to a new two slot production manifold (JULB). The new manifold will tie into the existing in-line tee (ILT) assembly via approximately 2.5 km of flexible flowline and umbilical. JUB1B will connect to the new JULB manifold by approximately 4.4 km flexible flowline and umbilical.

Three wells (JUA1C, JUA1E and the J-85 development well) are planned to tie back to empty slots located at the existing JULA production manifold via flexible flowlines and umbilicals.

The proposed activities are currently anticipated to be commenced between around Q3 2024 and Q1/Q2 2025, subject to EP approval. The timing and duration of the proposed activities is subject to change due to approvals, project schedule requirements, vessel availability, weather or unforeseen circumstances.

Activities will occur predominantly within the WA-49-L title area with some overlap with neighbouring Chevron operated title areas WA-5-R, WA-76-R and WA-526-P (see **Figure 1**).

Start-up and operation of the JDP3 production system will be subject to approval of a future revision of the Julimar Operations Environment Plan.

Project vessels

It is intended that the proposed activity will be performed by either a moored semi-submersible mobile offshore drilling unit (MODU), dynamically positioned (DP) MODU or a hybrid MODU which will moor on the seabed and operate on DP assist mode.

The hybrid MODU may operate at JDP3 in moored with dynamic positioning (DP) assist mode, which will have DP running for some or all of the time. Typically, two or three vessels will support the MODU during drilling activities, with at least one vessel in the vicinity to complete standby duties, if required.

Supply vessels from nearby ports will frequent the MODU at regular intervals, throughout operations. MODU moorings may be pre-installed up to three months prior to MODU arrival on location.

The flowlines, umbilicals, manifold and remaining subsea infrastructure are planned to be installed and tested from a primary installation vessel which may also support cold commissioning prior to start-up.

[1]The J85 reservoir development well location is not yet determined, though it will be within ~2 km of the JULA manifold.

Cold commissioning could also be performed using a subsea Inspection, Maintenance and Repair (IMR) vessel if required. Xmas trees may be installed by the MODU, or with an IMR vessel.

Drilling activities are currently expected to take approximately 60 days per well to complete, including mobilisation, demobilisation and contingency activities. It is anticipated that vessels will operate 24 hours per day, seven days per week for the duration of the activities.

Subsea installation and commissioning activities are likely to take approximately 100 days, with production targeted for around the second half of 2025. The wells may be developed as a single campaign or a second shorter campaign may be required in 2026, with production for those second campaign wells expected to commence in around 2026 or 2027.

Simultaneous Operations (SIMOPS) activities may occur whilst the proposed activities are underway (e.g. subsea installation nearby drilling activities but not at the same well location). Timing and duration of all activities is subject to change due to project schedule requirements, MODU/vessel availability, unforeseen circumstances and weather.

Communications with mariners

A 4 km radius Operational Area will be applied around the JDP3 development well centres allowing for well intervention, drilling and temporary installing of MODU moorings. A 1.5 km radius Operational Area will also be applied around subsea installation locations.

A temporary 500 m safety exclusion zone will apply around the MODU and subsea installation vessel, as well as the IMR vessel if used for commissioning, to allow management of movement and positioning of vessels.

Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area and remain clear of the exclusion zone. The JDP3 wells will continue to be marked on navigational charts.

Background

Woodside Energy Julimar Pty Ltd (Woodside), is operator of the Julimar Field Production System in Title Areas WA-49-L, WA-26-PL and WA-29PL. The system consists of subsea wells, Xmas trees, manifolds, flowlines/ pipelines and umbilicals. The system produces gas and condensate from the Brunello and Julimar fields to the offshore Chevron-operated Wheatstone platform. Gas and condensate from the Wheatstone Platform are then transported to the onshore Chevron-operated Wheatstone LNG facility for processing, storage and supply of LNG and condensate to customers. The system normally operates 24 hours per day, 365 days per year.

Assessment

The EP has risk-assessed drilling activities, installation of subsea infrastructure, support operations and contingency activities such as intervention, workover, or re-drilling activities throughout the year (all seasons) to provide operational flexibility for requirements and schedule changes and MODU/vessel availability.

Woodside has undertaken an assessment to identify potential risks to the marine environment and relevant persons, considering timing, duration, location and potential impacts arising from the planned activities. A number of mitigation and management measures will be implemented and are summarised in **Table 3**. Further details will be provided in the EP.

In preparing the EP, 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.

Joint Venture

Woodside Energy Julimar Pty Ltd is operator on behalf of the Julimar joint venture participants. The participants are Woodside and KUFPEC Australia (Julimar) Pty Ltd.

We welcome your feedback by 26 May 2023.

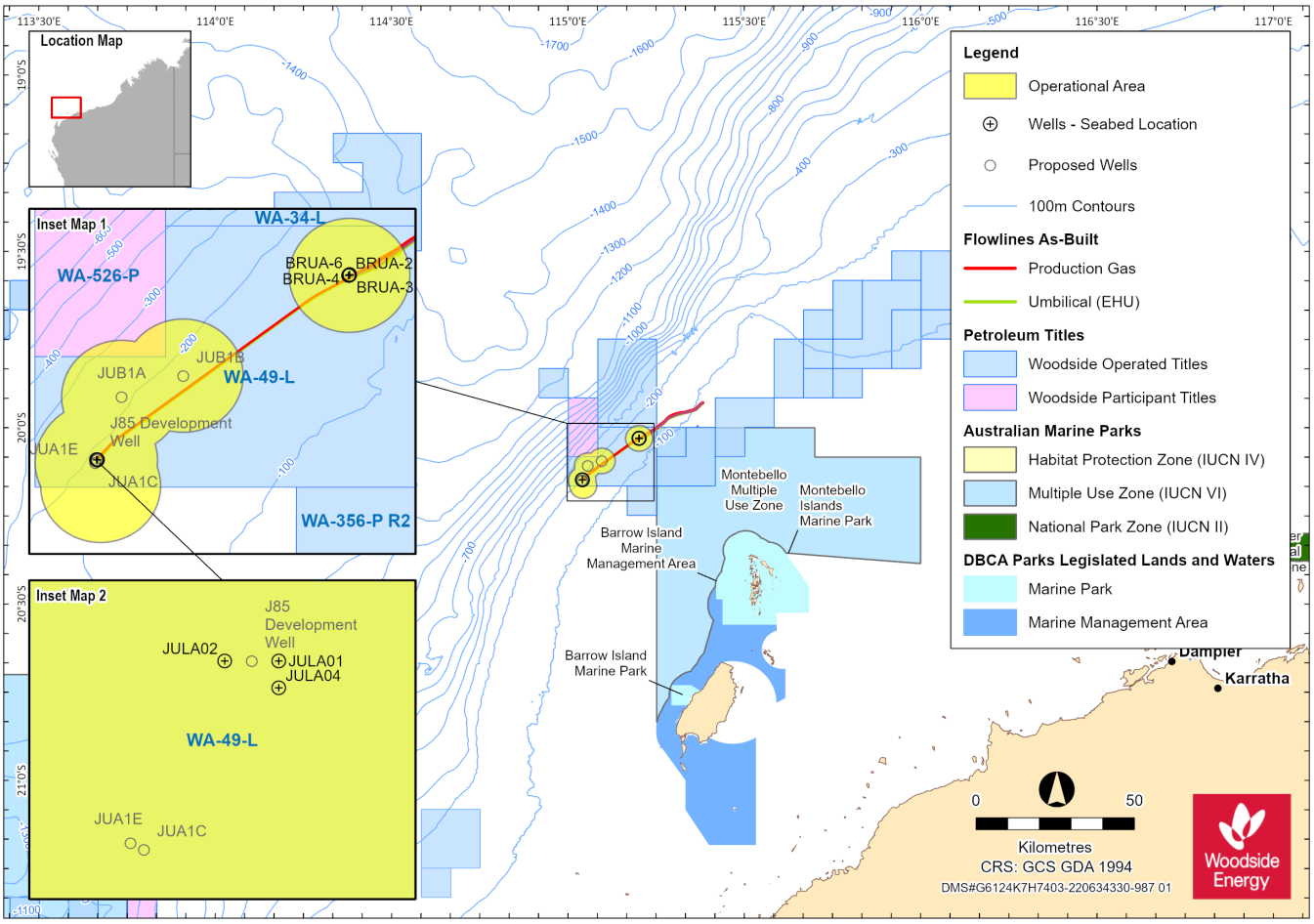

Figure 1 Petroleum Activity Program Operational Area

Table 1. Activity summary

JDP3 Environment Plan	
Summary	• Drill up to four wells (JUA1C, JUA1E, JUB1B and J-85 development well) in the Julimar field and one well (JUB1B) in the Penfolds prospect. • Installation of subsea infrastructure to connect the wells to the existing Julimar Development Project Phase 1 and Phase 2 infrastructure and the third-party operated Wheatstone Platform and onshore LNG plant. • Pre-commissioning and cold commissioning activities up to the point of introduction of hydrocarbons.
Permit Area	• Activities will occur predominantly within the WA-49-L title area with some overlap with neighbouring Chevron operated title areas WA-5-R, WA-76-R and WA-526-P.
Approximate water depth	• ~120 – 300m
Commencement date	• Drilling is currently anticipated to be conducted between around Q3 2024 – Q1/2 2025, subject to EP approval. However, drilling may be performed at any point within three years of EP acceptance. • Subsea installation is currently anticipated to be undertaken between around Q1 2025 – Q2 2025, subject to EP approval. • Pre-commissioning and cold commissioning activities are currently anticipated to be conducted between around Q2/Q3 2025, subject to EP approval.
Approximate estimated duration	• Drilling: Activities are currently anticipated to take approximately 60 days per well to complete. • Subsea installation and commissioning: Activities are currently anticipated to take approximately 100 days to complete, with production targeted for around the second half of 2025. • The wells may be developed as a single campaign or a second shorter campaign may be required in about 2026, with production for those second campaign wells expected to commence in around 2026 or 2027. • Simultaneous Operations (SIMOPS) activities may occur (e.g., subsea installation nearby drilling activities but not at the same well location). • If required, well intervention activities will take up to approximately 70 days per well to complete.

Infrastructure	• Up to five Xmas trees and wellheads
	• One two-slot production manifold complete with mudmat
	• Flexible production flowlines complete with diverless connectors
	  • ILT to JULB manifold –~2.5 km
	  • JULB manifold to Penfolds well – ~4.4 km
	  • JULA manifold to J85 production well – ~2 km
	• 2 x flexible jumpers complete with diverless connectors, connecting JULA manifold to 2 x JULA production wells –~300 m
	• 1 x flexible jumper complete with diverless connectors, connecting JULB manifold to 1 x JULB production well –~100 m
	• 2 x umbilicals associated with production flowlines (~diameter 150 mm)
	• Flying leads (FLs) connecting each Xmas tree to the manifolds and connecting to the existing subsea production control system
	• Potential ubsea cooling skid associated with the J85 reservoir tie back.
	• Five Umbilical Termination Assemblies (UTA) complete with mudmats
	• Mattresses/grout bags (~40)

Vessels	• Moored MODU, DP MODU or hybrid moored/DP MODU • Primary Installation Vessel • Inspection, Maintenance and Repair (IMR) Vessel • Support vessels including anchor handling vessel(s) and general supply/support vessels • DP Well Intervention Vessel (contingency only) • Subsea support vessel (optional for well head recovery)

JDP3 Environment Plan	
Operational Areas and Exclusion zones	• The Well Operational Area includes a radius of 4 km around development well centres, in which drilling related activities will be managed under this EP. This Operational Area allows for temporary installation of MODU moorings. The J85 Well Operational Area overlaps the Chevron operated WA-5-R Petroleum Title (this will include MODU mooring lines). • The Well Intervention Operational Area encompasses a radius of 4 km around existing Julimar Brunello production well centres, in which well intervention activities may take place and be managed under this EP. • The Subsea Installation Operational Area encompasses a 1.5 km radius (3 km corridor) around the subsea installation locations in which subsea installation and pre-commissioning activities will occur. The 1500 m (radii) Operational Area around subsea installation allows for the movement and positioning of vessels. • The Well Operational Area includes a 500 m safety exclusion zone around the MODU to manage vessel movements as well as the IMR vessel if used for commissioning activities. The 500 m safety exclusion zone is under the control of the MODU Person in Charge. The Primary Installation Vessel, operating within the Subsea Installation Operational Area, will also be surrounded by a 500 m safety exclusion zone when on-location and which be under the control of the vessel master. • The Operational Areas are collectively referred to as the Petroleum Activity Area (PAA) in this EP, with specific Operational Areas referred to where relevant. Vessel-related activities within the PAA will comply with this EP. Vessels supporting the Petroleum Activities Program when outside the PAA must adhere to applicable maritime regulations and other requirements. • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities.
Distance to nearest town	• ~160 km west-north-west of Dampier
Distance to nearest marine park/ nature reserve	• ~37 km north-west of the Montebello Islands Marine Park (State) • ~1 km north-west of the Montebello Multiple Use Zone (Cwlth)

Table 2. Approximate Locations

Activity	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
New Wells and Manifold					
JUA1C	~173 m	20° 08' 59.969" S	115° 02' 23.622" E	Temporary 500 m radius	WA-49-L
JUA1E	~174 m	20° 08' 58.753" S	115° 02' 22.501" E		WA-49-L
JUB1A	~191 m	20° 06' 27.931" S	115° 03' 23.418" E		WA-49-L
JUB1B (Penfolds)	~169 m	20° 05' 39.071" S	115° 05' 44.871" E		WA-49-L
JULB Manifold	~192 m	20° 06' 26.41"S	115° 03' 24.02"E		WA-49-L
J85 Reservoir Development Well**	~158-207 m	20° 08''52.917" S	115° 02 27.23" E		WA-9-PL
Existing or Approved Wells					
BruA-2	149 m	20°01'49.1571" S	115°12'05.6357" E	Temporary 500 m radius***	WA-49-L
BruA-3	149 m	20°01'47.8720" S	115°12'07.0511" E		WA-49-L
BruA-4	149 m	20°01'48.1207" S	115°12'07.5964" E		WA-49-L
BruA-5	149 m	20°01'49.6633" S	115°12'05.7596" E		WA-49-L
BruA-6	149 m	20°01'48.4958" S	115°12'07.8942" E		WA-49-L

Activity	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
JULA-01	174 m	20° 08' 52.996" S	115° 02' 28.377" E		WA-49-L
JULA02	174 m	20° 08' 52.222" S	115° 02' 26.436" E	Temporary 500 m radius if contingency activities are required	WA-49-L
JULA04	174 m	20° 08' 53.554" S	115° 02' 28.078" E		WA-49-L
Existing Subsea Infrastructure					
JDP2 ILT Assembly (existing)	167 m	20° 07 '36.11" S	115°04 '12.23" E	Temporary 500 m radius if contingency activities are required	WA-49-L
JULA Manifold (existing)	174 m	20° 08 '52.917" S	115°02 '27.23" E		WA-49-L

* *Well coordinates are approximate and could shift within a 2 km radius of the indicative location within WA-49-L.*
** *The J85 reservoir development well location is not yet determined, though it will likely be within ~2 km of the JULA manifold. As such the coordinates provided for this well in the above table are those of the JULA manifold and depth range demonstrates the depths within this 2 km radius*
*** *Relates primarily to installation of Subsea Power and Communication Unit, location is not yet determined. Also relates if contingency activities are required*

Environment That May Be Affected (EMBA)

The environment that may be affected (EMBA) is the largest spatial extent where the JDP3 drilling and subsea installation program [Petroleum Activities Program (PAP)] could potentially have an environmental consequence (direct or indirect impact). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment as a result of well loss of integrity and a vessel collision. This is depicted in **Figure 2**.

The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

For this EP Woodside has defined the EMBA by combining the potential spatial extent of surface and in-water (dissolved and entrained) hydrocarbons, resulting from a worst-case credible spill, loss of well integrity, and vessel collision.

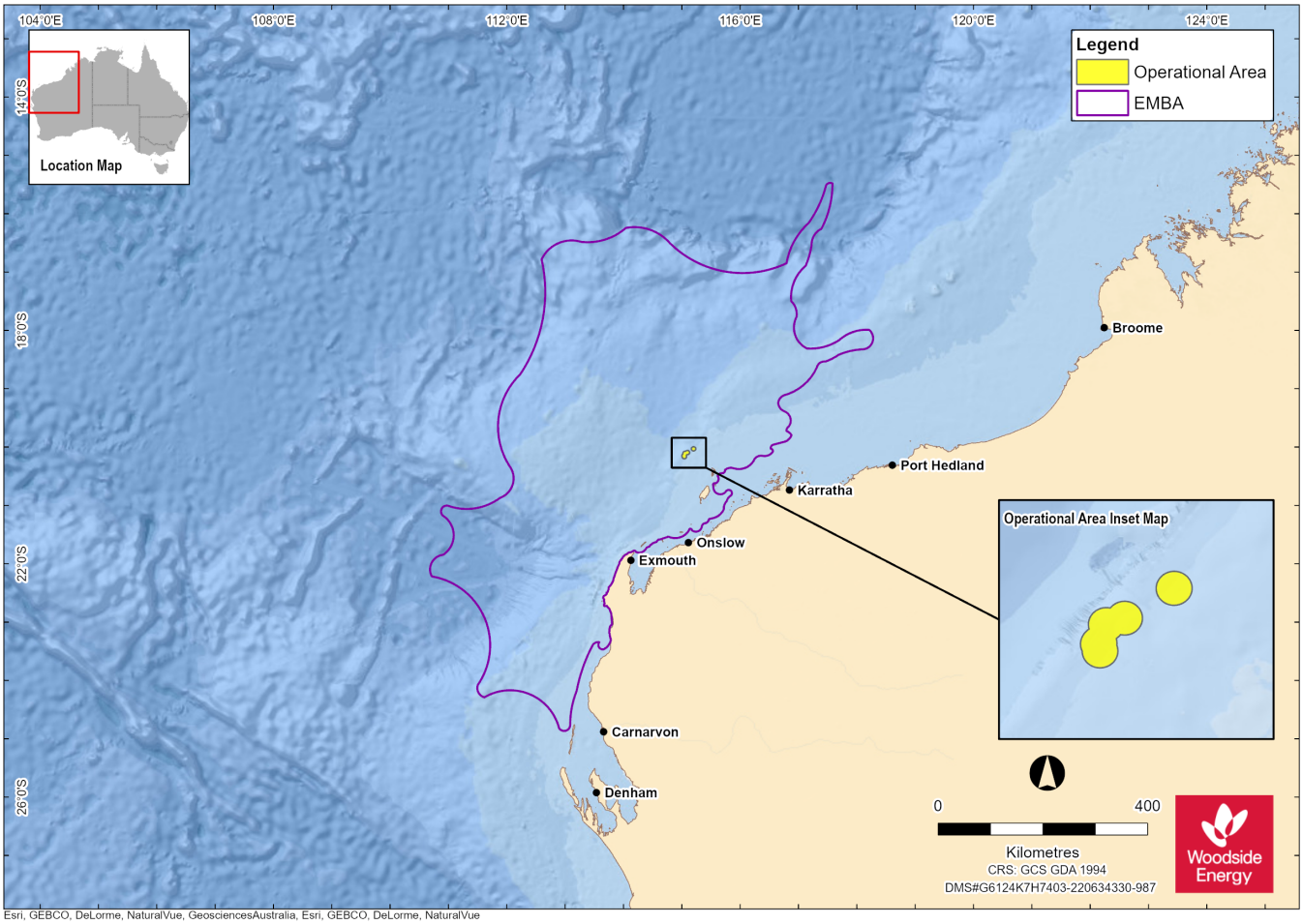

Figure 2 Environment that May Be Affected by the JDP3 Petroleum Activities Program

Mitigation and Management Measures

Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from the proposed JDP3 activities considering timing, duration, and location.

A number of mitigation and management measures for JDP3 activities are outlined in **Table 3**. Further details will be provided in the EP.

Table 3. Summary of key risks and/or impacts and management measures for the proposed JDP3 activities

Potential Risk and/or Impact	Description of Source of Potential Impact/Risk	Description of Potential Impacts	Preliminary Draft Mitigation and/or Management Measure
Planned			
Physical presence: interference or displacement of third party vessels	• Several vessel types will be required to complete the activity, and may include a MODU (either moored, operating on DP, or a hybrid of the two), installation vessels, inspection, maintenance and repair (IMR) vessels, well intervention vessels and support vessels. • The MODU will be present for up to ~60 days per new production though this could be longer if well intervention is required. • The physical presence and movement of project vessels within the Operational Area has the potential to displace other marine users. • The presence of subsea infrastructure also has the potential to displace third party vessels.	• Other vessels in the Operational Area, which may include commercial fishing and shipping and defence may experience temporary and localised displacement during the activity. • The Pilbara Line and Mackerel Managed fisheries were the fisheries considered to be active in the vicinity of the operational area. The operational area is located in water depths of 120 - 300m, the shallower extent of which is within the depth range where typical fishing efforts for some relevant fisheries may occur. • Tourism and recreation within the operational area are expected the be limited. The Montebello Islands are the closest location for frequent tourism activities, located approx. 42 km from the Operational Area. Recreational fishing may occur in the Operational Area, though given the water depths and distance from the shore, frequency and intensity of recreational fishing effort is expected to be low. Given the location and short-term nature of activities, it is expected that any impacts would be localised with no lasting effect. • The Operational Areas do not overlap any shipping fairways and as such impacts to shipping are unlikely.	• Vessels adhere to the regulatory requirements for navigational safety. • Establish a 500 m petroleum safety zone around MODU (and decommissioning, and intervention vessels, if required) which is communicated to marine users. • Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and on completion of activities. • Notify the Australian Hydrographic Office (AHO) prior to commencement of the activity to enable them to update maritime charts ensuring marine users are aware of the activity. • Notify Department of Defence of activities no less than five weeks before the scheduled activity commencement date. • Consult with relevant persons so they are informed of the proposed activities.
Physical presence: seabed disturbance	Seabed disturbance may result from the following: • Subsea infrastructure including wellheads, JULB manifold and flexible flowlines • MODU mooring system • Movement of a ROV near seabed. • DP transponders - clump weight • Stabilisation weights • Temporary installation aids	• Habitat modification as a result of seabed disturbance could occur within a localised radius of the well. Near this area, it is possible that benthic communities may be reduced or altered, leading to a highly localised impact to epifauna and infauna benthic communities present. • The Continental Slope Demersal Fish Communities Key Ecological Feature (KEF) overlap the Operational Areas. Potential seabed disturbances in this area are expected to be localised and short-term and are unlikely to affect the ecological value of the KEF. • The operational area for the contingent well intervention scope at the BRUA wells overlaps the Ancient Coastline at 125 m depth contour KEF.	• Mooring systems (chains/wires and anchors) will be removed at the conclusion of the activity. • Infrastructure will be placed on the seabed within the predefined design footprint using positioning technology to limit seabed disturbance. • MODU well site locations consider seabed sensitivities. • Impacts to cultural heritage areas or prospective areas to be avoided and/ or mitigated in accordance with Woodside's First Nations Communities Policy.

Routine acoustic emissions	• Project vessels may generate noise in the air and underwater due to the operation of thruster engines, propellers, and on-board machinery etc. • Underwater noise may also be generated by positioning equipment (subsea transponders).	• Elevated underwater noise may affect marine fauna, including marine mammals (cetaceans), turtles and fish in three main ways: 1. By causing direct physical effects, including injury or hearing impairment. Hearing impairment may be temporary (temporary threshold shift – TTS), or permanent (permanent threshold shift - PTS), with PTS generally considered to represent a form of injury. 2. Through disturbance leading to behavioural changes or displacement from important areas. The occurrence and intensity of disturbance is highly variable and depends on a range of factors relating to the animal and situation. 3. By masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey). • It is not expected that individual cetaceans that may pass through the Operational Area would experience PTS, given individuals would need to remain within 150 m of the drilling activity for a period of 24 hours continuously. • TTS onset is also considered highly unlikely given the known movement behaviour of cetaceans including key migrating whale species (pygmy blue whale and humpback whale) transiting through the Operational Area. • The Operational Area is not known to represent significant foraging/ aggregation habitat for cetaceans and individuals are not expected to dwell for extended periods. • Marine turtles within the Operational Area are expected to be transient and behavioural impacts are expected to be short term and localised. It is not expected that permanent and temporary thresholds would be exceeded for marine turtles. • Potential impacts from acoustic emissions on fish, sharks and rays are likely to be restricted to localised and temporary avoidance behaviour.	• Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions. • Implement adaptive management procedure prior to and during MODU/ installation vessel moves.

Routine and non-routine discharges: project vessels	• Sewage, greywater, and putrescible waste will be discharged from MODU and project vessels. • Bilge water, deck drainage and brine and cooling water may also be discharged.	• The main impact associated with ocean disposal of sewage and other organic wastes (i.e. putrescible waste) is eutrophication. Eutrophication occurs when the addition of nutrients, such as nitrates and phosphates, causes adverse changes to the ecosystem including short-term, localised impacts to water quality. • No significant impacts to water quality are expected from planned discharges because of the minor quantities involved, the expected localised mixing zone, and the high level of dilution into the open water marine environment of the Operational Area. • Similarly, although some marine fauna may transit the Operational Area, potential for impacts remains low due to the localised nature of discharges and rapid dilution.	• Comply with regulatory requirements for marine discharges. • Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Where there is potential for loss of primary containment of oil and chemicals on the MODU, deck drainage must be collected via a closed drainage system e.g., drill floor.
Routine and non-routine discharges: Flowline and subsea installation fluids	• Routine discharge of small volumes of flowline and subsea installation fluids to the marine environment from hydrotesting of subsea infrastructure and tie in of flowlines and monoethylene glycol (MEG) jumper.	• Impacts from routine and non routine discharges of these fluids will be localised to the immediate vicinity of the release location with short-lasting impacts, given the low potential for toxicity and bioaccumulation of MEG, and small volumes discharged, rapid dilution and low sensitivity of the receiving environment. • Gas and condensate gas released from manifolds during verification testing will become dispersed as bubbles in the water column which will rise to the surface. Receptors that may be impacted by the condensate release during verification testing are in-water receptors within the immediate vicinity of the release location, including plankton and pelagic fishes and are predicted to result in localised impacts with no lasting effect.	• Comply with regulatory requirements for marine discharges. • Chemicals intended or likely to be discharged into the marine environment reduced to ALARP using Woodside's chemical assessment process. • ROV inspection during hydrotest to identify any leakage.

Routine and non-routine discharges: drill cuttings, drilling fluids and well removal fluids	Drilling operations may result in the following discharges: • Routine discharge of Water Based Mud (WBM) and/or treated Non-Water Based Mud (NWBM) and drill cuttings to the seabed and marine environment will occur. • Discharges of other fluids may occur as required such as wash water from mud pits, vessel tank wash fluids and well clean-out fluids.	• Increased turbidity and total suspended sediment levels above ambient concentrations above the seabed (for top-hole well sections) or in the upper surface layers (for bottom-hole well sections). This reduction in water quality will be temporary (limited to the operational discharges during drilling) and subject to rapid dispersion and dilution by prevailing seabed currents. • Cutting of the wellhead may result in localised smothering of benthic communities as well as create localised and temporary increases in turbidity around the well. • It is expected that potential impacts to plankton species will be highly localised, within tens of metres, and return to previous conditions within a relatively short period of time due to the open nature of the marine environment and associated environmental conditions, the content and dispersive nature of drilling muds within the marine environment and the high population replenishment of these organisms. • Potential impacts to benthic communities will be largely limited to an area surrounding the well location. The low sensitivity of the benthic communities/habitats within and in the vicinity of the Operational Area, combined with the low toxicity of WBMs and residual NWBMs, no bulk discharges of NWBM and the highly localised nature and scale of predicted physical impacts to seabed biota, mean predicted impact is considered to be slight. • Potential impacts to the Continental Slope Fish Communities and Ancient Coastline at 125 m depth contour KEFs, which overlap the Operational Area, relate to ecological impacts to the seabed habitat and benthic communities. The extremely small portion of each KEF predicted to be impacted in combination with the predicted recovery of the affected benthic communities, mean that predicted impact is minor. • As only a small portion of each KEF overlap the Operational Area and in combination with the predicted recovery of the affected benthic communities, any potential impact is considered to have no lasting effect.	• All chemicals intended or likely to be discharged into the marine environment reduced to ALARP using the Woodside chemical assessment process. • NWBM base oils selected based on expected toxicity. • NWBMs only used where written justification process has been followed and bulk NWBM will be retained for disposal onshore or maintained on rig for re-use. • Fluids contaminated with hydrocarbons will be treated to meet specified discharge limits prior to discharge or contained. If discharge specifications are not met the fluids will be returned to shore. • Drill cuttings returned to the MODU will be discharged below the water line to facilitate dispersion.

Routine and non-routine discharges: cement, cementing fluids, subsea well fluids, produced water, unused bulk product and subsea chemicals	• Routine discharge of cement and cementing fluids to the seabed and marine environment. • Routine discharge of subsea well fluids (inc. BOP and well construction, well intervention / workover activity control fluids). • Produced / reservoir water disposal • Potential non-routine discharge of unused bulk product.	• Cement operations during drilling involve routine and non-routine discharges that can result in turbidity in the water column. Reduction in water quality will be temporary (limited to the cement operational discharges during drilling) and subject to rapid dispersion and dilution by prevailing currents. • The highly localised physical footprint of cement on the seabed at the well site is not expected to affect the overall diversity or ecosystem function of the benthic communities of the area. • Given the minor quantities of routine and non-routine planned discharges (including subsea control fluids, well displacement fluids), short discharge durations and the low toxicity and high dispersion in the open, offshore environment, any potential impacts on the marine environment are expected to be localised. • Well intervention fluids are typically inert and of low toxicity. These fluids may include subsea control fluid, completions fluids and well annular fluids. Changes to water quality are expected to be localised and temporary as discharges would be discrete and short in duration.	• Chemicals intended or likely to be discharged into the marine environment reduced to ALARP using Woodside's chemical assessment process. • Fluids contaminated with hydrocarbons will be treated to meet specified discharge limits prior to discharge or contained. • No bulk cement, bentonite or barite discharged without a documented environmental assessment. Discharging of excess product to the marine environment will be the last option. • Unused MEG/brine will be returned to port/staging point for disposal where practicable
Atmospheric emissions	• Atmospheric emissions and greenhouse gases will be generated by the MODU, project vessels and helicopters from internal combustion engines and incineration activities. • Emissions may arise from venting greenhouse gases in the unplanned event of a 'well kick'. This venting process ensures well integrity is maintained and emergency conditions are avoided.	• Emissions from MODU, project vessels, helicopters and well kick venting could result in temporary, localised reductions in air quality in the immediate vicinity. • Given the offshore location of the PAA, and the low volumes of atmospheric emission which will be generated, biodiversity, ecological integrity, social amenities, and human health will not be impacted and any potential impact to air quality is slight. • Given the nature and scale of GHG emissions from vessel and MODU fuel usage for this activity, the potential GHG impact and risk from this activity is considered to have no lasting effect.	• Comply with regulatory requirements for marine air pollution and GHG emissions reporting. • Manage vessel speed to reduce fuel combustion where practicable. • Wells drilled in compliance with the accepted Well Operations Management Plan (WOMP), including implementation of barriers to prevent a loss of well integrity. • Mitigation measures to reduce gas venting volumes in the event of a well kick e.g., installation of a BOP.

Light emissions	• Project vessels will use external lighting to navigate and conduct safe operations at night. • Vessel lighting will also be used to communicate the vessel's presence to other marine users (i.e. navigation/ warning lights).	• Light emissions have the potential to affect fauna such as marine turtles in two main ways: 1. Behaviour: artificial lighting has the potential to create a constant level of light at night that may override natural levels and cycles 2. Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation. • The Operational Area may be occasionally visited by seabirds and overlaps the Wedgetail Shearwater Foraging Biologically Important Area. Potential impacts are expected to be limited to localised behavioural disturbance to isolated individuals, with no significant impact to seabird foraging.	• Lighting limited to the minimum required for navigational and safety requirements, with the exception of emergency events. • Flaring, if required, will be restricted to a duration necessary to achieve the well objectives, eliminating unnecessary flared volumes and corresponding light emissions. • Implementation of the Woodside Seabird Management Plan.
Unplanned			
Unplanned hydrocarbon release: loss of well integrity	• Accidental loss of hydrocarbons to the marine environment due to loss of well control may occur, caused by failure of well barriers. • A loss of well containment could credibly occur during drilling or well intervention and workover activities.	• A loss of well containment and resulting blowout event is considered to be a highly unlikely event as it has occurred only very infrequently in the industry, and never in the Company's history. • Modelling of a loss of well containment was undertaken with the outcome, EMBA, illustrated in Figure 2. • JULA04 Condensate, used as a representative analogue, is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporative conditions, about 43.6% of the oil mass should evaporate within the first 12 hours and up to a further ~22.9% could evaporate within the first 24 hours. • Potential impacts across the whole EMBA were assessed as including receptors such as plankton, fish, turtles, sea snakes, marine mammals, seabirds and migratory shorebirds, tourism, recreation, commercial fisheries, and cultural heritage (for example). • The consequence to potential receptors, taking into account receptor sensitivity, has the potential to result in major, long-term impacts or less.	**Preventing loss of well control** • Wells are intended to be drilled in compliance with the accepted WOMP including implementation of barriers to prevent a loss of well control. • Checks completed during well operations to establish a minimum acceptable standard of well integrity. • An approved Source Control Emergency Response Plan will be prepared prior to drilling each well including feasibility and specific considerations for relief well. • Subsea BOP specification, installation and testing compliant with internal Woodside Standards and international requirements. **Spill response arrangements:** • Develop a project specific Oil Pollution Emergency Preparation document (OPEP) including first strike response plan. • Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

Unplanned hydrocarbon release: vessel collision	• Project vessels will use marine diesel fuel, meaning a vessel collision involving a project vessel or third-party during the activity may potentially result in the release of marine diesel.
	• For a collision to result in the worst-case scenario diesel release, several factors must occur as follows:
	  • Identified causes of vessel interaction must result in a collision
	  • The collision has enough force to penetrate the vessel hull and in the exact location of the fuel tank
	  • The fuel tank must be full or at least of volume which is higher than the point of penetration
		• In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur.
		• Modelling of a surface release of marine diesel within ~2 km from the Operational Areas was used to understand potential impacts.
		• Marine diesel is a relatively volatile, non-persistent nature hydrocarbon with up to ~41% evaporating within the first 24 hours.
		• Potential impacts across the whole EMBA were assessed including receptors such as plankton, fish, marine turtles, marine mammals, seabirds and migratory shorebirds, tourism, recreation, and commercial fisheries (for example).
		• Taking into account receptor sensitivity, the receptors were rated as having a potential consequence level of 'Minor' or less.
			Preventing vessel collision:
			• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.
			• Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision.
			• Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision.
			• Maintain a support vessel on standby as required during the activity to assist in third-party vessel interactions to reduce the likelihood of a collision.
			• Simultaneous Operations (SIMOPS) plans in place
			Spill response arrangements:
			• Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested to ensure the OPEP can be implemented as planned.
			• Emergency response activities would be implemented in line with the OPEP.

Unplanned hydrocarbon release: bunkering	• Accidental loss of hydrocarbons to the marine environment during bunkering/refuelling may occur caused by partial or total failure of a bulk transfer hose or fittings due to operational stress or other integrity issues	• Marine diesel surface release expected to be confined to within several kilometres of the release site, and well within the EMBA identified for the vessel collision scenario. • This unplanned marine diesel release may have the potential to result in changes in water quality and fauna behaviour. • Receptors considered in the risk assessment for this unplanned event included marine mammals, marine reptiles, fish, sharks, and rays. • Taking into account receptor sensitivity, the receptors were rated as having a potential consequence level of 'Minor' or less.	**Preventing unplanned hydrocarbon release due to bunkering:** • Comply with regulatory requirements for the prevention of marine pollution. • Liquid chemical and fuel storage areas bunded or secondarily contained when they are not being handled or temporarily moved. • Appropriate bunkering equipment kept and maintained., • Compliance with Woodside and Contractor procedures for the management of bunkering/helicopter operations to reduce the likelihood and potential severity of a spill. **Spill response arrangements:** • Maintain and locate spill kits in proximity to hydrocarbon storage and deck areas for use to contain and recover deck spills. • Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

Unplanned discharge: project fluids	• Accidental discharge of drilling fluids (WBM/NWBM/base oil) and cement to marine environment due to failure of slip joint packers, bulk transfer hose/fitting, emergency disconnect system or from routine MODU operations.	• Unplanned discharges of drilling fluids have a worst-case credible spill scenario of up to 8 m^3. • Unplanned discharge of cement would typically be <100 litres. • These discharges would be to the sea surface and would rapidly dilute through mixing by surface currents and wave action. Any release of NWBM or WBM would be confined to open waters and would not reach any sensitive receptors. • Given the small volumes, and the offshore location of the Operational Area, any impact of change to water quality resulting from unplanned discharge of drilling fluids is expected to be negligible and temporary.	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • No overboard disposal of bulk NWBM. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/ moved temporarily. • Spill kits positioned in high-risk locations around the vessel (near potential spill points such as transfer stations). • Deck drainage collected via a closed drainage system where there is a potential for loss of primary containment of oil and chemicals on the MODU. • Compliance with Contractor procedures for the management of drilling fluids to reduce the likelihood and potential severity of a spill.
Unplanned discharge: deck and subsea spills	• Accidental discharge of hydrocarbons/ chemicals from MODU and project vessels deck activities and equipment, from subsea ROV hydraulic leaks.	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (<100 L) would be expected to potentially occur, resulting in very short-term impacts to water quality, and limited to the immediate release location. • No significant impacts from the accidental discharges described would be anticipated due to the offshore/open water locations, low sensitivity of surrounding water quality and high level of dilution into the open water marine environment of the Operational Area.	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/ moved temporarily. • Spill kits positioned in high-risk locations around the vessel (near potential spill points such as transfer stations).
Unplanned discharge: hazardous and non-hazardous solid waste/ equipment	• Accidental, unplanned loss of hazardous or non-hazardous solid wastes/equipment to the marine environment may occur if dropped or blown overboard.	• The potential impacts of hazardous or non-hazardous solid wastes and equipment accidentally discharged to the marine environment include contamination of the environment as well as secondary impacts relating to potential contact of marine fauna with wastes. • The temporary or permanent loss of waste materials/equipment into the marine environment is not likely to have a significant environmental impact, based on the location of the PAP, the types, size and frequency of wastes that could occur, and species present.	• Compliance with Marine Order 95 – marine pollution prevention—garbage. • Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of waste generated. • Any solid waste/equipment dropped to the marine environment will be recovered where safe and practicable to do so. • Where retrieval is not practicable and/ or safe, material items (property) lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.

Physical presence (unplanned): vessel collision with marine fauna	• Accidental collision between project vessels and protected marine fauna. • The factors that contribute to the frequency and severity of impacts due to collisions vary greatly due to vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth) and the type of animal potentially present and their behaviours.	• Vessel movements have the potential to result in accidental collisions between the vessel (hull and propellers) and marine fauna. • The risk of vessel collision with marine mammals is present year-round but is seasonally elevated for species such as pygmy blue whales during migration periods and within migration BIAs. Given the short duration of activities within the Operational Area, and the slow speeds at which project vessels operate collisions with cetaceans are considered highly unlikely. • It is expected that marine turtles will respond to vessel presence by avoiding the immediate vicinity of the vessels, and combined with low vessel speed, this will reduce the likelihood of a vessel-turtle collision.	• Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.
Physical presence (unplanned: seabed disturbance from dropped objects and loss of station keeping leading to anchor drag	• There is the potential for objects to be dropped overboard from the MODU or project vessels. • High energy weather events such as cyclones, occurring while the MODU or AHV is on station, can lead to excessive loads on the mooring lines, resulting in failure (either anchor(s) dragging or mooring lines parting). • A failure of mooring integrity may lead to the mooring lines and anchors attached to the MODU being trailed across the seabed. If mooring failure is sufficient, the MODU may move off station, increasing the likelihood of anchor drag across the seafloor.	• In the unlikely nature of anchor drag and the predicted small footprint of a dropped object, potential environmental effects would be limited to minor physical damage to seabed and benthic communities.	• MODU/installation vessel inductions include control measures for dropped object prevention. • Dropped objects to be recovered and relocated where safe and practicable to do so. • Where retrieval is not practicable and/ or safe, material items (property) lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title • Specifications and requirements for mooring systems enforced which require the system to have sufficient capability that a failure of single components will not cause progressive failure of the remaining anchoring arrangement. • Tracking of the MODU will be possible when the MODU is unmanned to ensure location is tracked at all times. • Project-specific Mooring Design Analysis and mooring system testing undertaken to reduce the likelihood of mooring failure or anchor drag.
Physical presence (unplanned): accidental introduction and establishment of invasive marine species (IMS)	• Vessels transiting to the Operational Area may be subject to marine fouling whereby organisms attach to the vessel hull. • Organisms may also be drawn into ballast tanks during onboarding of ballast water. • Submersible equipment may be subject to marine fouling.	• The deep offshore open waters of the Operational Areas, away from shorelines and/or critical habitat, more than 40 km from a shoreline and in waters more than 80 m deep, are not conducive to the settlement and establishment of IMS.	• Ballast water and biofouling will be managed according to regulatory requirements, including the Australian Ballast Water Management Requirements, and the Australian Biofouling Management Requirements (international vessels), as applicable. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment entering the Operational Area.

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities in the region.

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **26 May 2023** via:

E: Feedback@woodside.com.au
Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities: **www.woodside.com/sustainability/consultation-activities.**

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth) or the Petroleum (Submerged Lands) (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 EP in order for this information to remain confidential to NOPSEMA.