

## Asset Removal Operations Environment Plan

### Information for Relevant Persons

#### Activity Overview

Santos plans to undertake further removal activities of its retired assets and proposes to remove the Campbell production facility and associated infrastructure, with removal activities to commence in early 2024.

The Campbell facility and associated infrastructure are located in Western Australian State waters in the Carnarvon Basin, approximately 105 km west-northwest of Dampier, Western Australia (see Figure 1).

#### Consultation & Feedback

All petroleum activities in Western Australian State waters must have an Environment Plan (EP) accepted by the Department of Mines, Industry Regulation and Safety (DMIRS) before any activities can take place.

Under State Environmental Regulations, Santos is required to consult with relevant authorities and other relevant interested persons and organisations about proposed activities when preparing an EP. This may include you if, for example, you have spiritual or cultural connections to land and sea country in accordance with Indigenous tradition that might be affected by our proposed activity, if you otherwise carry out recreational or commercial fishing,

tourism or other activities that might be affected by our proposed activity or if you are part of a local community that might be affected by our proposed activity.

If you consider you may be a relevant authority or a relevant interested person or organisation, please contact us by **26 June 2023** to allow Santos time to initiate consultation with you so you can tell us how you would like to be consulted throughout this process or if you need additional information.

Details on how to contact us are included in the **Providing Feedback** section of this information sheet.

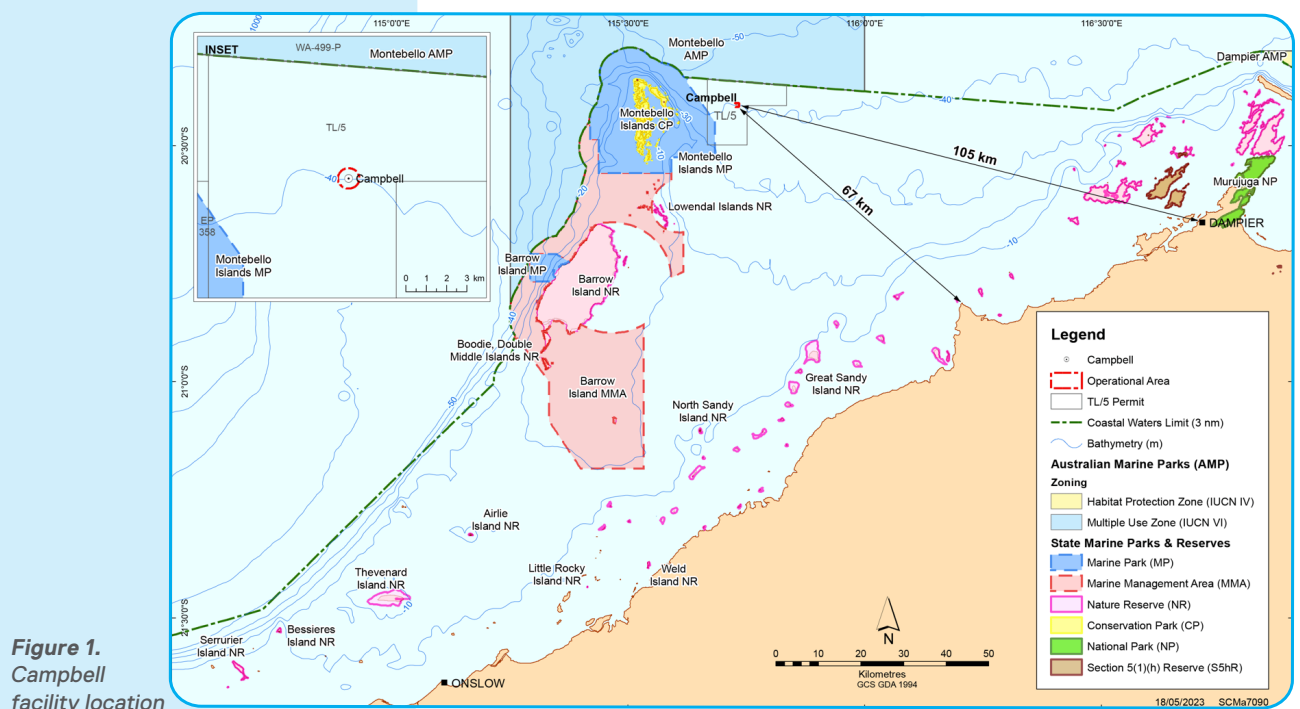


Figure 1.  
Campbell  
facility location

## Activity Description

### ACTIVITY DETAILS

<b>Location</b>	The Campbell facility is approximately 30 km north-northeast of Varanus Island and approximately 105 km west-northwest of Dampier.
<b>Timing</b>	Activities are proposed to commence in February 2024.
<b>Duration</b>	The activity duration is approximately 14 days.
<b>Water depth</b>	Approximately 40 m.
<b>Planned activities</b>	<p>Activities include but are not limited to:</p> <ul style="list-style-type: none"> <li>+ Pre-removal (as required) and post-removal site surveys</li> <li>+ Preparatory works on the platform topsides and substructure prior to removal</li> <li>+ Removal of platform topsides, substructure and associated items</li> <li>+ Removal of plugged and abandoned well conductors</li> <li>+ Cutting and capping/plugging of the production pipeline and removal of riser</li> <li>+ Securing of removed structures on a project vessel(s) for transport to shore for disposal</li> <li>+ Installation of subsea caps to cover remaining protruding structures on the seabed</li> <li>+ Removal of the facility's cathodic protection system and debris within 25m of the asset</li> </ul>
<b>Vessels</b>	<p>Activities will be carried out by the following vessels:</p> <ul style="list-style-type: none"> <li>+ A dynamically positioned (DP) offshore lift vessel with supporting barge and tugs</li> <li>+ Supply vessels may be utilised to transfer equipment to and from vessels, as required</li> </ul>
<b>Aircraft</b>	Helicopters may be used to transfer crew and equipment to and from vessels and assist in emergency situations, as required.
<b>Description of the natural environment</b>	The seabed surrounding the facility is relatively featureless. The superficial seabed deposits comprise unconsolidated calcareous sand. Subcropping of cemented sediments occurs approximately 50 m to the north-east of the facility. No sensitive natural seabed features such as coral bommies or reefs have been identified near the facility to date.
<b>Exclusion zone</b>	The Operational Area includes a 500 m petroleum safety zone (PSZ) which acts as an exclusion zone surrounding the facility.
<b>Operational Area</b>	A 500 m radius surrounding the facility.
<b>Petroleum production licences</b>	State Water Permit TL/5.

### ACTIVITY COORDINATES

Surface hole location of facility	Latitude (GDA 94)	Longitude (GDA 94)
Campbell	20° 24' 46.67" S	115° 43' 51.56" E

## Activity Purpose and Approvals

The Campbell facility is a monopod structure secured to the seabed by three piled legs. The platform is normally unmanned with simple facilities and minimal topside equipment (Figure 2).

The topside module has a helideck (out of service and partially removed), crane (out of service), production deck, mezzanine deck, cellar deck and an access platform for the single riser emergency shut-down valve (ESDV). The topside module is supported by a single caisson (above waterline) which transitions to a three-legged monopod substructure. Access to the platform is provided by a platform boat landing ladder.

All wells associated with the facility have been plugged and abandoned and minimal production pipework remains on the topside. All well conductors have been cut to within 1 m of seabed in preparation for removal.

The production pipeline to the facility is disconnected and isolated from the Varanus Island Hub at the Linda pipeline intersect but remains connected to the riser at Campbell. The production riser has been cut below the ESDV platform in preparation for removal and the cathodic protection system (in the form of anode skids on seabed) remains connected to the platform legs.

Removal activities may consist of:

- + Remotely operated vehicle (ROV) surveys to identify and locate any construction debris or sensitive seabed features that may interfere with or restrict navigation, positioning, activities and/or safety. Unmanned aerial vehicle (UAV) surveys of topside facilities may also be conducted prior to, and potentially during, Asset Removal Operations (ARO).
- + Preparatory works prior to commencing facility removal, including:

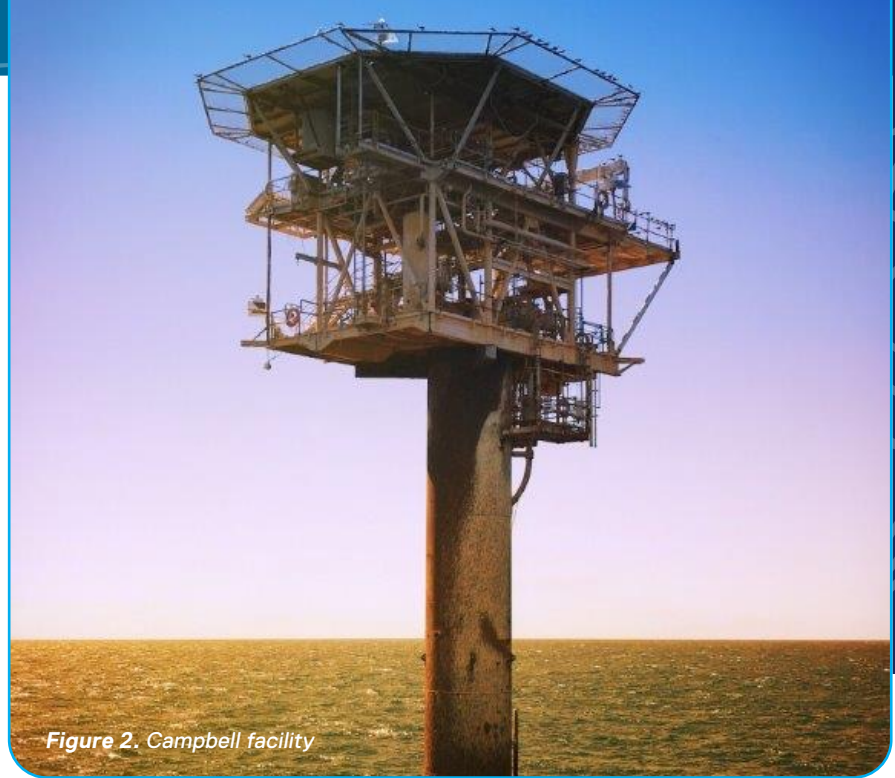


Figure 2. Campbell facility

- Deployment of temporary vessel positioning surface reference markers
  - Installation of moorings or pre-laid anchors
  - Pressure washing of the structure
  - Testing for residual hydrocarbon within riser
  - Marine growth cleaning of the substructure;
  - Installing lifting equipment (e.g. pad-eyes or similar) and setting up of equipment transfer rigging
  - Erecting topside scaffolding
  - Securing of conductors to the structure
  - Welding of lifting guides and/or other removal aids onto the structure
  - Cutting and removal of pipework, conductors and other minor structures as required.
  - Cutting and removal of a section of the subsea pipeline as required
  - Removal of other subsea structures as required
  - Plugging and/or capping pipeline
  - Cutting mudline templates as required
  - ROV operations
  - Other topside and subsea works in preparation for removal activities
- + Removal of the structure in multiple sections, subject to capacity of the main execution vessel performing the removal. Cutting will be completed utilising manual, semi-remote and remote methods. Structure sections may be lifted directly to a vessel/barge deck or laid onto the seabed for further cutting via ROV, prior to recovery to a vessel/barge deck. Where required, temporary supports may be positioned on the seabed to allow the lay down of structures and will be retrieved at the end of the activity. The remaining platform cathodic protection system (anode skids) shall be removed just prior to or following substructure removal.
  - + Platform well conductors have already been cut to within 1 m of seabed. The platform legs are to be cut as close as possible to seabed with an expected cut height of less 1 m above the adjacent seabed or original mudline, whichever is higher. The remaining platform leg and conductor stubs will be covered with a prefabricated subsea cap. The caps will be sized to cover the subsea obstruction. Caps are expected to be made from reinforced concrete for subsea application. Caps will have lifting points for installation and be of low profile to minimise snagging risks.

+ An as-left survey will be conducted following completion of the ARO activity. Monitoring activities of the pipeline/ infrastructure left in-situ will continue to be conducted as required under the Varanus Island Hub Operations EP and in accordance with Santos' pipeline integrity program.

An ROV will be used to assist with cutting activities and with collection of the structure debris, where safe and practicable to do so. A basket (typically 6 m long) may be deployed to aid in the removal of debris. Debris may be cut into smaller pieces using a grinder, shears, diamond wire saw or similar, as required.

Once secured on deck, the project or support vessels will commence transportation of the recovered structures to a disposal location outside of the Operational Area.

Although it is considered unlikely that residual hydrocarbons of any significant amounts have migrated to the top of the Campbell riser, there is potential for small amounts to exist in liquid, vapour or solid form. During the removal of the facility, it shall be assumed that approximately 20 litres of residual hydrocarbon may be released to the environment either during the cutting of the riser at seabed or during the removal of the substructure sections.

Santos will prepare a Bridging Document (BD) to the in-force Asset Removal Operations (ARO) 5-Year Environment Plan (EP). The ARO EP covers asset removal operations of potentially up to 17 offshore structures (including the Campbell facility) and was prepared in accordance with the WA State Petroleum (Submerged Lands) (Environment) Regulations 2012 (P(SL)(E)R). The EP was accepted in December 2019 by DMIRS.

The Bridging Document will include updated oil spill modelling for the accidental spill of vessel hydrocarbon due to a larger vessel undertaking ARO activities than what was described in the existing ARO EP.

The mobilisation and demobilisation of vessels, and the transportation and disposal of the removed facility outside of the Operational Area are not provided for in the ARO EP. These activities are subject to applicable maritime and onshore legislative requirements.

The EP will be submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) Act 1982* and related *Petroleum (Submerged Lands) (Environment) Regulations 2012* and the *Petroleum and Geothermal Energy Resources (Management of Safety) Regulation 2010*.

## Defining the Environment That May Be Affected Area for Proposed Activities

Santos has undertaken an initial assessment to identify the environmental, social, economic and cultural values and sensitivities that may be affected by impacts and risks of proposed activities.

To do this we have considered the totality of the areas where activity impacts and risks may occur. These areas are summarised in **Table 1**. The widest extent of these areas is called the Environment that May Be Affected (EMBA), which for this activity is the outer boundary of a worst-case marine diesel spill resulting from a vessel collision during asset removal

activities. The EMBA for proposed Campbell decommissioning activities is illustrated in **Figure 2**.

Oil spill EMBA's are defined by overlaying a great number (usually hundreds) of individual, computer simulated, hypothetical oil spill events into a single map. Each simulation run starts from the same location (release point) but each run will be subject to a different set of wind and weather conditions derived from historical data. The use of advanced and sophisticated models enables us to present all the areas that could be affected.

While the EMBA represents the largest possible spatial extent that could be contacted by the worst-case spill events modelled, an actual spill event is more accurately represented by a single simulation run, resulting in a smaller spatial extent in the event of an actual spill. Often one or more simulation runs are selected to be representative of the 'worst-case' based on the nature and scale of the activity and the local environment.

Please see the [NOPSEMA Spill Modelling Video](#) for more information on oil spill modelling and why it is required for the preparation of Environment Plans.

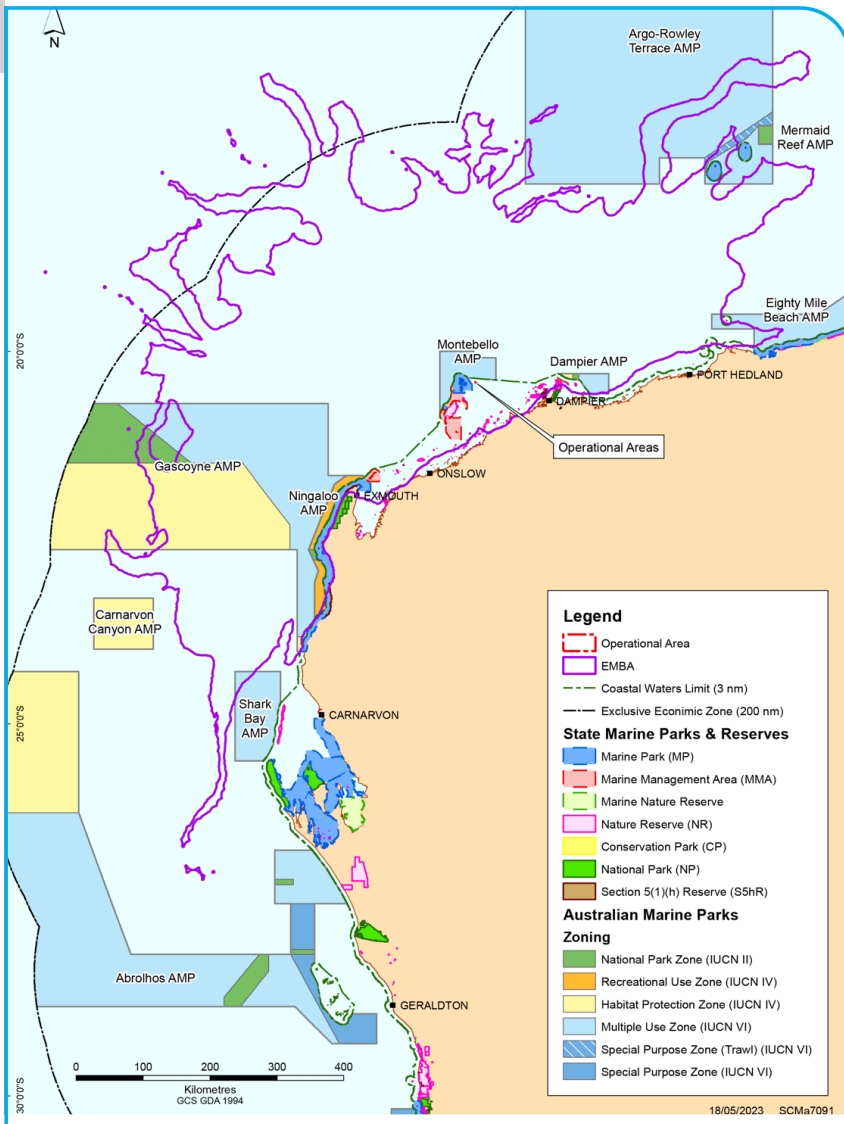


Figure 2. Activity location with EMBA



**TABLE 1**  
**ENVIRONMENT AREA FOR PROPOSED ACTIVITIES**

### ENVIRONMENT AREA

#### Operational Area

The area in which the offshore lift vessel and support vessels will operate.

#### Environment that May Be Affected (EMBA)

The spatial extent of activity impacts (e.g., facility presence, light, noise) and risk (e.g., hydrocarbon spill).

## Environmental, Social, Economic and Cultural Features

Santos has undertaken a review of publicly available information to identify environmental, social, economic and cultural features and/or values that may be affected by activity impacts and risks. The outcomes of this review are summarised in **Table 2**.

**TABLE 2**  
**ENVIRONMENTAL, SOCIAL, ECONOMIC AND CULTURAL FEATURES**

FEATURES	DESCRIPTION	OPERATIONAL AREA	EMBA	PUBLIC INFORMATION REVIEW
<b>Aboriginal Heritage</b>	Registered Aboriginal heritage sites protected under the: <ul style="list-style-type: none"> <li>+ <i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i></li> <li>+ <i>WA Aboriginal Heritage Act 2021</i></li> </ul>	No	Yes	Barrow Island, Montebello Islands, Exmouth, Dampier Archipelago, Ningaloo Reef and the adjacent foreshores have a long history of occupancy by Indigenous communities.
<b>Cultural Heritage</b>	Registered cultural sites under the: <ul style="list-style-type: none"> <li>+ <i>Underwater Cultural Heritage Act 2018</i></li> </ul>	No	Yes	No known sites of shipwrecks, sunken aircraft or Aboriginal and Torres Strait Islander Underwater Cultural Heritage have been identified within the Operational Area.  There are several shipwrecks within the EMBA. Three historic shipwreck are located near Hermite Island, which is approximately 14 km from the Operational Area: <ul style="list-style-type: none"> <li>+ Park Lugger;</li> <li>+ Plym HMS; and</li> <li>+ Tropic Queen.</li> </ul>
<b>Defence</b>	Designated defence activity areas	No	No	Defence Controlled Areas are located at Exmouth and overlap the EMBA. The closest Defence Controlled Area is approximately 221 km south-west of the Operational Area.
<b>Fishing</b>	Commercial fishing	Yes	Yes	A number of Commonwealth, State and Territory fisheries overlap the EMBA, some of which are active in the Operational Area.
	Indigenous, subsistence or customary fishing	No	Yes	Traditional Australian Indigenous fishing activities are generally concentrated within 3 NM of the Western Australian coastline.
	Recreational and charter boat fishing	No	Yes	It is unlikely recreational fishing would occur in the Operational Area, but it may occur in around the nearby Barrow and Montebello Islands. Recreational fishing is expected to occur throughout the EMBA.

<b>Oil and Gas Operations</b>	Petroleum operations	No	Yes	<p>Petroleum exploration and production activities are undertaken within the EMBA.</p> <p>All petroleum-related activities within close proximity of the Operational Area are Santos WA operated. The closest non-Santos WA operating petroleum field is Barrow Island, operated by Chevron Australia Pty Ltd (Chevron).</p>
<b>Protected Areas (nearest Commonwealth and State marine parks)</b>	Australian Marine Park (Cwth)	No	Yes	The Montebello Australian Marine Park is approximately 5.4 km (North) of the Operational Area.
	Marine Park (State)	No	Yes	The Montebello Islands Marine Park is approximately 7 km (West) of the Operational Area.
<b>Shipping</b>	Shipping fairway	No	Yes	The Operational Area does not overlap any shipping fairways. There are several commercial shipping lanes that exist in the EMBA.
<b>Telecommunications</b>	Subsea telecommunications cables	No	Yes	The Northwest Cable System connects offshore oil and gas facilities in the Browse, Bonaparte and Carnarvon Basins to onshore locations and does not overlap the Operational Area, however it overlaps the EMBA area adjacent to the Port Hedland region.
<b>Tourism</b>	Tourism operations	No	Yes	The majority of tourism and recreation activities are confined to coastal areas and islands.
<b>Towns / communities</b>	Dampier	No	No	Dampier is approximately 105 km (Southeast) from the Operational Area.
	Onslow	No	No	Onslow is approximately 149 km (Southwest) from the Operational Area.

## Activity Impacts and Risk Management

We have summarised in **Table 3** potential environmental risks and impacts and associated management measures for the proposed activity. These aspects will be risk-assessed with the Environment Plan on a case-by-case basis.

**TABLE 3**  
**ACTIVITY IMPACT AND RISK MANAGEMENT**

### POTENTIAL ACTIVITY IMPACTS

#### Light emissions

##### Description of potential impacts

Artificial lighting may result in behavioural changes to fauna, particularly fish, marine turtles and seabirds.

##### Compliance with the following key management measures

- + Vessel navigation lighting and equipment is compliant with International Regulations for Preventing Collisions at Sea (COLGREGS) / Marine Orders 30: Prevention of Collisions, and with Marine Orders 21: Safety of Navigation and Emergency Procedures.
- + Light levels minimised to that required for safe operations and marine standards and regulations.
- + Vessel Light Management Procedures.
- + For night-time operations between 1 October and 30 April that are planned for more than one consecutive night and within 3 km of a known turtle nesting beach or shearwater rookery, lighting managed in accordance with a DMIRS-accepted Illumination Plan. Department of Biodiversity, Conservation and Attractions (DBCA) consulted in the development of the management plan.

#### Noise emissions

##### Description of potential impacts

Temporary and localised behavioural response may result from the noise levels emitted, but these will not be at levels that could cause mortality or injury to marine fauna or cause a decrease in local population size or area of occupancy of species.

##### Compliance with the following key management measures

- + Vessels, helicopters, UAVs comply with Protected Marine Fauna Interaction and Sighting Procedure (EA-91-II-00003).
- + Marine Assurance Procedure.
- + Marine Fauna interaction procedure.
- + Project inductions will include information on Operational Area, sensitive environmental areas and receptors, regulatory regime, highest risk activities, key environmental management control measures, reporting requirements.
- + Documented maintenance program in place for a vessel and project equipment that provides a status on vessel/equipment maintenance.



## Atmospheric emissions

### Description of potential impacts

The activity will occur in the open ocean and offshore waters, The quantities of gaseous emissions are relatively small and will, under normal circumstances, quickly dissipate into the surrounding atmosphere.

### Compliance with the following key management measures

- + Vessel fuel oil sulphur content is compliant with the International Convention for the Prevention of Pollution from Ships (MARPOL)..
- + Pursuant to MARPOL Annex VI, vessels will maintain a current International Air Pollution Prevention (IAPP) Certificate as relevant to vessel class.
- + Documented maintenance program in place for a vessel and project equipment that provides a status on vessel/equipment maintenance.

## Operational discharges

### Description of potential impacts

Operational discharges in the same location for an extended period of time may result in water quality changes and alteration to marine fauna behaviour. The activity will be for a limited duration, rapid dissipation within the water column is expected and impacts will be limited.

### Compliance with the following key management measures

- + Waste (garbage) management procedure.
- + Routine vessel discharge (sewage, bilge water, food waste) will meet MARPOL requirements.
- + Deck cleaning products that may be discharged to the ocean will meet MARPOL requirements.
- + Santos general chemical management procedures.
- + Onshore disposal of platform and pipeline assets by experienced contractor and only at a licensed waste facility.

## Habitat disturbance

### Description of potential impacts

The area of physical environment and habitat that will be impacted during the proposed activities is small compared to the area of similar habitat in the wider environment and is expected to re-establish following disturbance. As such, long-term or significant impacts to local populations or ecosystem factors are not expected.

### Compliance with the following key management measures

- + Site survey equipment, anchors, DP reference markers, positioning beacons, project equipment (e.g. cutting tools, ROV baskets, sand bags), and removed structures only placed in pre-identified locations on the seabed to minimise impacts to naturally occurring sensitive features.
- + Vessel navigation procedures and an anchoring, mooring and equipment deployment management plan.
- + Objects dropped overboard are recovered (where possible and safe to do so) to mitigate the environmental consequences from objects remaining in the marine environment.
- + Operational surveys, including as left surveys.
- + If facilities are removed and pipelines are left suspended in-situ, monitoring activities of the pipelines will continue to be conducted under the Varanus Island Hub Operations EP (EA-60-IR-00186) and in accordance with Santos' pipeline integrity program.
- + Facility topsides will be checked prior to commencement of removal activities. If a nest is located, it will be checked for egg and/or chick presence. If eggs and/or chicks are present and relocation options are viable the nest may be relocated in consultation with the DBCA.

## Interactions with other marine users

### Description of potential impacts

Disturbance to other marine users (commercial fishers, recreational fishers and tourism, commercial shipping and oil and gas activities) will be minimal and temporary due to the short duration of the activity.

### Compliance with the following key management measures

- + If requested, stakeholders will be notified prior to the commencement of, and on cessation of each activity. Relevant maritime notices issued.
- + A 500 m radius PSZ (exclusion zone) will be in place around the platforms for the duration of the activity.
- + Other marine users are permitted to enter the Operational Area but should take care for safety reasons.
- + A visual and radar watch will be maintained on the support vessel bridge.
- + Lighting compliance with NSCV or SOLAS requirements.
- + Support vessels will be prohibited from recreational fishing within the operational area.
- + Notify Australian Hydrographic Office (AHO) of locations for equipment abandoned in situ for marking on navigational charts.

## ACTIVITY RISKS

### Accidental introduction of invasive marine species (IMS)

#### Description of risks

IMS can be introduced into the Operational Area and surrounds by vessels carrying IMS in external biological fouling, internal systems (sea chests, seawater systems etc.), on marine equipment (e.g. mooring lines), or through ballast water exchange. Cross contamination between vessels can also occur.

#### Compliance with the following key management measures

- + Implementation of the Santos Quarantine Management Plan (EA-91-RI-10002).
- + Vessels are managed to low risk in accordance with the Santos Invasive Marine Species Management Plan prior to movement/transit into or within the invasive marine species management zone, which requires:
  - + assessment of applicable vessels using the Department Primary Industry and Regional Development (DPIRD) Vessel Check Tool.
  - + the management of immersible equipment to low risk.

### Unplanned interaction with marine fauna

#### Description of risks

There is the potential for the physical movement of vessels, ROV or UAVs to collide with marine fauna.

#### Compliance with the following key management measures

- + Procedures for interacting with marine fauna.
- + Vessel navigation procedures, including constant bridge watch.

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## Accidental disturbance to benthic habitats

### Description of risks

Disturbance to the seabed and benthic habitats may occur due to dropped objects or vessel grounding.

### Compliance with the following key management measures

- + Site survey prior to vessel arrival to identify and avoid any environmentally sensitive seabed features.
- + Operational surveys, including as left surveys.
- + Vessel navigation procedures and an anchoring, mooring and equipment deployment management plan.
- + Pipeline and umbilical recovery procedure.
- + Objects dropped overboard are recovered (where possible and safe to do so) to mitigate the environmental consequences from objects remaining in the marine environment.

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## Accidental discharge of solid wastes

### Description of risks

Accidental discharge of solid waste (hazardous or non-hazardous) to the marine environment from a vessel may occur through mishandling of containers, dropped via swinging loads, or inadequate storage of waste. In the marine environment dropped objects/lost equipment could also result in seabed disturbance or floating obstacles if not retrieved.

### Compliance with the following key management measures

- + Waste management controls for activities.

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## Accidental spill of hazardous and non-hazardous liquids

### Description of risks

Minor hazardous liquid may include chemicals or hydrocarbons such as small quantities of liquids such as cleaning products, paints, primers, hydrocarbons, hydraulic oils, residual chemicals. This could impact water quality and marine fauna and benthic communities

### Compliance with the following key management measures

- + Dropped object prevention procedures.
- + Hazardous and General chemical management procedures Maritime Dangerous Goods Code.
- + Subsea hydraulic equipment, including ROV and cutting tools, maintenance procedures.
- + Vessel spill response plans (SOPEP/SMPEP).
- + Remotely operated vehicle (ROV/tooling) inspection and maintenance procedures.
- + Equipment refuelling procedures.

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## Accidental spill of vessel hydrocarbon

### Description of risks

Accidental hydrocarbon releases to the marine environment could occur from vessel collision/grounding. The largest single inventory release from a proposed vessel from collision or grounding would be a 998 m<sup>3</sup> surface release of Marine Gas Oil (MGO) over 6 hours, to represent the loss of containment from a support vessel at Campbell.

### Compliance with the following key management measures

- + In the event of a hydrocarbon spill, an activity specific Oil Pollution Emergency Plan (OPEP) will be implemented to mitigate environmental impacts.
- + The OPEP sets out environmental protection priorities and appropriate response measures for a range of spill scenarios.
- + The OPEP is developed in conjunction with the Regulator assessing the plan and in accordance with National, State and Territory marine pollution plans.



## Consultation

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Consultation provides Santos with an opportunity to receive feedback from authorities, persons and organisations whose functions, interests or activities may be affected by proposed petroleum activities.

This feedback helps us to refine or change the management measures we are planning to address potential activity impacts and risks. Santos' objective for proposed activities is to reduce environmental impacts and risks to a level that is As Low As Reasonably Practicable and acceptable over the life of the activity.

Consultation also helps us to identify values and sensitivities where information is not publicly available, such as spiritual and cultural connection to land and sea country, as well as first-hand feedback on commercial and recreational fishing, tourism and local community activities and interests.

## Providing feedback

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If you consider you may be a relevant person, please contact us by **26 June 2023** to allow Santos time to initiate consultation with you in relation to the proposed activity and so you can tell us how you would like to be consulted throughout this process.

The merits of relevant person feedback provided through the consultation process will be considered during BD development, with a summary of responses summarised and included in the BD submitted to DMIRS for assessment.

# Santos

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