Woodside Energy

CONSULTATION

INFORMATION SHEET

July 2024

ANGEL CCS GEOPHYSICAL AND GEOTECHNICAL SURVEYS COMMONWEALTH AND STATE ENVIRONMENT PLANS

NORTH WEST SHELF, 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.

Overview

The Angel Carbon Capture and Storage Joint Venture (Angel CCS JV), of which Woodside is Operator, has identified the opportunity for a carbon capture and storage (CCS) project in the North-West region of Western Australia (WA). The proposed Angel CCS Project involves the development of a Carbon Dioxide (CO_2) gathering system, collecting CO_2 via new pipelines from emitters on shore or through imported options via ships. Collected CO_2 would be transported to a central compression facility prior to being transported offshore via subsea pipeline and injected into the subsea geological formation.

More information about the plans for the proposed Angel CCS Project is available at https://woodside.com/angelccs.

To support the Angel CCS Project, Woodside is proposing to undertake geophysical and geotechnical surveys to provide data to support the greenhouse gas (GHG) activity program. Data from the surveys is intended to inform the design for the pipeline and umbilical routes, subsea structure foundation locations and planning for mobile offshore drilling unit (MODU) anchoring or jack-up rig placement. The surveys will also support baseline studies to provide data on existing infrastructure and potential future activities.

Survey activities proposed to be undertaken in Commonwealth waters will be submitted to National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).*

Pending the introduction of legislation, survey activities proposed to be undertaken in State waters are currently intended be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) pending review of the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).*

Location and operations

The State Operational Area is proposed to be on the North West Shelf of WA extending from the state waters adjacent to the Karratha Gas Plant (KGP) out to the Commonwealth/State waters boundary.

The Commonwealth Operational Area is proposed to extend from the Commonwealth/State waters boundary, out to the Angel Field located in GHG Assessment Permit G-10-AP. A narrow survey corridor also extends west out from the Angel Field to petroleum title WA-1-L. Operational Areas are shown in **Figure 1.**

Woodside notes that the Commonwealth Operational Area is larger than the area of the GHG Assessment Permit G-10-AP and that within G-10-AP there are overlapping petroleum titles. Woodside will obtain key GHG Operation permits and GHG Special Authorities as applicable.

Surveys

Geophysical and geotechnical surveys are planned to assist to provide data for aspects of the GHG activity program. The surveys will involve seafloor sampling and scanning in both State and Commonwealth waters for data collection to inform various phases of the Angel CCS Project.

For the purposes of the EPs, a 'survey' is defined as a suite of geophysical and/or geotechnical activities that are all conducted in a defined survey campaign. Survey activities under this EP will be conducted in the following permit areas:

- Commonwealth Operational Area includes permit titles: WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, WA-208-P, G-9-AP, G-10-AP, vacant acreage and vacant acreage release area W22-4
- State Operational Area includes permit title: vacant acreage.

Timing

The surveys are anticipated to commence around Q1 2025, with the State waters component estimated to take a total of approximately 80 days to complete and the Commonwealth component, a total of approximately 100 days. The survey activities are not planned to be undertaken in a single campaign and will be split into a number of campaigns over the five-year validity period of the EPs. Timing and duration may be subject to change due to a number of factors including approvals, weather, project vessel availability, and other unforeseen circumstances.

The campaign may occur at any time throughout the year and therefore the EPs assess risks relevant to geophysical and geotechnical survey activities in all seasons to provide flexibility for campaigns.

Proposed future activity in State waters is pending revision of State regulations [and State EP approval].

Table 1 Summarises the activities, which will be managed under the Angel CCS Geophysical and Geotechnical Surveys EPs.

Project vessels

A number of project vessels will be used to complete the survey activities.

These may include a multi-purpose project vessel for geophysical and geotechnical survey and a smaller vessel to access the nearshore sections.

Geotechnical drilling may be performed from a supply vessel using a seafloor drilling unit or from a small jack-up barge. The barge will be positioned and supported using a small tug or multi cat.

Activities in Commonwealth waters may also require a larger vessel such as a geotechnical drilling vessel. Uncrewed surface vessels (USVs), controlled from a remote operations centre, are likely to replace conventional vessels for numerous survey tasks over the life of the EP. In addition, a drone or light aircraft may be used to capture data close to the shore.

Communications with mariners

A 500 m safety exclusion zone will apply around the project vessels conducting survey activities to manage vessel movements.

Commercial fishers and other marine users are permitted to use the Operational Areas but should take care around operations by adhering to standard navigation rules and remain clear of the safety exclusion zone.

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Assessment

Woodside has undertaken an assessment of the potential impacts and risks to the environment and relevant persons arising from the planned activities as well as unplanned events. This assessment considers the timing, duration, and location of the activities. **Table 3** provides a summary of mitigation and management measures that will be implemented. Further details will be provided in the EPs.

In preparing the EP, Woodside's intent is to minimise environmental social and cultural risks and impacts associated with the proposed activities, and we seek your feedback to inform our decision making.

Joint venture

Woodside Energy Ltd is the operator on behalf of the Angel CCS Joint Venture. The participants of the JV are Woodside Energy Ltd, BP Developments Australia Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd, and Chevron Australia Pty Ltd.

We welcome your feedback by 9 August 2024.

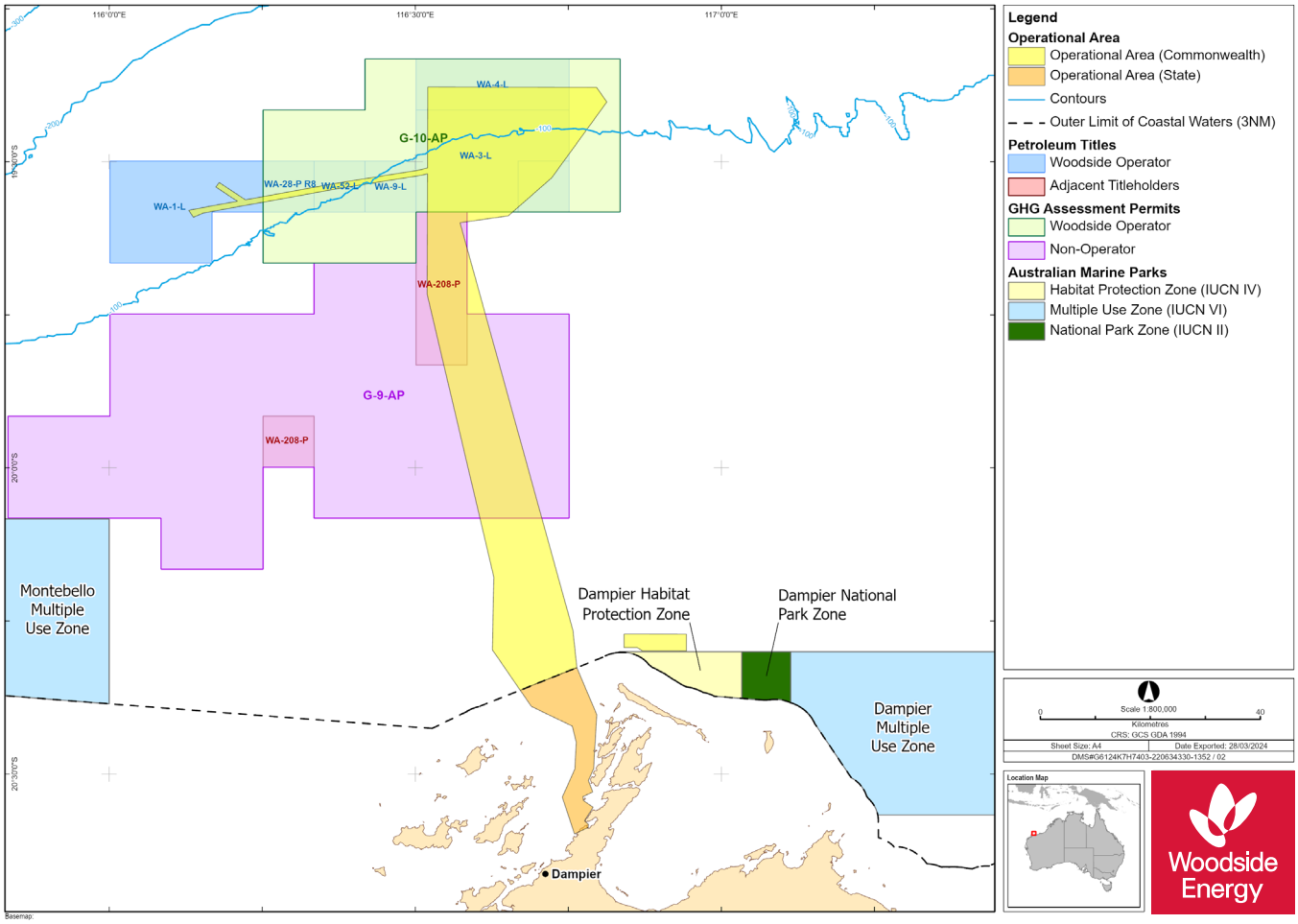

Figure 1: Commonwealth and State Operational Areas for Angel CCS Geophysical and Geotechnical Surveys EPs.

Table 1. Activity Summary

Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys Commonwealth and State Environment Plans		
	State	**Commonwealth**
Location	• North West Shelf Province	• North West Shelf
Permit titles	• Vacant acreage	• G-10-AP, WA-3-L, WA-4-L, WA-9-L, WA-52-L, WA-28-P, WA-1-L, G-9-AP, WA-208-P, Vacant acreage, Vacant acreage release area W22-4
Approximate water depth	• Up to 45 m	• ~ 35 - 135 m
Key activities	**Geophysical surveys:** • Multibeam echo sounders, single beam echo sounders, altimeters • Side scan sonar • Magnetometers • Sub-bottom profilers • Refraction sub-bottom profiler (including mini airgun) **Geotechnical surveys:** • Box cores/grab samplers • Piston/gravity cores and vibrocores • Drilling core holes • Piezocone penetrometer tests **Other survey techniques:** • Water samplers • Sound velocity sensors and multi-parameter conductivity-temperature-depth profilers • Ultra-short baseline positioning system • Doppler velocity log and inertial navigation systems • Underwater cameras • Underwater laser scanners • Remotely operated vehicles, autonomous underwater vehicles • Drone or light aircraft photogrammetry or lidar (State only)	
Vessels	• Multi-purpose project vessel • Supply vessel • Jack-up barge positioned and supported by small tug or multi cat • Smaller vessel to access the very nearshore sections • Uncrewed surface vessels controlled from a remote operations centre.	• Multi-purpose project vessel • Supply vessel • Geotechnical drilling vessel • Uncrewed surface vessels controlled from a remote operations centre.
Key dates	• Commence around Q1 2025 • Approximately 80 days, split into multiple campaigns, over the five-year period of the State EP.	• Commence around Q1 2025 • Approximately 100 days, split into multiple campaigns over the five-year period of the Commonwealth EP.
Operational area and exclusion zones	• Temporary 500 m exclusion zone around vessels conducting survey activities to manage vessel movements. • No restrictions to other vessels within the Operational Area apart from being advised to take care during the survey vessel activities.	
Distance to nearest town	• ~ 9 km north-east of Dampier	• ~ 35 km (closest survey point) to 140 km (furthest survey point) north of Dampier
Distance to nearest marine park/ nature reserve	• ~ 800 m west of Murujuga National Park • ~ 7.7 km southwest of Dampier Habitat Protection Zone	• ~ 150 m north of Dampier Habitat Protection Zone (borrow ground) • ~ 7.5 km west of Dampier Habitat Protection Zone

Table 2. Approximate locations

Approximate Locations	State Operational Area coordinates (GDA94)		Commonwealth Operational Area coordinates (GDA94)	
	Latitude	Longitude	Latitude	Longitude
	20° 19' 33.990" S	116° 45' 50.227" E	19° 31' 34.359" S	116° 43' 22.354" E
	20° 24' 10.800" S	116° 47' 47.400" E	19° 35' 18.320" S	116° 39' 06.558" E
	20° 27' 38.831" S	116° 47' 34.767" E	19° 35' 57.638" S	116° 34' 23.093" E
	20° 27' 41.877" S	116° 47' 29.380" E	20° 15' 54.774" S	116° 45' 27.037" E
	20° 27' 52.453" S	116° 47' 34.075" E	20° 19' 33.990" S	116° 45' 50.227" E
	20° 29' 27.666" S	116° 47' 29.237" E	20° 21' 46.789" S	116° 40' 16.961" E
	20° 30' 38.105" S	116° 46' 58.079" E	20° 17' 49.079" S	116° 37' 33.362" E
	20° 31' 44.956" S	116° 47' 23.784" E	20° 10' 42.448" S	116° 37' 42.242" E
	20° 32' 13.144" S	116° 46' 25.596" E	19° 42' 58.071" S	116° 31' 09.470" E
	20° 32' 34.871" S	116° 46' 28.691" E	19° 31' 10.091" S	116° 31' 11.574" E
	20° 33' 15.082" S	116° 47' 25.625" E	19° 31' 19.011" S	116° 30' 38.038" E
	20° 34' 34.741" S	116° 46' 34.926" E	19° 32' 39.510" S	116° 22' 16.080" E
	20° 34' 53.753" S	116° 46' 57.273" E	19° 35' 01.321" S	116° 09' 14.078" E
	20° 35' 13.412" S	116° 46' 57.245" E	19° 35' 26.418" S	116° 08' 14.970" E
	20° 35' 51.842" S	116° 45' 36.089" E	19° 34' 45.208" S	116° 07' 47.574" E
	20° 32' 15.330" S	116° 44' 24.769" E	19° 33' 52.082" S	116° 12' 33.998" E
	20° 29' 29.850" S	116° 45' 38.524" E	19° 32' 28.487" S	116° 10' 27.117" E
	20° 26' 52.501" S	116° 45' 46.552" E	19° 32' 01.775" S	116° 10' 46.702" E
	20° 25' 17.701" S	116° 45' 23.139" E	19° 33' 43.511" S	116° 13' 21.128" E
	20° 23' 22.218" S	116° 41' 22.685" E	19° 32' 07.493" S	116° 22' 09.990" E
	20° 21' 46.789" S	116° 40' 16.961" E	19° 30' 47.223" S	116° 30' 30.517" E
			19° 30' 36.276" S	116° 31' 11.673" E
			19° 22' 40.255" S	116° 31' 13.073" E
			19° 22' 42.119" S	116° 47' 45.355" E
			19° 24' 08.149" S	116° 48' 46.696" E
			And borrow ground:	
			20° 16' 17.851" S	116° 56' 34.716" E
			20° 17' 55.121" S	116° 56' 34.626" E
			20° 17' 54.855" S	116° 52' 14.764" E
			20° 17' 36.215" S	116° 51' 45.215" E
			20° 17' 36.333" S	116° 50' 27.616" E
			20° 16' 17.443" S	116° 50' 27.487" E

Environment That May Be Affected (EMBA)

The EMBA is a mathematically modelled area of the largest possible spatial extent where the Commonwealth activities could potentially have an environmental consequence. The broadest extent of the model takes into consideration planned and unplanned activities. For the EPs, the EMBA has been developed by combining numerous modelling outputs based on scenarios involving a release of hydrocarbons to the environment. These scenarios are highly unlikely to occur. The most credible modelling scenarios that inform the EMBA are based on hydrocarbon release as a result of a vessel collision. The Commonwealth EMBA is depicted in **Figure 2.**

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

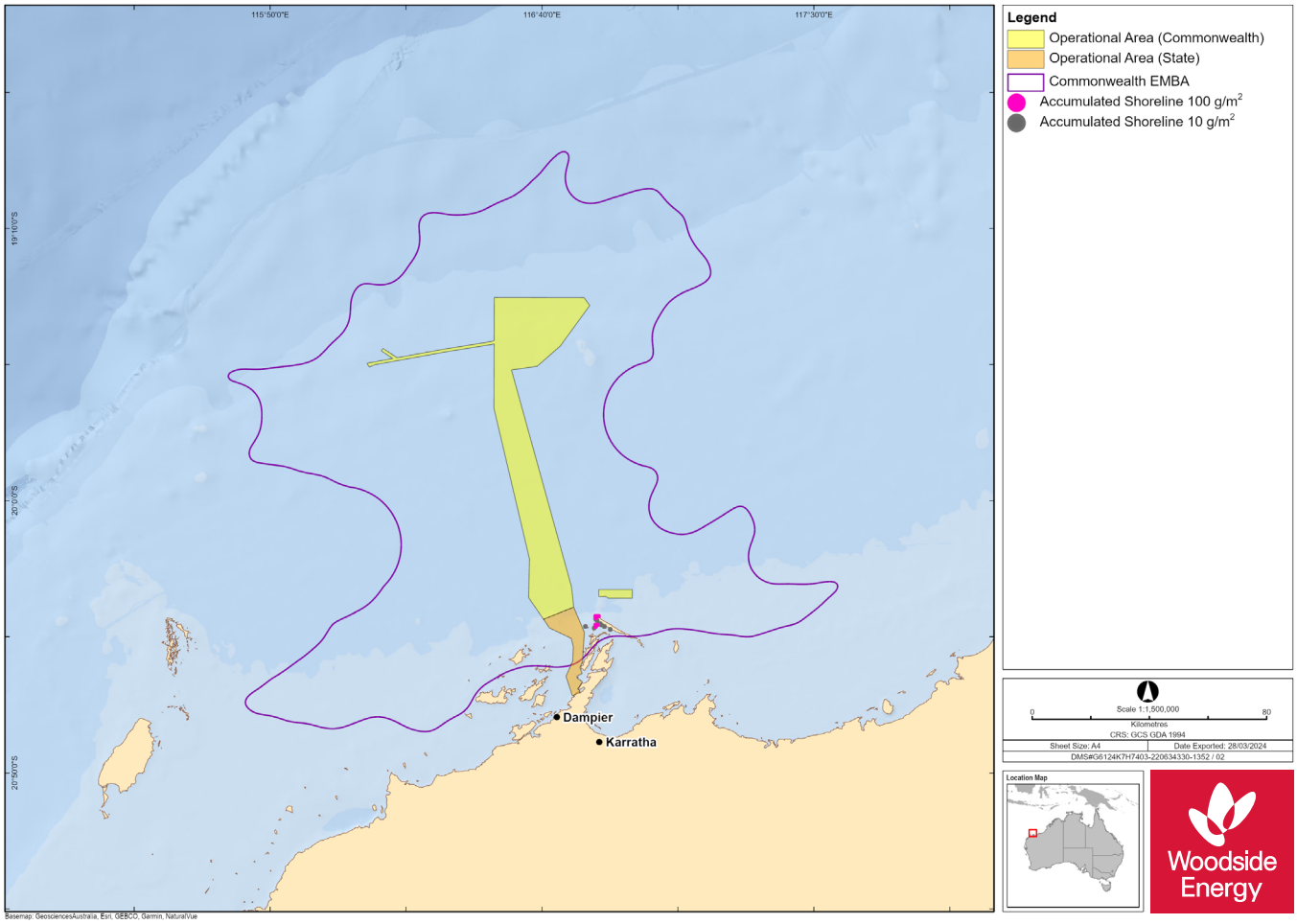

Figure 2: Commonwealth EMBA for Angel CCS Geophysical and Geotechnical Surveys EPs

Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the proposed activities considering timing, duration, location. Mitigation and management measures for proposed activities are outlined in **Table 3**. Further details will be provided in the EPs.

Table 3. Summary of key risks and/or impacts and management measures

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Planned Activities (Routine and Non-routine)			
Physical presence: interaction with other marine users	The physical presence and movement of project vessels within the Operational Areas has the potential to interfere with/ displace other marine users. The following vessels will be involved in survey activities: • multi-purpose project vessels • geotechnical vessels (geotechnical drilling vessels) • jack-up barge positioned and supported using a small tug or multi cat (State only) • smaller vessel will be used to access the very nearshore sections (State only) • uncrewed surface vessels (USVs). Survey activities are planned to be conducted as multiple campaigns over the five-year approval period of the EP (2025 – 2029).	• Displacement of commercial fishing activities and commercial shipping vessels. • Other marine users may be present in the Operational Areas. These include recreational fishing areas, tourism, and commercial shipping fairways. • Due to the localised nature of the activity, any displacement is expected to be negligible with no lasting effect.	• Establish a temporary 500 m safety exclusion zone around the project vessels which is communicated to marine users. • Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* and any subsequent Marine Orders. • Notify Australian Hydrographic Office (AHO) of activities and movements. • Notify relevant government departments, fishing industry representative bodies and licence holders (where requested during consultation) of activities.
Physical presence – disturbance to seabed from geotechnical and geophysical surveys	Geotechnical survey activities are likely to result in localised and temporary physical modification and disturbance to a small area of the seabed. The source of impact from geotechnical surveys are: • box cores/grab samplers • shallow cores and probes: piston/gravity/vibrocores • cored bore holes • penetrometer testing (CPT/PCPT/CPTu). The geotechnical seabed coring may result in the indirect discharge of a small quantity of drill cuttings and fluid at the seafloor. Placing the geotechnical equipment on the seafloor will result in minor localised physical disturbance to the seafloor beneath the equipment.	Environmental values potentially impacted: • seabed habitat • key ecological features (KEFs) (Commonwealth only) • marine primary producers • cultural heritage. The Operational Areas are expected to consist mainly of sandy substrate. The Commonwealth Operational Area overlaps the Ancient Coastline and Glomar Shoal Key Ecological Features (KEFs). Activities will be localised and of short duration, physical impacts to the seabed are expected to be negligible.	• No routine anchoring will occur during surveys. • Monitor inventory deployed to the field and track removal of equipment during activity. • Implement Woodside's Chemical Selection and Assessment Environment Guideline. • No seabed disturbance will occur on shoals within the Operational Areas. • An Unexpected Finds Procedure will be in place in the event of the discovery of what appears to be Underwater Cultural Heritage. • Desktop heritage assessment prior to starting the activities. • Comply with regulatory requirements for Underwater Cultural Heritage.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Routine acoustic emissions – **Generation of noise from survey vessels, and from geophysical and geotechnical survey equipment**	• Generation of underwater noise from project vessels. • Generation of acoustic signals from dynamic positioning systems. • The key sound sources during geotechnical surveys include the penetration tests and sampling boreholes undertaken at the seabed. • Underwater noise generated by geophysical sources during surveys and positioning equipment (transponders).	• Elevated underwater noise may affect marine fauna, including marine mammals, turtles and fish in three main ways: 1. By causing direct physical effects, including injury or hearing impairment. Hearing impairment may be temporary or permanent. 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 rating 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). • The frequency of the transponders is at the upper limit of the bandwidth of low frequency cetaceans. Low frequency cetaceans such as pygmy blue whales are therefore unlikely to be impacted by sound generated from the transponders. • The continuous noise generated by vessels is not expected to cause temporary or permanent change in hearing sensitivity to cetaceans due to the level of exposure required to trigger this. Impacts may relate to temporary behavioural changes such as avoidance with no lasting effect. • Biologically Important Areas (BIAs) overlapping the Operational Areas include the pygmy blue whale distribution BIA, the humpback whale migration BIA. • The Commonwealth Operational Area overlaps internesting buffers for the hawksbill, loggerhead, green turtles and flatback turtles. The State Operational Area supports several BIAs such as internesting buffers, internesting, foraging, migration corridors, mating, and nesting for all marine turtles. Marine turtles may avoid the low-frequency sounds generated by vessel noise. • The Commonwealth Operational Area overlaps a foraging BIA for whale sharks however as the thresholds for impacts are higher than the noise generated by the activities, impacts are not expected.	• Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions. • Project vessels will not travel greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and not closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin or turtle and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean or turtle shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • Project vessels will not travel greater than 8 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark. • Start-up of geophysical survey equipment will be delayed if a whale is sighted within the observation zone (150 m). • Implementation of an observation zone for 30 minutes prior to start up around geophysical survey equipment.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Routine and non-routine discharges from survey vessels	• Routine discharge of sewage, grey water and putrescible wastes to marine environment from project vessels. • Routine discharge of deck and bilge water to marine environment from project vessels.	• 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 are expected to water quality 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 Areas. • Similarly, although some marine fauna may transit the Operational Areas, potential for impacts remains low due to the localised nature of discharges and rapid dilution.	• Vessel discharges will be managed according to regulatory requirements.
Routine and non-routine discharges of drill cuttings and drilling fluids during geotechnical drilling	• Drill cuttings and fluids will be discharged at the borehole location during geotechnical seabed coring. • Drilling fluid will consist primarily of seawater and may include low-toxicity additives.	Geotechnical survey activities are likely to result in localised and temporary physical modification and disturbance to a small area of the seabed. Potential impacts include: • localised reduction in water and sediment quality • loss or damage to benthic habitats. The Commonwealth Operational Area overlaps with the Ancient Coastline KEF and Glomar Shoals KEFs. Impacts to benthic marine fauna as a result of geotechnical surveying are expected to be highly localised to surface area of the borehole, drill cuttings and the footprint of the geotechnical equipment, which is a relatively small area compared to the regional extent of the Ancient Coastline KEF.	• All chemicals intended or likely to be discharged into the marine environment reduced to as low as reasonably practicable (ALARP) using Woodside's chemical assessment process.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Routine light emissions – external lighting on survey vessels	Project vessels will use external lighting to navigate and conduct safe operations at night, including to maintain good night visibility for crew members and to communicate the vessel's presence to other marine users.	Light emissions may affect fauna (such as marine turtles and birds) in two main ways: 1. Behaviour: artificial lighting has the potential to create a constant level of light at night that can 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 Commonwealth Operational Area overlaps internesting buffers for the hawksbill, loggerhead, green turtles and flatback turtles. The State Operational Area supports several BIAs such as internesting buffers, internesting, foraging, migration corridors, mating, and nesting for all marine turtles. The Commonwealth Operational Area supports several breeding BIAs for the wedge-tailed shearwater, roseate tern, and fairy terns. The State Operational Area supports both breeding and foraging BIAs for these species.	Implementation of the Woodside Offshore Seabird Management Plan, that includes but not limited to: • record keeping and reporting of seabird interactions • procedures on seabird intervention, care and management • regulatory reporting requirements for seabed interactions that result in unintentional injury • a scalable adaptive management process should negative light impacts to nocturnal seabirds be detected. Lighting will be limited to the minimum required for navigation and safe operational requirements, with the exception of emergency events.
Routine and non-routine atmospheric and GHG emissions	• Atmospheric emissions and GHG emissions generated by project vessels. • Emissions are generated from internal combustion engines, machinery, and incinerators on vessels.	• Emissions from project vessels and could result in temporary, localised reductions in air quality in the immediate vicinity. • The exposed location of the project vessels is expected to result in the rapid dispersion of the low volumes of atmospheric emissions, as such the potential impacts are expected to be localised and of no lasting effect.	• Comply with regulatory requirements for GHG emissions reporting. • Vessel operations planned, where practicable, to minimise fuel consumption and associated GHG/air emissions. • Fuel types will be selected to reduce expected GHG emissions (I.e., Project vessels will not use heavy fuel oil (HFO) or intermediate fuel oil (IFO)).
Unplanned Events (Accidents / Incidents)			
Accidental introduction of invasive marine species (IMS)	• Project vessels have the potential to introduce IMS to the Operational Areas through marine biofouling (containing IMS) on vessels, as well as within high risk ballast water exchange. • There is also a remote potential that cross contamination between vessels can also occur (such as IMS translocated between project vessels) or onto benthic habitat within shallower areas.	• It is not credible for IMS to be introduced and establish on the seabed or subsea structures in the Commonwealth Operational Area as these deep waters are not conducive to the settlement and establishment of IMS. • The State Operational Area in shallower waters (up to 45 m) present a slightly increased risk of IMS establishment, however, the risk of establishment, whilst credible, is remote. • Given the low likelihood of IMS translocation to and colonisation within the Operational Areas, project activities are unlikely to result in establishment of IMS, and as such will not adversely affect other marine user activities in the region.	• Project vessels will manage their ballast water using one of the approved ballast water management options, as outlined in the Australian Ballast Water Management Requirements. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment undertaking the activities.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Unplanned interaction with marine fauna	• Vessel movements have the potential to result in collisions between project vessel (hull and propellers) and marine fauna. • Project vessels would typically be stationary or moving at low speeds when supporting the survey activities.	• BIAs overlapping the Operational Areas include the pygmy blue whale distribution BIA, the humpback whale migration BIA, marine turtle internesting buffers, internesting, foraging, migration corridors, mating, and nesting BIAs, marine turtle critical habitat areas, and the Commonwealth whale shark foraging BIA. • Given the adopted controls, it is considered that if a collision or entanglement were to occur, it will not result in a potential impact greater than a localised impact to environmental receptors, with no lasting effect to marine fauna populations.	Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.
Physical presence – disturbance to seabed: vessel grounding (State only)	The highly unlikely event of a collision or grounding event during the survey activities could cause disturbance of seabed habitat.	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities and is therefore considered to present a negligible risk.	Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.
Physical presence – disturbance to seabed from dropped objects, equipment loss	Dropped objects resulting in the disturbance of seabed habitat	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities and is therefore considered to present a negligible risk. • Potential impacts to KEFs which intersect the Commonwealth Operational Area are considered to have a temporary disruption and no lasting effects to a small area of the seabed, as they would be limited to the footprint of a dropped object resulting in potential highly localised and temporary change in habitat. Dropped objects within the Ancient Landscape could impact cultural heritage associated with this area, however, this would also comprise a small area.	• Project vessel inductions include control measures for dropped object prevention. • Dropped objects and geophysical/ geotechnical equipment to be recovered and relocated where safe and practicable to do so. Overboarding geotechnical equipment: exclusion zone of 50 m of existing subsea assets
Unplanned discharges – loss of solid hazardous and non- hazardous wastes/ equipment	• Accidental discharge of hydrocarbons/ chemicals from project vessels deck activities and equipment, from subsea ROV hydraulic leaks. • Unplanned release of chemicals or hydraulic fluid due to failure of subsea equipment. • Accidental loss of hazardous or non-hazardous solid wastes / equipment to the marine environment.	• 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.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes (i.e., Marine Orders 95 and 94). • Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of waste generated. • Solid waste/equipment dropped to the marine environment is to be recovered where safe and practicable to do so.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Unplanned discharges – deck and subsea spills from geotechnical and geophysical survey vessels and equipment	• Accidental discharge to the ocean of other hydrocarbons/ chemicals/ geotechnical drilling fluids from project vessels deck activities and equipment (e.g., cranes). • Unplanned release of chemicals or hydraulic fluid due to failure of geotechnical and geophysical survey equipment.	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes are anticipated, resulting in very short-term impacts to water quality, limited to the immediate release location. • As a result of a change in water quality, further impacts to receptors may occur, however impacts to marine fauna are expected to be limited to temporary irritation of sensitive membranes to individuals and are considered slight or less (negligible).	• Comply with regulatory requirements for the prevention of marine pollution for project vessels. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily on project vessels. • Spill kits positioned in high-risk locations around the vessels (near potential spill points such as transfer stations). • Chemicals will be selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.
Unplanned hydrocarbon release – vessel collision	Vessels will use marine diesel fuel, meaning a collision involving a project vessel or third-party vessel during the activity may result in the release of marine diesel. For an interaction to result in the worst-case scenario diesel release, several factors must occur: • Vessel interaction must result in a collision. • The collision has enough force to penetrate the vessel hull and must occur in the location of a fuel tank. The fuel tank must have a sufficient amount of fuel so that the liquid level is higher than the point of damage.	• In the highly unlikely event of a vessel collision causing a release of hydrocarbon, impact to water quality and marine ecosystems could occur. • Marine diesel is a relatively volatile, non-persistent hydrocarbon. If released to the environment, up to approximately 40% evaporates within the first 24 hours. • In the event of a hydrocarbon release, potential impacts across the EMBA will be assessed including receptors such as plankton, fish, marine turtles, marine mammals, seabirds and migratory shorebirds, marine primary producers, tourism, recreation, commercial fisheries, commercial shipping and cultural heritage. • Considering receptor sensitivity, potential loss of containment volume(s) and potential spill locations, most receptors are expected to be rated as having a potential consequence level of 'Minor' or less (Slight or Negligible).	• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. • Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and on completion of activities. • Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision. • A management plan for simultaneous operations is in place when working in vicinity of other Woodside operations/ activities. **Spill response arrangements:** • Arrangements supporting the Oil Pollution Emergency Plan (OPEP) will be tested so that the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

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 **9 August 2024** via:

E: Feedback@woodside.com

Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:

www.woodside.com/what-we-do/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 and to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS).

Woodside will communicate material changes to the proposed activity to affected relevant persons as relevant and appropriate.

Your feedback and our response will be included in our Environment Plans which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)* and support other regulatory processes associated with the planned activities (which may or may not be confidential) as well as to DEMIRS pending review of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA). Noting that at the date of this information sheet, the legislation has not yet been drafted.

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit: www.woodside.com/what-we-do/consultation-activities.