Santos

WA-1-P Environment Plan

Information for Relevant Persons

Activity Overview

Santos is planning vessel-based inspection activities to confirm the location and condition of three historic exploration wellheads in Production Licence WA-1-P in Commonwealth waters, with a view to leaving the wells in situ.

The historic wellheads are:

+ Rosemary 1 - drilled in 1973 to 3,909 m depth; plugged and abandoned at the conclusion of drilling.
+ Lewis 1 - drilled in 1976 to 265 m depth; abandoned due to technical problems.
+ Lewis 1A - drilled in 1976 to 3,400 m depth; plugged and abandoned at the conclusion of drilling.

Rosemary-1 is approximately 85 km north-northwest of Dampier and the Lewis wells are approximately 95 km north of Dampier.

Consultation & Feedback

All petroleum activities in Commonwealth waters must have an Environment Plan (EP) accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) before any activities can take place.

Under Commonwealth Environmental Regulations, Santos is required to consult with relevant persons about proposed activities when preparing an EP. A relevant person includes authorities, persons or organisations whose functions, interests or activities may be affected by the proposed activity.

You might be a relevant person 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 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.

Santos is now consulting with relevant persons for activities proposed to be managed under the WA-1-P Environment Plan. If you consider you may be a relevant person, please contact us as soon as possible if you require any further information or if you think you are not on our consultation list.

We are asking for relevant persons to provide feedback by **26 July 2023**.

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

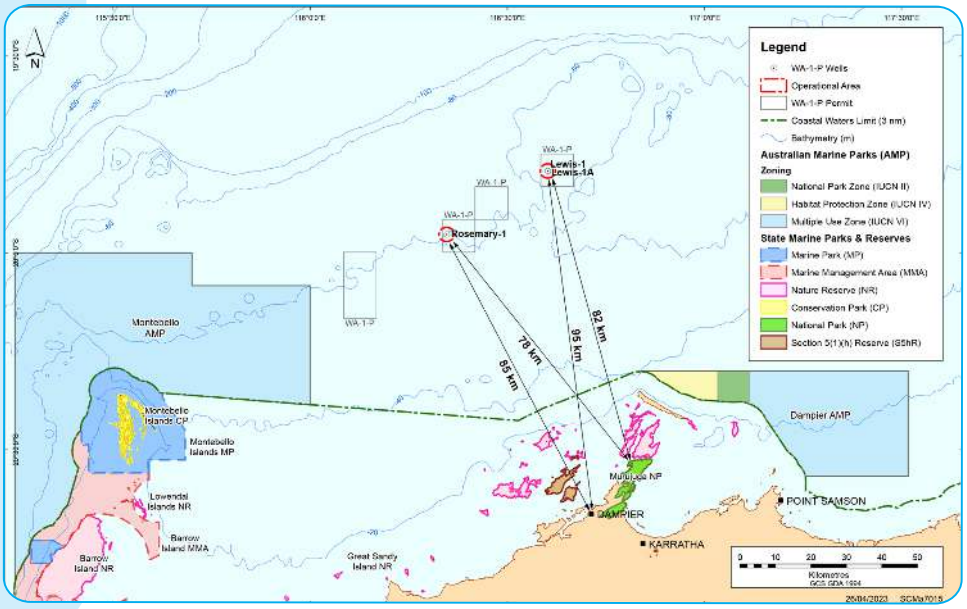

Figure 1. *Lewis-1 and Rosemary-1 Wellhead locations.*

Activity Description

ACTIVITY DETAILS	
Location	Rosemary-1 is approximately 85 km north-northwest of Dampier and the Lewis wells are approximately 95 km north of Dampier, Western Australia.
Timing	+ Vessel-based inspection activities - timing has not been confirmed and will be dependent on vessel availability. + Wellhead presence - ongoing following EP acceptance by NOPSEMA.
Duration	+ Vessel-based inspection activities - up to five days per well. + Wellhead presence - ongoing following EP acceptance by NOPSEMA.
Water depth	Approximately 60 m.
Planned activities	+ Wellhead inspections using a remotely operated vehicle (ROV) and acoustic survey. + Ongoing presence of the wellheads.
Vessels	Single offshore support vessel with ROV and dynamic positioning (DP) capability.
Aircraft	Helicopters may be used for crew changes, critical equipment supply and emergency response.
Description of the natural environment	Flat and featureless, predominantly sandy unconsolidated sediments.
Exclusion zone	Existing exclusions are in place around the wellheads.
Operational Area	A temporary 2 km Operational Area will be in place around each wellhead for the duration of the inspection.
Petroleum production licence	WA-1-P

ACTIVITY COORDINATES		
WELL LOCATIONS	**Latitude (GDA94)**	**Longitude (GDA94)**
Rosemary-1	116° 20' 45.87" E	19° 57' 11.52" S
Lewis-1	116° 36' 8.28" E	19° 47' 31.13" S
Lewis-1A	116° 36' 8.65" E	19° 47' 31.13" S

About decommissioning activities (source NOPSEMA)

Decommissioning is a normal and inevitable stage in the lifetime of an offshore petroleum project that is planned and matured throughout the life of operations.

Decommissioning involves the timely, safe and environmentally responsible removal of, or otherwise satisfactorily dealing with, infrastructure from the offshore area that was previously used to support oil and gas operations.

Key aspects for consideration in planning decommissioning activities are:

+ **Navigation** – ensuring that property does not cause an unacceptable impact and risk to other marine users.
+ **Contamination** – consideration of any pollution or contamination resulting from the deterioration of property.
+ **Impact on marine environment** – consideration of impacts and risks from the activity to the marine environment.
+ **Stability** – consideration of movement of infrastructure.
+ **Technical Feasibilit**y – review of the technical feasibility of implementing the decommissioning activity.

The Australian Government base case for decommissioning is the complete removal of all infrastructure.

Options other than complete removal may be considered, however the titleholder must demonstrate that the alternative decommissioning approach delivers equal or better environmental outcomes compared to complete removal and meets all applicable requirements under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* and regulations, including well integrity and safety related matters, and other applicable laws.

More information about decommissioning can be found **here**.

Activity Purpose and Approvals

The Lewis-1 and Rosemary-1 wellhead inspection activities are being carried out to confirm the location and condition of three historic exploration wellheads, with a view to leaving the wells in situ.

Each wellhead is assumed to still have in place the wellhead, which is a steel tube that may extend approximately 2-3 m above the seabed. Guideposts, which would be within 2-3 m of the wellheads, may also be present.

Santos intends to inspect these historic wellheads using a remotely operated vehicle (ROV) deployed from a vessel to confirm their condition and location. Inspection methods may include:

+ **Side-scan Sonar (SSS)** - SSS identifies large objects on the sea floor. SSS involves towing a set of transducers mounted on either side of a 'tow fish' approximately 10 to 20 m above the seabed, producing pulses at high frequencies.
+ **Multibeam Echo Sounder (MBES)** - MBES surveys enable the collection of bathymetry data and the correlation of depth information. This type of survey uses a sonar system to transmit short pulses of sound energy, analysing the return signal from the seafloor or other objects.
+ **Ultra-short Baseline System (USBL)** - USBL tracks underwater survey and ROV equipment. An acoustic pulse is transmitted by the transceiver and detected by the subsea transponder, which replies with its own acoustic pulse. This return pulse is detected by the shipboard transceiver.
+ **General Video Inspection (GVI)** - GVI uses camera/video equipment will be used once the wellhead is located.

The inspection activity duration is up to five days per well, subject to activity schedule requirements, vessel availability and weather. The timing of the inspection activities is yet to be confirmed. No further activities are planned in relation to the three wellheads at the conclusion of the inspection activities.

The inspection scope of work will not involve re-entering the wells or working on the wellheads that remain in-situ on the seabed.

An EP is being prepared for proposed activities, under which all activity impacts and risks are proposed to be managed to a level as low as reasonably practicable and acceptable over the life of the activity.

The EP will be submitted to NOPSEMA for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

Defining the Environment Area for Proposed Activities

Santos has undertaken an assessment to define the environmental, social, economic and cultural aspects that may be affected by 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 worst-case marine diesel spill resulting from a vessel collision during inspection activities. The EMBA for proposed inspection activities is illustrated in **Figure 2**.

Oil spill EMBAs 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.

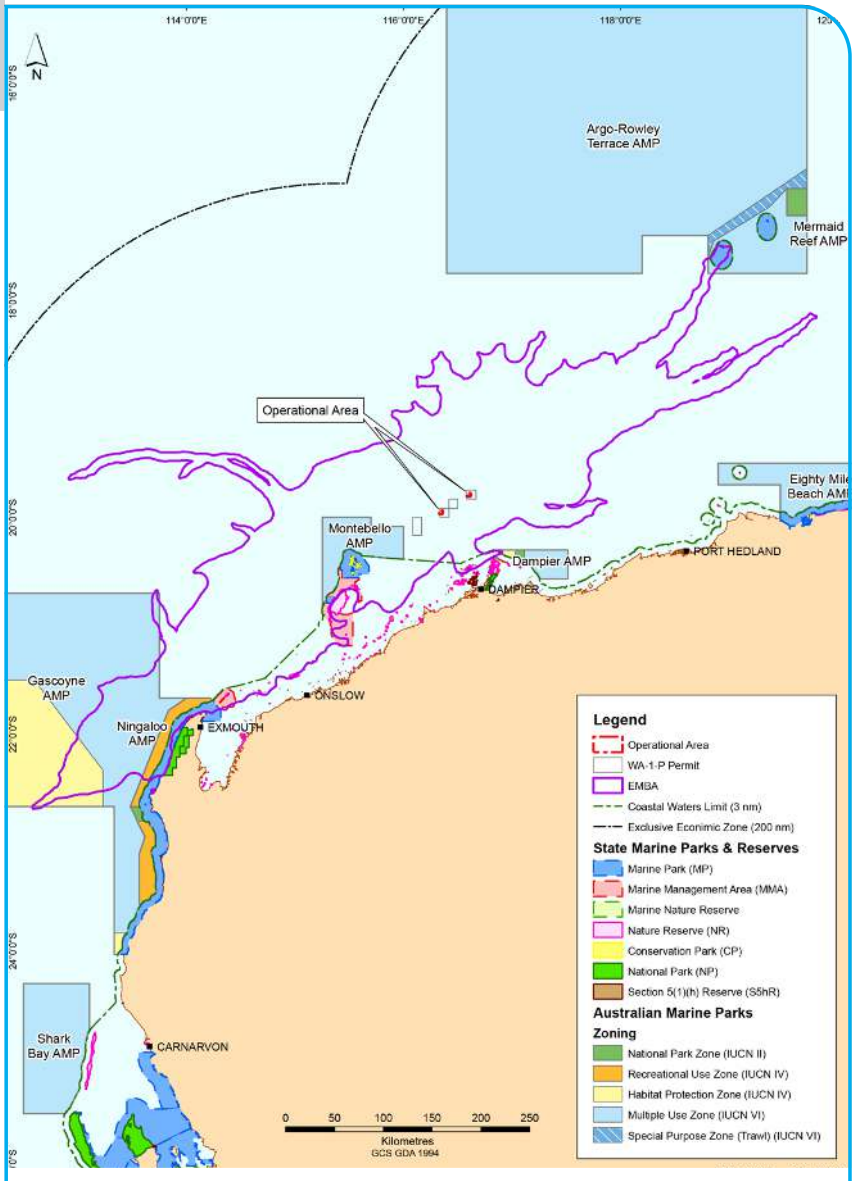

Figure 2. *Activity location map with EMBA*

TABLE 1 ENVIRONMENT AREA FOR PROPOSED ACTIVITIES

ENVIRONMENT AREA	
Operational Area	The area in which the vessel 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

We have undertaken a review of publicly available information to identify environmental, social, economic and cultural features that may be affected by activity impacts and risks, which are summarised in **Table 2**.

TABLE 2
ENVIRONMENTAL, SOCIAL, ECONOMIC AND CULTURAL FEATURES

FEATURES	DESCRIPTION	OPERATIONAL AREA	EMBA	PUBLIC INFORMATION REVIEW
Aboriginal Heritage	Registered Aboriginal heritage sites protected under the: + *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* + *WA Aboriginal Heritage Act 2021*	No	Yes	Aboriginal Heritage sites are present along the coastline along Pilbara and Ningaloo Coast.
Cultural Heritage	Registered cultural sites under the: + *Underwater Cultural Heritage Act 2018*	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. The nearest shipwreck, a scuttled barge, is approximately 53 km west of Rosemary-1.
Defence	Designated defence activity areas	No	No	Defence activities may take place within the Operational Area.
Fishing	Commercial fishing	Yes	Yes	A number of Commonwealth, and State fisheries overlap the EMBA, of which some 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 Northern Territory / Western Australian coastline.
	Recreational and charter boat fishing	No	Yes	No recreational or charter boat fishers are anticipated given the remoteness of the Operational Area. Recreational fishing is present within the EMBA.
Oil and Gas Operations	Petroleum operations	No	Yes	The Northwest Shelf trunklines lie approximately 2 km east of Rosemary-1. Petroleum exploration and production activities have been undertaken within the EMBA.

Protected Areas (nearest Commonwealth and State marine parks)	Australian Marine Park (Cwth)	No	Yes	The Montebello AMP is approximately 38 km west of the Operational Area.
	Marine Management Area (State)	No	Yes	The Montebello Islands Marine Park is approximately 88 km west of the Operational Area.
Shipping	Shipping fairway	No	Yes	The Operational Area does not overlap any shipping fairways, though it is adjacent to vessel traffic.
Telecommunications	Subsea telecommunications cables	No	Yes	The North West Cable System overlaps the EMBA.
Tourism	Tourism operations	No	Yes	Remoteness of the Operational Area limits opportunities for tourism. Tourism occurs within the EMBA.
Towns / communities	Onslow	No	No	Dampier is the nearest community and is approximately 85 km south of the Operational Area.

Activity Impacts and Risk Management

Santos has summarised in **Table 3** potential environmental risks and impacts and associated management measures for the proposed activity.

TABLE 3
ACTIVITY IMPACT AND RISK MANAGEMENT

POTENTIAL ACTIVITY IMPACTS	
Physical presence - interaction with other marine users	
Description of potential impacts Potential impacts from leaving the wellheads in situ may result in: + Displacement of commercial fishers using demersal trawl gear from around the wellheads.	**Compliance with the following key management measures** + The wellhead is charted on Australian Hydrographic Office nautical charts so that marine users are aware of its location. + Marine users are not excluded from the area. + Maritime notices.
Physical presence of wellhead - environmental consequences	
Description of potential impacts + Potential impacts from leaving the wellheads in situ may result in: + Degradation of the wellheads in situ.	**Compliance with the following key management measures** + No control measures are considered necessary.
Acoustic disturbance to fauna	
Description of potential impacts Potential impacts from noise emissions may occur in the onshore operational area from the following sources: + Vessel and ROV operations. + Side scan sonar (SSS).	**Compliance with the following key management measures** + Vessel Planned Maintenance System (PMS) to maintain vessel dynamic positioning, engines and machinery. + Marine fauna interaction procedure. + Marine assurance procedure.
Atmospheric emissions	
Description of potential impacts Potential impacts from atmospheric emissions may occur in the operational area from combustion through the engines and incinerators on offshore support vessels.	**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. + Waste (garbage) management procedure.

Light emissions

Description of potential impacts

+ Light emissions in the marine environment will occur as a result of vessel and ROV operations.

Compliance with the following key management measures

+ National Light Pollution Guidelines.
+ Vessel navigation lighting and equipment is compliant with the Convention on the International Regulations for Preventing Collisions at Sea, 1972 / Marine Orders 30: Prevention of Collisions, and with Marine Orders 21: Safety of Navigation and Emergency Procedures.

Operational discharges

Description of potential impacts

Planned operational discharges include all discharges that are not chemical/hydrocarbon related e.g. chemicals that are used in desal/cooling water/deck drainage /sewage treatment.

Planned operational discharges will occur as a result of vessel and ROV operations.

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.
+ General chemical management procedures.

Physical presence and interaction with other marine users

Description of potential impacts

Interaction with other marine users may occur as a result of:

+ Vessel operations.

Compliance with the following key management measures

+ If requested, stakeholders will be notified prior to the commencement of, and on cessation of the activity.
+ Relevant maritime notices issued.
+ A visual and radar watch will be maintained on the offshore support vessel bridge.
+ Lighting compliance with National Standard for Commercial Vessels or Marine Orders requirements.
+ Offshore support vessel will be prohibited from recreational fishing within the operational area.

POTENTIAL ACTIVITY RISKS

Accidental introduction of invasive marine species (IMS)

Description of risks

IMS may occur due to biofouling on vessels, discharge of high-risk ballast waters. IMS have the potential to cause significant loss of function for an environment or habitat. Introduction of invasive marine species (IMS) may occur due to:

+ Biofouling on offshore support vessels and external/ internal (e.g., sea chests, seawater systems) niches.
+ Biofouling on equipment that is routinely submerged in water (e.g., ROVs).
+ Discharge of high-risk ballast water.

Compliance with the following key management measures

+ Implementation of the management controls in the Santos Invasive Marine Species Management Plan.
+ International Convention on the Control of Harmful Anti-fouling Systems on Ships.
+ Ballast water management requirements.

Unplanned hazardous and non-hazardous discharges

Description of risks

Sources of risk from a minor hydrocarbon release may occur as a result of vessel and ROV operations.

Compliance with the following key management measures

+ Dropped object prevention procedures.
+ Hazardous and general chemical management procedures.
+ International Maritime Dangerous Goods Code.
+ Subsea hydraulic equipment procedures, including ROV maintenance procedures.
+ Vessel spill response plans (SOPEP/SMPEP).
+ Section and maintenance procedures.

Unplanned interaction with marine fauna

Description of risks

+ Marine fauna interactions may occur as a result of vessel operations including ROV operations.

Compliance with the following key management measures

+ Santos procedure for interacting with marine fauna.
+ Vessel navigation procedures, including constant bridge watch.

Unplanned release of solid objects

Description of risks

Solid objects, such as those listed below, can be accidentally released to the marine environment, and potentially impact on sensitive receptors:

+ Non-hazardous solid wastes, such as paper and packaging.
+ Hazardous solid wastes, such as oily and contaminated materials, (such as sorbents, oily rags), batteries and aerosol cans.
+ Equipment and materials, such as hard hats, tools.

Compliance with the following key management measures

+ Dropped object prevention procedures.
+ Waste (garbage) management procedure.
+ General chemical management procedures.
+ International Maritime Dangerous Goods Code.

Unplanned oil spill resulting from a vessel collision or bunkering incident

Description of risks

A worst-case credible scenario for the proposed activity is a marine diesel oil (MDO) / marine gas oil (MGO) spill resulting from a vessel collision.

+ This worst-case estimated volume would be typical for similar vessel-based or maintenance activities and significantly less than for commercial shipping activities in the region.

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

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 (ALARP) 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

If you consider you may be a relevant person, please contact us as soon as possible if you require any further information or if you think you are not on our consultation list.

We are asking for relevant persons to provide feedback by **26 July 2023**.

Feedback provided by relevant persons will be considered during development of the **WA-1-P Environment Plan** and through the life of the activity. Feedback from relevant persons will be included in the EP submitted to NOPSEMA for assessment.

Please let us know if you would like your personal/organisational details or any part of your feedback to remain private and we will ensure this remains confidential to NOPSEMA.

Santos

E: offshore.consultation@santos.com

T: 1800 267 600

www.santos.com/offshoreconsultation