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Appendix 3 - Environment Regulations Requirements

1.0 Requirements

1.1 OPGGS Act Requirements

The OPGGS Act provides the regulatory framework for all offshore petroleum activities within Commonwealth waters. The Act ensures that activities are undertaken in a way that is:

- Consistent with the principles of ecologically sustainable development as defined in section 3A of the EPBC Act.
- Reduces environmental impacts and risks of the activity to as low as reasonably practicable (ALARP).
- Ensures that environmental impacts and risks of the activity are acceptable.

There are several regulations under the Act including:

- OPGGS (Safety) Regulations 2024
- OPGGS (Resource Management and Administration) Regulations 2011
- OPGGS(E)R 2023.

Table 1-1 specifies the requirements of the OPGGS(E)R in relation to the content of this EP.

Table 1-1: Requirements of the Regulations

OPGGS(E) R Section	Description	Document Section
21 (1)	A comprehensive description of the activity including: • The location or locations of the activity. • General details of the development drilling and layout of any facility that is used in undertaking the activity. • An outline of the operational details of the activity and proposed timetables for undertaking the activity. • Any additional information relevant to consideration of environmental impacts and risks of the activity.	Section 3
21 (2) and (3)	Describe the existing environment that may be affected by the activity and include details of the relevant values and sensitivities (if any) of that environment. Relevant values and sensitivities may include any of the following: • world Heritage property values • national Heritage property values • ecological character of a declared Ramsar wetland • listed threatened species or ecological communities • listed migratory species • values and sensitivities which exist in, or in relation to, part or all of: – Commonwealth marine areas – or Commonwealth land.	Section 4
21 (4), 22 (16)	Describe the requirements, including legislation requirements, that apply to the activity and are relevant to the environmental	Section 2 Appendix 3

OPGGS(E) R Section	Description	Document Section
	management of the activity and demonstrate how those requirements will be met. The implementation strategy must comply with the Act, this instrument, any other regulations made under the Act, and any other environmental legislation applying to the activity.	
21 (5) and (6)	The environment plan must include: • Details of the environmental impacts and risks of the activity. • An evaluation of all the environmental impacts and risks, appropriate to the nature and scale of each impact or risk. • Details of the control measures that will be used to reduce the impacts and risks of the activity to as low as reasonably practicable and an acceptable level. To avoid doubt, the evaluation mentioned above must evaluate all of the environmental impacts and risks arising directly or indirectly from: • All operations of the activity. • Any potential emergency conditions, whether resulting from an accident or any other cause.	Section 6
21 (7)	The environment plan must: • Set environmental performance standards for the control measures. • Set out the environmental performance outcomes for the activity against which the performance of the titleholder in protecting the environment is to be measured. • Inclusion of measurement criteria for environmental performance outcomes and environmental performance standards.	Section 10
22 (1) and (7)	The environment plan must: • Contain an implementation strategy for the activity in accordance with this section. The implementation strategy must: • State when the titleholder will report to NOPSEMA in relation to the titleholder's environmental performance for the activity. The interval between reports must not be more than 12 months.	Section 12
22 (2)	The implementation strategy must contain a description of the environmental management system for the activity, including specific measures to be used to ensure that, for the duration of the activity: • The environmental impacts and risks of the activity continue to be identified and reduced to a level that is as low as reasonably practicable; and • Control measures detailed in the environment plan are effective in reducing the environmental impacts and risks of the activity to as low as reasonably practicable and an acceptable level.	Section 12

OPGGS(E) R Section	Description	Document Section
	• Environmental performance outcomes and environmental performance standards in the environment plan are being met.	
22 (3) and (4)	The implementation strategy must: • Establish a clear chain of command, setting out the roles and responsibilities of employees and contractors in relation to the implementation, management, and review of the environment plan, including during emergencies or potential emergencies. • Include measures to ensure that each employee or contractor working on, or in connection with, the activity is aware of the employee's or contractor's responsibilities in relation to the environment plan, including during emergencies or potential emergencies, and has the appropriate competencies and training.	Section 12
22 (5), 51	The implementation strategy must provide for sufficient monitoring, recording, audit, management of non-conformance and review of the titleholder's environmental performance and the implementation strategy to ensure that the environmental performance outcomes and environmental performance standards in the environment plan are being met. Environmental performance report must be submitted to NOPSEMA at the times or intervals provided for in the environment plan in force for the activity.	Section 12
22 (6)	The implementation strategy must provide for sufficient monitoring of, and maintaining a quantitative record of, emissions and discharges (whether occurring during normal operations or otherwise), such that the record can be used to assess whether the environmental performance outcomes and environmental performance standards in the environment plan are being met.	Section 12
22 (8)	The implementation strategy must contain an oil pollution emergency plan and provide for the updating of the plan.	Offshore Victoria OPEP (VIC-ER-EMP-0001) Section 12
22 (9)	The oil pollution emergency plan must include adequate arrangements for responding to and monitoring oil pollution, including the following: • The control measures necessary for timely response to an emergency that results or may result in oil pollution. • The arrangements and capability that will be in place, for the duration of the activity, to ensure timely implementation of the control measures, including arrangements for ongoing maintenance of response capability. • The arrangements and capability that will be in place for monitoring the effectiveness of the control measures and ensuring that the environmental performance standards for the control measures are met.	Section 12 (detail within Offshore Victoria OPEP ((VIC-ER-EMP-0001))

OPGGS(E) R Section	Description	Document Section
	• The arrangements and capability in place for monitoring oil pollution to inform response activities	
22 (10) and (11)	The implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities that: • Is appropriate to the nature and scale of the risk of environmental impacts of the activity. • Is sufficient to inform any remediation activities. The implementation strategy must include information demonstrating that the response arrangements in the oil pollution emergency plan are consistent with the national system for oil pollution preparedness and response.	Section 12
22 (12)	The implementation strategy must include arrangements for testing the response arrangements in the oil pollution emergency plan. The testing arrangements must be appropriate to the response arrangements and to the nature and scale of the risk of oil pollution for the activity.	Section 12 (detail within Offshore Victoria OPEP ((VIC-ER-EMP-0001))
22 (13) and (14)	The testing arrangements must include: • (a) a statement of the objectives of testing • (b) a proposed schedule of tests • (c) mechanisms to examine the effectiveness of response arrangements against the objectives of testing • (d) mechanisms to address any recommendations arising from tests. For the purposes of paragraph (13)(b), the proposed schedule of tests must provide for the following: • Testing the response arrangements when they are introduced. • Testing the response arrangements when they are significantly amended. • Testing the response arrangements not later than 12 months after the most recent test. • If a new location for the activity is added to the environment plan after the response arrangements have been tested, and before the next test is scheduled to be conducted—testing the response arrangements in relation to the new location as soon as practicable after it is added to the plan. • If a facility becomes operational after the response arrangements have been tested and before the next test is scheduled to be conducted—testing the response arrangements in relation to the facility when it becomes operational.	Section 12 (detail within Offshore Victoria OPEP ((VIC-ER-EMP-0001))
24 (c), 48 and 50	The environment plan must include: • Details of reportable incidents in relation to the activity, procedures for reporting and notifying reportable and recordable incidents.	Section 12
24 (a) and (b)	The environment plan must include:	Section 11

OPGGS(E) R Section	Description	Document Section
	• A statement of the titleholder's corporate environmental policy. • A report on all consultations under section 25 of any relevant person by the titleholder, that contains: – A summary of each response made by a relevant person. – An assessment of the merits of any objection or claim about the adverse impact of each activity to which the environment plan relates. – A statement of the titleholder's response, or proposed response, if any, to each objection or claim. – A copy of the full text of any response by a relevant person.	Section 12 Appendix 8
22 (15), 25 (1), (2), (3) and (4)	Consultation with relevant authorities, persons and organisations must occur during the preparation of an environment plan. The implementation strategy must provide for appropriate consultation with: • Relevant authorities of the Commonwealth, a State, or a Territory. • Other relevant interested persons or organisations. For the purpose of the consultation, the titleholder must give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person. The titleholder must allow a relevant person a reasonable period for the consultation. The titleholder must tell each relevant person the titleholder consults that: • The relevant person may request that particular information the relevant person provides in the consultation not be published. • Information subject to such a request is not to be published under this Part.	Section 11
23 (1), (2) and (3)	The environment plan must include the following details for the titleholder: • Name, business address, telephone number (if any), fax number (if any), email address (if any). • An ACN (within the meaning of the Corporations Act 2001). The environment plan must also include the following details for the titleholder's nominated liaison for the activity: Name, business address, telephone number (if any), fax number (if any), email address (if any). The environment plan must include arrangements for notifying NOPSEMA of any of the following: • A change in the titleholder. • A change in the titleholder's nominated liaison for the activity.	Section 1.6 Section 11

OPGGS(E) R Section	Description	Document Section
	• A change in the contact details for either the titleholder or the nominated liaison.	

1.2 EPBC Act Requirements

This EP considers the impacts to matters of national environmental significance (MNES) protected under Part 3 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). MNES relevant to the EP include:

- listed threatened species and ecological communities
- listed migratory species (protected under international agreements)
- Commonwealth marine areas
- World Heritage places
- National Heritage places
- Commonwealth Heritage places
- wetlands of international importance (listed under the Ramsar Convention).

Relevant requirements associated with the EPBC Act, related policies, guidelines, plans of management, recovery plans, threat abatement plans, and other relevant advice issued by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) are detailed in Section 4.0 as part of the description of the existing environment.

The requirements identified within management/recovery plans and conservation advice have been considered in the development of the EP and used as guidance in developing the management of proposed activities.

Table 1-2 outlines the management plans, recovery plans and conservation advice of listed species identified in Section 4.0 and highlights any key threats or conservation actions relevant to the proposed activities.

Table 1-3 provides guidance on the 'key terms' within the Blue Whale Conservation Management Plan (CMP) and how they are applied within this EP. Guidance and advice have been considered when assessing the impacts and risks, acceptability and in developing environmental performance outcomes (EPOs).

Table 1-2: Recovery Plans, Threat Abatement and Species Conservation Advice

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Fish					
Australian Grayling	National Recovery Plan for the Australian Grayling (Backhouse et al., 2008)	• Vulnerable	The overall objective of recovery is to minimise the probability of extinction of the Australian grayling in the wild, and to increase the probability of important populations becoming self-sustaining in the long term. Relevant specific objectives within the lifespan of the recovery plan, with a particular focus on riverine habitats, are: • Protect and restore habitat for Australian grayling. • Investigate and manage threats to populations and habitats.	Climate Change	No explicit relevant management actions; climate change identified as a threat.
				Poor Water Quality	Manage water quality where Australian Grayling occurs to maintain waters free of significant levels of nutrient, sediment, pesticide, and other pollutants, consistent with the ANZECC guidelines for water quality.
	Conservation Advice *Prototroctes maraena* Australian Grayling (TSSC, 2021)		No explicit relevant objectives	Climate Change	No explicit relevant management actions; climate change identified as a threat.
Black Rockcod	Approved Conservation Advice for *Epinephelus daemelii* (Black Rock-cod) (DSEWPaC, 2012c)	• Vulnerable	No explicit relevant objectives	Climate Change	No explicit relevant management actions; climate change identified as a threat.
	National recovery plan for the Dwarf Galaxias	• Endangered	No explicit relevant objectives	Climate Change	

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Eastern Dwarf Galaxias	(*Galaxiella pusilla*) (Saddlier et al., 2010a)				No explicit relevant management actions; climate change identified as a threat.
	Conservation Advice for *Galaxiella pusilla* (dwarf galaxias) (DCCEEW, 2023b)				
Variegated Pygmy Perch	National recovery plan for the Variegated Pygmy Perch (*Nannoperca variegate*) (Saddlier and Hammer, 2010b)	• Vulnerable	No explicit relevant objectives	Climate Change	No explicit relevant management actions; climate change identified as a threat.
Yarra Pygmy Perch	National recovery plan for the Yarry Pygmy Perch (*Nannoperca obscura*) (Saddlier and Hammer, 2010c)	• Endangered	No explicit relevant objectives	Climate Change	No explicit relevant management actions; climate change identified as a threat.
	Approved Conservation advice for *Nannoperca obscura* (Yarra pygmy perch) (DCCEEW, 2023c)				
Handfish	Recovery Plan for Three Handfish Species: Spotted Handfish (*Brachionichthys hirsutus*), Red Handfish (*Thymichthys politus*), and Ziebell's Handfish	Critically Endangered: • Red handfish • Spotted handfish • Vulnerable:	No explicit relevant objectives	Pollution and siltation of waterways	No explicit relevant management actions; pollution and siltation of waterways identified as a threat.
				Climate Change	No explicit relevant management actions; climate change identified as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
	(*Branchiopsilus ziebelli*) (CoA, 2015b)	• Ziebell's handfish			
	Approved Conservation Advice for T*hymichthys politus* (Red Handfish) (DSEWPaC, 2012d)	• Critically Endangered	No explicit relevant objectives	Habitat Degradation	Ensure there is no disturbance to areas where the red handfish occurs, excluding necessary actions to manage the conservation of the species. Manage any known, potential, or emerging threats including introduced species
White Shark	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPaC, 2013a)	• Vulnerable • Migratory	The overarching objective of this recovery plan is to assist the recovery of the white shark in the wild throughout its range in Australian waters with a view to: • Improving the population status leading to future removal of the white shark from the threatened species list of the EPBC Act. • Ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future. The specific objectives of the recovery plan (relevant to industry) are: • Objective 7: Continue to identify and protect habitat critical to the survival of the white shark and	Habitat modification	No explicit relevant management actions; habitat modification identified as a threat.
				Climate Change	No explicit relevant management actions; climate change identified as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
			minimise the impact of threatening processes within these areas.		
Grey Nurse Shark (east coast population)	Recovery Plan for the Grey Nurse Shark (*Carcharias Taurus*) (DoE, 2014)	• Critically Endangered	The long-term objective of this recovery plan is to assist the recovery of the grey nurse shark in the wild, throughout its range in Australian waters, with an aim to improve its population status and ensure that anthropological activities do not hinder the recovery of the grey nurse shark. The specific objectives of this recovery plan (relevant to industry) are: • Objective 8: Continue to identify and protect critical habitat to the survival of the grey nurse shark and reduce the impact of threatening processes within these areas.	Pollution	Review and assess the potential threats of introduced species, pathogens, and pollutants.
				Habitat Modification	Review the level and spatial extent of protection measures at key aggregation sites to ensure appropriate levels of protection, and a consistent approach to the designation and implementation of protective measures, are applied. Use Biologically Important Areas (BIA) to help inform the development of appropriate conservation measures, including through the application of advice in the marine bioregional plans on the types of actions which are likely to have a significant impact on the species and updating such conservation measures as new information becomes available.
				Climate Change	No explicit relevant management actions; climate change identified as a threat.
Whale Shark	Approved Conservation Advice for *Rhincodon typus* (Whale Shark) (TSSC, 2015c)	Vulnerable • Migratory	No explicit relevant objectives	Vessel Strike	Minimise offshore developments and transit time of large vessels in areas close to marine features likely to correlate with whale shark aggregations.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Pollution	No explicit relevant management actions; pollution (marine debris) identified as a threat.
				Climate Change	No explicit relevant management actions; climate change identified as a threat.
Shorebirds and Seabirds					
Threatened Albatross and Petrel species	National Recovery Plan for Albatrosses and Petrels (2022) (CoA, 2022)	Endangered: Chatham albatross • Grey-headed albatross • Northern royal albatross • Shy albatross • Gould's petrel • Southern giant petrel Vulnerable: • Antipodean albatross • Black-browed albatross • Buller's albatross • Campbell albatross	Overall objective: To ensure the long-term survival and recovery of albatross and giant petrel populations breeding and foraging in Australian jurisdiction by reducing or eliminating human related threats at sea and on land. Specific objectives: • Land-based threats to the survival and breeding success of albatrosses and giant petrels breeding within areas under Australian jurisdiction are quantified and reduced. • Marine-based threats to the survival and breeding success of albatrosses and giant petrels foraging in waters under Australian jurisdiction are quantified and reduced.	Marine pollution	Undertake, as feasible, monitoring of breeding colonies for marine debris, plastics and marine pollution impacts including, as a priority: • Incidence of oiled birds at nest. • Effect of plastics and marine pollution. • Develop baseline measures of levels of heavy metals and persistent organic pollutants. • Risk-based response strategies are implemented where appropriate, for marine pollution incidents that have the potential to affect breeding populations.
				Marine infrastructure interactions	No explicit relevant management actions; marine infrastructure interactions identified as a threat.
				Climate Change	No explicit relevant management actions; climate change identified as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
		• Indian, yellow-nosed albatross • Northern giant petrel • Salvin's albatross • Sooty albatross • Southern royal albatross • White-capped albatross.			
All Migratory Shorebirds	Wildlife Conservation Plan for Migratory Shorebirds (CoA, 2015a).	N/A	Anthropogenic threats to migratory shorebirds in Australia are minimised or, where possible, eliminated.	Habitat degradation / modification (oil pollution)	No explicit relevant management actions; identified as a threat.
				Anthropogenic disturbance	Investigate the significance of cumulative impacts on migratory shorebird habitat and populations in Australia. Ensure all areas important to migratory shorebirds in Australia continue to be considered in development assessment processes (specifically for coastal developments).
				Climate Change	Investigate the impacts of climate change on migratory shorebird habitat and populations in Australia.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
All Seabirds	Wildlife Conservation Plan for Seabirds (CoA, 2020)	N/A	Seabirds and their habitats are protected and managed in Australia.	Pollution (marine debris, light, water)	Enhance contingency plans to prevent and/or respond to environmental emergencies that have an impact on seabirds and their habitats.
				Habitat loss and degradation from pollution	No explicit relevant management actions; identified as a threat.
				Anthropogenic disturbance	Ensure all areas of important habitat for seabirds are considered in the development assessment process. Manage the effects of anthropogenic disturbance to seabird breeding and roosting areas.
				Invasive species	Ensure seabirds are protected from the adverse effects of invasive species.
				Climate Change	No explicit relevant management actions; climate change identified as a threat.
All Seabirds and Migratory Shorebirds	National Light Pollution Guidelines for Wildlife	N/A	Lighting objectives will need to consider the regulatory requirements and Australian standards relevant to the activity, location and wildlife present. Objectives should be described in terms of specific locations and times for which artificial light is necessary. Consideration should be given to whether colour differentiation is required and if some areas should remain dark – either to contrast with lit	Light pollution	Best practice lighting design incorporates the following design principles: • Start with natural darkness and only add light for specific purposes. • Use adaptive light controls to manage light timing, intensity and colour. • Light only the object or area intended – keep lights close to the ground, directed and shielded to avoid light spill.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
			areas or to avoid light spill. Where relevant, wildlife requirements should form part of the lighting objectives. A lighting installation will be deemed a success if it meets the lighting objectives (including wildlife needs) and areas of interest can be seen by humans clearly, easily, safely and without discomfort.		• Use the lowest intensity lighting appropriate for the task. • Use non-reflective, dark-coloured surfaces. Use lights with reduced or filtered blue, violet and ultra-violet wavelengths.
Little Tern	Conservation Advice for *Sternula albifrons* (little tern) (DCCEEW, 2025b)	• Vulnerable	The primary conservation objectives for the conservation advice are; • Retain breeding colonies across the species' range by managing threats to the extent possible, including by facilitating breeding site re-positioning if needed, and achieve a stable or increasing population trend in both subpopulations. • Increase breeding success in existing breeding colonies in all range states through appropriate management of threats.	Climate Change	No explicit relevant management actions; climate change identified as a threat. Disturbance to nesting birds by activities such as use of boats and jet skis close to shore identified as a threat. This is not applicable to the activities in this EP.
Sooty Shearwater	Conservation Advice for *Ardenna grisea* (sooty shearwater). (DCCEEW, 2023d)	• Vulnerable • Migratory • Marine	The primary conservation objectives for the conservation advice are: • To increase the trend of Australian breeding population.	Climate Change	No explicit relevant management actions; climate change identified as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
			• At-sea losses within Australia remain minimal.		
Australasian Bittern	Approved Conservation Advice for *Botaurus poiciloptilus* (Australasian bittern) (TSSC, 2019a)	• Endangered	The objective of this conservation advice is to provide guidance for actions that will expand the range and the number of Australasian bitterns in Australia.	Habitat loss and degradation	No explicit relevant management actions; habitat loss and degradation recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
	National Recovery Plan for the Australasian Bittern (*Botaurus poiciloptilus*) (DCCEEW, 2023n)		The objective of this recovery plan is to demonstrate, by 2032, an increasing trend (compared to 2020 baseline counts) in the number of mature individuals being recorded in annual surveys at key locations, and to ensure that habitat critical to the survival of the Australasian Bittern is protected and managed to meet the ecological requirements of the species.	Climate Change	No explicit relevant management actions; climate change recognised as a threat.
				Reduced water quality	No explicit relevant management actions; reduced water quality recognised as a threat.
Red Knot	Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024f)	• Vulnerable • Migratory • Marine	Minimise further loss of habitat critical to the survival of red knot throughout Australia (including habitat predicted to become habitat critical in the future because of climate change)	Acute Pollution	No explicit relevant management actions; oil pollution recognised as a threat.
				Habitat loss, disturbance, and modifications	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Great Knot	Conservation Advice for *Calidris tenuirostris* (great knot) (DCCEEW, 2024g)	• Vulnerable • Migratory • Marine	Minimise further loss of habitat critical to the survival of great knot throughout Australia (including habitat predicted to become habitat critical in the future because of climate change)	Acute Pollution	No explicit relevant management actions; oil pollution recognised as a threat.
				Habitat loss, disturbance, and modifications	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Curlew Sandpiper	Approved Conservation Advice for *Calidris ferruginea* (Curlew Sandpiper) (TSSC, 2015d)	• Critically Endangered • Migratory • Marine	Minimise further loss of habitat critical to the survival of curlew sandpiper throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).	Acute and chronic pollution	No explicit relevant management actions; oil spill is recognised as a threat.
				Habitat loss, disturbance, and modifications	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Pilotbird	Conservation Advice for *Pycnoptilus floccosus* (Pilotbird)	• Vulnerable	No explicit relevant objectives	NA	NA

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Sharp-tailed Sandpiper	Approved Conservation Advice for Calidris acuminata (sharp-tailed sandpiper) (DCCEEW, 2024h)	• Vulnerable • Migratory • Marine	Australian Objective: Minimise further loss of habitat critical to the survival of the sharp-tailed sandpiper throughout Australia.	Habitat loss, degradation, and fragmentation	Ensure that future development projects avoid any activities that disproportionately affect the upper-tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Terek Sandpiper	Approved Conservation Advice for Xenus cinereus (Terek sandpiper) (DCCEEW, 2024i)	• Vulnerable • Migratory • Marine	Australian Objective: Minimise further loss of habitat critical to the survival of the terek sandpiper throughout Australia.	Habitat loss, degradation, and fragmentation	Ensure that future development projects avoid any activities that disproportionately affect the upper-tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Greater Sand Plover	Approved Conservation Advice for *Charadrius leschenaultia* (Greater Sand Plover) (TSSC, 2016a)	• Vulnerable • Migratory • Marine	No explicit relevant objectives	Habitat loss and degradation	Identifies research priorities and the need for actions to prevent destruction of key breeding and migratory staging sites. Protect important habitat in Australia.
				Pollution and contamination	No explicit relevant management actions; pollution / contaminants recognised as a threat.
				Introduced Species	No explicit relevant management actions; introduced species recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Lesser Sand Plover	Approved Conservation Advice for *Charadrius mongolus* (Lesser Sand Plover) (TSSC, 2016b)	• Endangered • Migratory • Marine	No explicit relevant objectives	Habitat loss and degradation	No explicit relevant management actions; Habitat loss and degradation is identified as a threat.
				Pollution/contamination impacts	No explicit relevant management actions; Climate Change is identified as a threat.
				Introduced species	No explicit relevant management actions; Pollution/Contamination identified as a threat.
				Direct mortality	No explicit relevant management actions; Disturbance identified as a threat.
				Climate Change	No explicit relevant management actions; Direct morality is identified as a threat.
Grey Plover	Approved Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW, 2024j)	• Vulnerable • Migratory • Marine	Minimise further loss of habitat critical to the survival of grey plover throughout Australia (including habitat predicted to become habitat critical to survival in the future because of climate change).	Habitat Loss	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
				Climate Change	No explicit relevant management actions; Direct morality is identified as a threat.
Blue Petrel	Approved Conservation Advice for *Halobaena caerulea* (Blue Petrel) (TSSC 2015e)	• Vulnerable • Marine	No explicit relevant objectives	Habitat Loss, Disturbance and Modification	No explicit relevant management actions; habitat loss, disturbance and modification recognised as a threat.
		• Endangered	Minimise further loss of habitat critical to the survival of grey plover	Habitat loss, degradation	Ensure that future development projects avoid any activities that disproportionately

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Nunivak Bar-tailed Godwit	Conservation Advice for *Limosa lapponica baueri* (Alaskan bar-tailed godwit) (DCCEEW, 2024k)		throughout Australia (including habitat predicted to become habitat critical to survival in the future because of climate change).	and fragmentation	affect the upper-tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies and site managers.
				Acute Pollution	No explicit relevant management actions; oil pollution recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Eastern Curlew	Approved Conservation Advice for *Numenius madagascariensis* (Eastern Curlew) (DCCEEW, 2023o)	• Critically Endangered • Migratory • Marine	Minimise further loss of habitat critical to the survival of far eastern curlew throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).	Acute and chronic pollution	No explicit relevant management actions; oil spill is recognised as a threat.
				Habitat loss, disturbance, and modifications	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Fairy Prion (southern)	Approved Conservation Advice for *Pachyptila subantarctica* (Fairy Prion (southern)) (TSSC, 2015f)	• Vulnerable	No explicit relevant objectives	Habitat Loss, Disturbance and Modification	No explicit management actions; habitat loss, disturbance and modification recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Australian Painted Snipe	Approved Conservation Advice for *Rostratula australis* (Australian painted snipe) (DSEWPaC, 2013b)	• Endangered • Marine	No explicit relevant objectives	Habitat loss disturbance and modifications	Habitat recovery actions are a priority.
	National Recovery Plan for the Australian Painted Snip (*Rostratula australis*) (DCCEEW, 2022b)		By 2032, sustain a positive population trend (compared to 2020 baseline counts) in the number of mature individuals of the Australian Painted Snipe.	Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Australian Fairy Tern	Approved Conservation Advice for *Sternula nereis* (Australian Fairy Tern) (DSEWPaC, 2011b)	• Vulnerable	No explicit relevant objectives	Oil spills, particularly in Victoria	Ensure appropriate oil spill contingency plans are in place for the subspecies' breeding sites that are vulnerable to oil spills.
	National Recovery Plan for (*Sternula nereis nereis*) (Australian Fairy Tern) (DAWE, 2020b)		Long-term Vision: The Australian fairy tern population has increased in size to such an extent that the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	Habitat degradation and loss of breeding habitat	No explicit management actions; habitat degradation and loss of breeding habitat recognised as a threat.
				Pollution	No explicit management actions; pollution recognised as a threat.
				Climate variability and change	No explicit management actions; climate change recognised as a threat.
Grey-headed Albatross	Approved Conservation Advice for *Thalassarche*	• Endangered	No explicit relevant objectives	Pollution	No explicit management actions; pollution recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
	Chrysostoma, Greyheaded Albatross) (DEWHA, 2009)	• Migratory • Marine		Entanglement in Marine Debris	No explicit management actions; marine debris recognised as a threat.
				Climate Change	No explicit management actions; climate change recognised as a threat.
Shy Albatross	Conservation Advice *Thalassarche cauta* Shy Albatross (TSSC, 2020a)	• Endangered • Migratory • Marine	Refer to objectives in the National Recovery Plan for Threatened Albatrosses and Giant Petrels 2022	Marine Pollution	No explicit management actions; marine pollution recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Hooded Plover (eastern)	Approved Conservation Advice for *Thinornis rubricollis* (Hooded Plover, Eastern) (TSSC, 2014)	• Vulnerable • Marine	Primary Conservation Objectives: • Achieve stable numbers of adults in the population, and maintain a stable number of occupied and active breeding territories. • Maintain, enhance and restore habitat, and integrate the subspecies' needs into coastal planning.	Oil spills	Prepare oil spill response plans to ensure effective rehabilitation of oiled birds.
				Entanglement and Ingestion of Marine Debris	Reduce in-shore marine debris
				Invasive Species	No explicit management actions; invasive species recognised as a threat.
				Climate Change	No explicit management actions; climate change recognised as a threat.
Gould's Petrel	Gould's Petrel (*Pterodroma leucoptera leucoptera*) Recovery Plan (DEC, 2006)	• Endangered	The overall objective of the Gould's petrel recovery effort is for Gould's petrel to be down listed from endangered to vulnerable by 2011. Specific recovery objectives are:	None identified	NA

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
			To identify and manage the threats operating at sites where the subspecies occurs		
Herald Petrel	Conservation Advice *Pterodroma heraldica* (Herald petrel) (TSSC, 2015g)	• Critically Endangered	No explicit relevant objectives	None identified	NA
Soft-plumage Petrel	Approved Conservation Advice for *Pterodroma mollis* (Soft-plumaged Petrel) (TSSC, 2015h)	• Vulnerable • Marine	No explicit relevant objectives	None identified	NA
Kermadec Petrel (western)	Lord Howe Island Biodiversity Management Plan (DECC, 2008)	• Vulnerable	No explicit relevant objectives	None identified	NA
	Norfolk Island Region Threatened Species Recovery Plan (DCCEEW, 2025c)		No explicit relevant objectives	None identified	NA
White-bellied Storm Petrel (Tasman Sea)	Lord Howe Island Biodiversity Management Plan (DECC, 2008)	• Vulnerable	No explicit relevant objectives	None identified	NA
Swift Parrot	National Recovery Plan for the Swift Parrot (*Lathamus discolor*) (DCCEEW, 2024l)	• Critically Endangered • Marine	By 2032, anthropogenic threats to Swift Parrot are demonstrably reduced.	Climate Change	No explicit relevant management actions; climate change recognised as a threat

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
	Conservation Advice *Lathamus discolor* Swift Parrot (TSSC, 2016c)		No explicit relevant objectives	None identified	NA
Orange-bellied Parrot	National Recovery Plan for the Orange-bellied Parrot (*Neophema chrysogaster*) (DELWP, 2016)	• Critically Endangered • Marine	The three primary objectives of this Recovery Plan are based on the recovery strategy outlined above, while the fourth, supporting objective is essential in order to achieve the three primary objectives: • Objective 1. To achieve a stable or increasing population in the wild within five years. • Objective 2. To increase the capacity of the captive population, both to support future releases of captive-bred birds to the wild and to provide a secure long term insurance population. • Objective 3. To protect and enhance habitat to maintain, and support growth of, the wild population. • Objective 4. To ensure effective adaptive implementation of the plan.	Habitat degradation and modification	Retain habitat Manage threats to habitat quality Monitor the wild population and habitat
				Barriers to migration and movement	No explicit relevant management actions; barriers to migration recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change impacts recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Grey Falcon	Conservation Advice *Falco hypoleucos* Grey Falcon (TSSC, 2020b)	• Vulnerable	No explicit relevant objectives	Climate Change	No explicit relevant management actions; climate change impacts recognised as a threat.
White-throated Needletail	Conservation Advice *Hirundapus caudacutus* White-throated Needletail (TSSC, 2019b)	• Vulnerable • Migratory • Marine	No explicit relevant objectives	NA	NA
Common Greenshank	Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024m)	• Endangered • Migratory • Marine	Minimise further loss of habitat critical to the survival of common greenshank throughout Australia (including habitat predicted to become habitat critical to the survival of the species in the future because of climate change).	Habitat loss, degradation and fragmentation	Ensure that future development projects avoid any activities that disproportionately affect the upper-tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies and site managers.
				Acute Pollution	No explicit relevant management actions; acute recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Black-tailed Godwit	Conservation Advice for *Limosa limosa* (black-tailed godwit). (DCCEEW, 2024n)	• Endangered • Migratory • Marine	Minimise further loss of habitat critical to the survival of black-tailed godwit throughout Australia (including habitat predicted to become habitat critical to the survival of the species in the future because of climate change).	Habitat loss, degradation and fragmentation	Ensure that future development projects avoid any activities that disproportionately affect the upper-tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies and site managers.
				Acute Pollution	No explicit relevant management actions; acute recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Latham's Snipe	Conservation Advice for *Gallinago hardwickii* (Latham's snipe) (DCCEEW, 2024o)	• Vulnerable • Migratory • Marine	Minimise further loss of habitat critical to the survival of Latham's snipe throughout Australia (including habitat predicted to become habitat critical to the survival of the species in the future because of climate change).	Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Ruddy Turnstone	Conservation Advice for *Arenaria interpres* (ruddy turnstone) (DCCEEW, 2024p)	• Vulnerable • Migratory • Marine	Minimise further loss of habitat critical to the survival of ruddy turnstone throughout Australia (including habitat predicted to become habitat critical to the survival of the species in the future because of climate change).	Habitat loss, degradation and fragmentation	Ensure that future development projects avoid any activities that disproportionately affect the upper-tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies and site managers.
				Acute Pollution	No explicit relevant management actions; acute recognised as a threat.
				Climate Change	No explicit relevant management actions; climate change recognised as a threat.
Blue-winged Parrot	Conservation Advice for *Neophema chrysostoma* (blue-winged parrot) (DCCEEW, 2023e)	• Vulnerable • Marine	No explicit relevant objectives	Habitat loss, degradation and fragmentation	No explicit relevant management actions; habitat loss, degradation and fragmentation recognised as a threat.
				Climate change	No explicit relevant management actions; climate change recognised as a threat.
King Island Brown Thornbill	Conservation Advice for *Acanthiza pusilla magnirostris* (King Island brown thornbill) (DCCEEW, 2023f)	• Endangered	No explicit relevant objectives	NA	NA

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
	King Island Biodiversity Management Plan (DPIPWE, 2012)		No explicit relevant objectives	NA	NA
King Island Scrubtit	Conservation Advice for *Acanthornis magna greeniana* (King Island scrubtit) (DCCEEW, 2023g)	• Critically Endangered	No explicit relevant objectives	NA	NA
	King Island Biodiversity Management Plan (DPIPWE, 2012)		No explicit relevant objectives	NA	NA
Regent Honeyeater	National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*) (DoE, 2016)	• Critically Endangered	No explicit relevant objectives	NA	NA
	Conservation Advice *Anthochaera phrygia* (Regent honeyeater) (TSSC, 2015i)		No explicit relevant objectives	NA	NA
Southern Whiteface	Conservation Advice for *Aphelocephala leucopsis* (southern whiteface) (DCCEEW, 2023h)	• Vulnerable	No explicit relevant objectives	NA	NA
Tasmanian Wedge-tailed Eagle	Threatened Tasmanian Eagles Recovery Plan 2006-2010	• Endangered	Minimising both the modification of foraging habitat and the occurrence of human-related mortality with the ultimate goal of an increase in the population size and stability	Pollution; specifically oiling	No explicit relevant management actions; oiling recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
	(Threatened Species Section, 2006)				
Gang-gang Cockatoo	Conservation Advice for *Callocephalon fimbriatum* (Gang-gang Cockatoo) (DAWE, 2022a)	• Endangered	No explicit relevant objectives	NA	NA
South-eastern Red-tailed Black-Cockatoo	National Recovery Plan for the South-Eastern Red-tailed Black-Cockatoo *Calyptorhynchus banksii graptogyne* (CoA, 2007)	• Endangered	No explicit relevant objectives	NA	NA
South-eastern Glossy Black-Cockatoo	Conservation Advice for *Calyptorhynchus lathami lathami* (South-eastern Glossy Black Cockatoo) (DCCEEW, 2022a)	• Vulnerable	No explicit relevant objectives	NA	NA
Tasmanian Azure Kingfisher	Conservation Advice for *Ceyx azureus diemenensis* (Tasmanian Azure Kingfisher) (DEWHA, 2010b)	• Endangered	No explicit relevant objectives	Habitat Loss, Disturbance and modification	Minimise disturbance to terrestrial and aquatic components of the Tasmanian azure kingfisher's habitat in areas where the subspecies occurs, including necessary actions to manage the conservation of the subspecies.
Brown Treecreeper (south-eastern)	Conservation Advice for *Climacteris picumnus victoriae* (brown treecreeper (south-eastern)) (DCCEEW, 2023i)	• Vulnerable	The primary conservation outcome of this conservation advice is to observe stable or increasing populations across the range.	Climate Change	No explicit relevant management actions; climate change recognised as a threat

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Eastern Bristlebird	National Recovery Plan for Eastern Bristlebird (*Dasyornis brachypterus*) (OEH, 2012)	• Endangered	No explicit relevant objectives	NA	NA
Regent Honeyeater	National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*)	• Critically Endangered	No explicit relevant objectives	NA	NA
	Conservation Advice *Anthochaera phrygia* regent honeyeater		No explicit relevant objectives	NA	NA
Painted Honeyeater	Conservation Advice *Grantiella picta* (Painted honeyeater) (TSSC, 2015j)	• Vulnerable	No explicit relevant objectives	NA	NA
	National Recovery Plan for the Painted Honeyeater (*Grantiella picta*) (DAWE, 2021b)		No explicit relevant objectives	NA	NA
Malleefowl	National recovery plan for Malleefowl (*Leipoa ocellata*) (Benshmesh, 2007)	• Vulnerable	No explicit relevant objectives	NA	NA
South-eastern Hooded Robin	Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin (south-eastern)) (DCCEEW, 2023j)	• Endangered	No explicit relevant objectives	NA	NA

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Plains-wanderer	Conservation Advice *Pedionomus torguatus* (plains-wanderer) (TSSC, 2015k)	• Critically Endangered	No explicit relevant objectives	NA	NA
	National Recovery Plan for the Plains-wanderer (*Pedionomus torquatus*) (CoA, 2016)		No explicit relevant objectives	NA	NA
Night Parrot	Conservation Advice Pezoporus occidentalis night parrot (TSSC, 2016d)	• Endangered	No explicit relevant objectives	NA	NA
Green Rosella (King Island)	Conservation Advice *Platycercus caledonicus* brownii green rosella (King Island) (TSSC, 2015l)	• Vulnerable	No explicit relevant objectives	NA	NA
Pilotbird	Conservation Advice for *Pycnoptilus floccosus* (Pilotbird) (DAWE, 2022b)	• Vulnerable	No explicit relevant objectives	NA	NA
Diamond Firetail	Conservation Advice for *Stagonopleura guttata* (diamond firetail) (DCCEEW, 2023k)	• Vulnerable	No explicit relevant objectives	NA	NA

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Black Currawong (King Island)	Conservation Advice *Strepera fuliginosa colei* (black currawong) (King Island) (TSSC, 2015l)	• Vulnerable	No explicit relevant objectives	NA	NA
Masked Owl (Tasmanian)	Conservation Advice for *Tyto novaehollandiae castanops* (Tasmanian Masked Owl) (DEWHA, 2010c)	• Vulnerable	No explicit relevant objectives	NA	NA
Marine Turtles					
All Marine Turtles • Loggerhead Turtles • Green Turtles • Leatherback Turtles	Recovery Plan for Marine Turtles in Australia, 2017 – 2027 (CoA, 2017a)	Endangered: • Loggerhead turtle • Leatherback turtle • Vulnerable: • Green turtle • Flatback turtle • Hawksbill turtle	Long-term recovery objective: Minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 3: • Anthropogenic threats are demonstrably minimised.	Chemical and Terrestrial Discharge	Minimise chemical and terrestrial discharge into marine turtle habitat.
				Marine debris	Reduce the impacts from marine debris: Support the implementation of the EPBC Act Threat Abatement Plan for the impacts of marine debris on vertebrate marine life.
				Noise interference	Assess and address anthropogenic noise: Understand the impacts of anthropogenic noise on marine turtle behaviour and biology.
				Light interference	Minimise light pollution: Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Vessel disturbance	Vessel interactions identified as a threat; no specific management actions in relation to vessels prescribed in the plan.
				Habitat modification	Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival. Manage anthropogenic activities in Biologically Important Areas to ensure that biologically important behaviour can continue.
				Climate Change and variability	Adaptively manage turtle stocks to reduce risk and build resilience to climate change and variability: Continue to meet Australia's international commitments to address the causes of climate change. Identify, test and implement climate-based adaptation measures.
	National Light Pollution Guidelines for Wildlife		Lighting objectives will need to consider the regulatory requirements and Australian standards relevant to the activity, location and wildlife present. Objectives should be described in terms of specific locations and times for which artificial light is necessary. Consideration should be given to	Light pollution	Light pollution

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
			whether colour differentiation is required and if some areas should remain dark – either to contrast with lit areas or to avoid light spill. Where relevant, wildlife requirements should form part of the lighting objectives		
Leatherback Turtle	Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DEWHA, 2008a)	• Endangered • Migratory • Marine	No explicit relevant objectives	Boat strike	No explicit relevant management actions; vessel strikes identified as a threat.
				Habitat degradation (changes to breeding sites and degradation to foraging areas)	Identify and protect migratory corridors between nesting beaches and common foraging areas to facilitate colonization.
				Marine debris	No explicit relevant management actions; marine debris identified as a threat.
Cetaceans					
Sei Whale	Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015a)	• Vulnerable • Migratory	Determine population abundance, trends and population structure for sei whales, and establish a long-term monitoring program in Australian waters.	Vessel disturbance	Minimising vessel collisions: Develop a national vessel strike strategy that investigates the risk of vessel strikes on sei whales and also identifies potential mitigation measures. Ensure all vessel strike incidents are reported in the National Vessel Strike Database.
				Noise interference	Once the spatial and temporal distribution (including biologically important areas) of sei

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
					whales is further defined, assess the impacts of increasing anthropogenic noise (including seismic surveys, port expansion, and coastal development).
				Habitat degradation	No explicit relevant management actions; habitat degradation identified as a threat.
				Pollution (persistent toxic pollutants)	No explicit relevant management actions; pollution identified as a threat.
				Climate and Oceanographic Variability and Change	Understanding impacts of climate variability and change: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.
Fin Whale	Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015b)	• Vulnerable • Migratory	Determine population abundance, trends and population structure for fin whales, and establish a long-term monitoring program in Australian waters.	Vessel disturbance	Develop a national vessel strike strategy that investigates the risk of vessel strikes on fin whales and identifies potential mitigation measures. Ensure all vessel strike incidents are reported in the National Vessel Strike Database.
				Noise interference	Once the spatial and temporal distribution (including biologically important areas) of Fin Whales is further defined, assess the impacts of increasing anthropogenic noise (including seismic surveys, port expansion, and coastal development).

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Habitat degradation	No explicit relevant management actions; habitat degradation identified as a threat.
				Pollution (persistent toxic pollutants)	No explicit relevant management actions; pollution identified as a threat.
				Climate and Oceanographic Variability and Change	Understanding impacts of climate variability and change: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica
Blue Whale	Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015b)	• Endangered • Migratory	The long-term recovery objective is to minimise anthropogenic threats to allow the conservation status of the blue whale to improve so that it can be removed from the threatened species list under the EPBC Act. Key terms of the Conservation Management Plan (CMP) and how they have been considered in this EP are provided in Appendix 3 Table 1-3.	Table 1-3Noise interference	Assess and address anthropogenic noise: shipping, industrial and seismic noise.
				Vessel disturbance	Minimise vessel collisions: Develop a national vessel strike strategy that investigates the risk of vessel strike on blue whales and also identifies potential mitigation measures. Ensure all vessel strike incidents are reported in the National Ship Strike Database. Ensure the risk of vessel strikes on blue whales is considered when assessing actions that increase vessel traffic in areas where blue whales occur and, if required, appropriate mitigation measures are implemented.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Habitat modification	No explicit relevant management actions; habitat modification identified as a threat.
				Climate Change	Understanding impacts of climate variability and change: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.
				Marine Debris	No explicit relevant management actions; marine debris identified as a threat.
Southern Right Whale	National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (DCCEEW, 2024b)	• Endangered • Migratory	Long term recovery objective: • The population has increased in size to a level that the conservation status has improved, and the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria. Interim Recovery Objective 2: • Anthropogenic threats are managed consistent with ecologically sustainable development principles to facilitate recovery of southern right whales. Target 2.1: • Robust and adaptive management principles are implemented to	Vessel interaction	Manage, minimise, and mitigate the threat of vessel strike: 1. Assess the risk of vessel strike to southern right whales in BIAs. 3. Ensure environmental impact assessments and associated plans consider and quantify the risk of vessel strike and associated potential cumulative risks in BIAs and habitat critical to the survival (HCTS) of the species. 5. Ensure all vessel strike incidents are reported in the National Ship Strike Database managed through the Australian Marine Mammal Centre, Australian Antarctic Division.
				Noise interference	Assess, manage, and mitigate impacts from anthropogenic noise:

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
			reduce anthropogenic threats to southern right whales in Australian waters and minimise the risk of mortality, injury, auditory impairment, or disturbance to biologically important behaviours from anthropogenic activities. Target 2.2: • Management decisions are supported by high quality information and scientific data, and high priority research areas identified in the Recovery Plan to deliver this information are supported through national and/or state funding programs and conservation planning.		• 2. Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that it does not prevent any southern right whale from utilising the area or cause auditory impairment. • 3. Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that the risk of behavioural disturbance is minimised. • 4. Ensure environmental assessments associated with underwater noise generating activities include consideration of national policy (e.g., EPBC Act Policy Statement 2.1) and guidelines related to managing anthropogenic underwater noise and implement appropriate mitigation measures to reduce risks to southern right whales to the lowest possible level • 5. Quantify risks of anthropogenic underwater noise to southern right whales
				Habitat modification	Address habitat degradation impacts from coastal and offshore marine infrastructure developments: • 1.Coastal and offshore development actions are assessed according to

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
					principles of ecological sustainable development to ensure the risk of injury, auditory impairment and/or disturbance to southern right whales is minimised. • 2. Baseline surveys and monitoring undertaken during activity implementation are conducted in accordance with best practice standards and guidelines to ensure standardised datasets are obtained and suitable to inform environmental management decision making that can reduce the risk of threats to southern right whales. • 3. Current information on species' occurrence, particularly in HCTS, BIAs, and historic high use areas, are used to inform planning, assessment, and decision-making on marine infrastructure development actions.
				Entanglement (marine debris)	No explicit relevant management actions; entanglement identified as a threat.
				Pollution	No explicit relevant management actions; pollution identified as a threat.
				Cumulative effects from threats	No explicit relevant management actions; cumulative effects identified as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Climate Change	Understand impacts of climate variability and anthropogenic climate change on the species biology and population recovery: 1. Continue to meet Australia's international commitments to address causes of climate change, including greenhouse gas emissions.
Pinnipeds					
Australian Sea Lion	Conservation Advice for the *Neophoca cinerea* (Australian sea lion) (TSSC, 2020c)	• Endangered • Marine	Primary conservation actions: Mitigate the impacts of marine debris on Australian sea lions	Noise interference	Monitor and mitigate impacts (including cumulative impacts) of human interactions on Australian sea lion colonies. Control access to breeding colonies to minimise the impacts of disturbance on Australian sea lions.
				Marine debris	Assess the impacts of marine debris on Australian sea lion populations and identify the sources of marine debris which have an impact. Develop and implement measures to mitigate the impacts of marine debris on the species (including reducing the amount of these marine debris entering the oceans), noting linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Disease and parasites	Improve human wastewater management to minimise dispersal of bacteria, parasites and pollutants into the marine environment.
				Habitat degradation and pollution (oil spills)	Require all vessels to have oil spill mitigation measures in place and implement jurisdictional oil spill response strategies as required.
				Climate Change	Review and adjust management measures to address the threats from disease/parasites and prey depletion, if it is demonstrated that increased temperatures compound these threats.
	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) (CoA, 2013)		The overarching objective of this recovery plan is to halt the decline and assist the recovery of the Australian sea lion throughout its range in Australian waters by increasing the total population size while maintaining the number and distribution of breeding colonies with a view to: • Improving the population status leading to the future removal of the Australian sea lion from the threatened species list of the EPBC Act	Vessel strike	Collect data on direct killings and confirmed vessel strikes.
				Marine debris	Identify the sources of marine debris having an impact on Australian sea lion populations. Assess the impacts of marine debris on Australian sea lion populations. Develop and implement measures to mitigate the impacts of marine debris on Australian sea lion populations, noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life.
				Pollution and oil spills	Implement jurisdictional oil spill response strategies as required.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
			• Ensuring that anthropogenic activities do not hinder recovery in the near future or impact on the conservation status of the species in the future.	Habitat degradation	No explicit management actions; habitat degradation recognised as a threat.
				Disease	No explicit management actions; disease and pathogens recognised as a threat.
				Climate Change	No explicit management actions; climate change recognised as a threat.
Southern Elephant Seal	Conservation Advice *Mirounga leonina* southern elephant seal (TSSC, 2016e)	• Vulnerable • Marine	Continue high levels of protection for the southern elephant seal in important breeding, foraging and haul-out sites. Assess the impacts of disturbance, pollution and associated risks of disease on the health status of southern elephant seals	Climate and oceanographic variability and change	Improve knowledge of climate and oceanographic variability, including El Niño events, that affect southern elephant seal foraging and reproductive success.
				Pollution (including marine debris)	Continue, and where necessary adapt, management actions to reduce disturbance and pollution/marine debris impacts on southern elephant seals and their important breeding, foraging and resting habitats.
	Sub-Antarctic Fur-seal and Southern Elephant Seal Recovery Plan (DEH, 2003)	• Vulnerable	To maintain existing levels of protection for the Sub-Antarctic Fur and Southern Elephant seals to enable population growth so that these species may be removed from the threatened species list under the EPBC Act, and to ensure that any future anthropogenic impacts are not limiting.	None identified	NA
Threatened Ecological Communities					
Giant Kelp Marine Forests of	Approved Conservation Advice for Giant Kelp Marine	• Endangered	No explicit relevant objectives	Invasive species	No explicit management actions; invasive species recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
Southeast Australia	Forests of Southeast Australia (DSEWPaC, 2012b)			Climate Change	No explicit management actions; climate change recognised as a threat.
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Approved Conservation Advice for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia ecological community (DoE, 2015c)	• Critically Endangered	No explicit relevant objectives	None identified	NA
Subtropical and Temperate Coastal Saltmarsh	Conservation Advice for Subtropical and Temperate Coastal Saltmarsh (DSEWPaC, 2013c)	• Vulnerable	No explicit relevant objectives	Pollution (oil spills)	Identify Coastal Saltmarsh as important habitat in all oil spill contingency planning at national and State levels and monitor the application of protocols on the management of spills involving saltmarshes.
				Invasive Species	No explicit management actions; invasive species recognised as a threat.
				Climate Change	No explicit management actions; climate change recognised as a threat.
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria	Approved Conservation Advice (including Listing Advice) for the Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community (DoE, 2018a)	• Endangered	The conservation objective is to mitigate the risk of extinction of the Salt-wedge Estuaries ecological community, assist recovery and maintain its biodiversity and function.	Land use and associated decline in water quality	Apply recommended buffers around the ecological community and avoid activities that could cause significant change to hydrology or water quality.
				Invasive species	No relevant management actions; invasive species recognised as a threat.
				Extractive and recreational activities	No explicit management actions; Extractive and recreational activities recognised as a threat.

Species	Plan/ Advice	Protection under EPBC Act	Relevant objectives	Threats identified relevant to the activity	Relevant conservation actions
				Climate Change	Enhance the resilience of the ecological community to the impacts of climate change by reducing other pressures.
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland	Conservation advice (incorporating listing advice) for the Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community (DoE, 2018b)	• Endangered	To mitigate the risk of extinction of Coastal Swamp Oak Forest, and help recover its biodiversity and function	Climate Change	No explicit management actions; climate change recognised as a threat.
Other relevant species					
Vertebrate Species	The Threat Abatement Plan for the impacts of Marine Debris on Vertebrate Wildlife of Australia's Coasts and Ocean (CoA, 2018)	N/A	There are four main objectives: • Contribute to the long-term prevention of the incidence of harmful marine debris • Remove existing harmful marine debris from the marine environment • Mitigate the impacts of harmful marine debris on marine species and ecological communities. • Monitor the quantities, origins and impacts of marine debris and assess the effectiveness of management arrangements over time for the strategic reduction of debris.	Marine debris	No explicit management actions for non-fisheries related industries (note that management actions in the plan relate largely to management of fishing waste (for example 'ghost' gear), and State and Commonwealth management through regulation.

Table 1-3: Guidance on 'Key Terms' within the Blue Whale Conservation Management Plan (CMP) and How they are Applied within this EP (DAWE, 2021a)

Relevant Plan/Advice	Description
Recovery Plans	The CMP for the Blue Whale (DoE, 2015a) has been treated as a recovery plan (under the EPBC Act) throughout the EP.
Recovery Plan actions	Actions identified in the CMP for the Blue Whales (DoE, 2015a) have been considered in the assessment of impacts and determination of acceptability of potential impacts to blue whale, specifically in underwater sound emissions (Sections 6.5 and 6.6).
Biologically Important Areas (BIAs)	BIAs for blue whale, CMP for the Blue Whale (DoE, 2015a), are described in Section 4.4.2.
Legal requirement - Action A.2.3. from the Blue Whale CMP: "Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to utilise the area without injury and is not displaced from a foraging area". Further, the DAWE key terms state: 'The recovery plan requirement, Action A.2.3, applies in relation to BIAs. A whale could be displaced from a Foraging Area if impact mitigation is not implemented. This means that underwater anthropogenic noise should not: • Stop or prevent any blue whale from foraging. • Cause any blue whale to move on when foraging. • Stop or prevent any blue whale from entering a Foraging Area. It is considered that a whale is displaced from a Foraging Area if: • Foraging behaviour is disrupted, regardless of whether the whale can continue to forage elsewhere within that Foraging Area. Mitigation measures must be implemented	Action A.2.3 and the DAWE key terms (September 2021) have informed the assessment of acceptability of underwater sound emissions, described in Section 6.5 and 6.6. In the assessment of underwater sound emissions, Amplitude Energy has taken a conservative approach. This is presented through the application of conservative impact thresholds for potential disturbance and injury, the application of ALARP Decision Context B, and the adoption of additional control measures to achieve ALARP. Adaptive management approaches have been investigated and the selected measures adopted reflect a conservative approach; they are designed such that the risk of injury and displacement are reduced so that the foraging behaviour of any blue whale should not be impacted. Amplitude Energy has considered the seasonal presence of species in defining the schedule and limitations for this activity. The residual risks to the species are considered low (Section 6.5) to moderate (Section 6.6) and the duration of activities (which could cause disturbance) are limited. The level of risk reduction achieved by locking the activity into a specific activity window is therefore considered to be grossly disproportionate to the level of risk reduction achieved. Temporal restrictions are unlikely to be manageable; schedule flexibility is necessary to allow for external factors outside of Amplitude Energy's control. If temporal restrictions were to be applied consistently for the purpose of eliminating the risk of disturbance due to vessel noise within blue whale foraging areas, it would prevent the use of vessels for a range of offshore activities for large periods of the year across the entire south-eastern bioregion, with significant impacts to shipping, fishing, existing and transitional offshore projects.

Relevant Plan/Advice	Description
to reduce the risk of displacement occurring during operations where modelling indicates that behavioural disturbance within a Foraging Area may occur'.	
Definition of 'a foraging area'	The activity operational area is located within a foraging BIA. Blue whale foraging is considered throughout the assessment of potential impacts and risks to blue whales. Timeframes when blue whale foraging is more likely to occur has been defined based on contemporary literature.
Definition of 'displaced from a foraging area'	The definition of 'displacement from a foraging area' has been adopted throughout the assessment of underwater sound emissions (Section 6.5 and 6.6).
Definition of 'injury to Blue Whale'	Injury has been defined as permanent threshold shift (PTS) and temporary threshold shift (TTS) throughout the assessment of underwater sound emissions (Section 6.5 and 6.6).

1.3 Other Requirements

1.3.1 Commonwealth Legislation, Policies and Guidelines

In addition to the OPGGS and EPBC Acts there are additional Commonwealth legislation, policies and guidelines (Table 1-4) relevant to the Project.

Table 1-4: Other Requirements - Commonwealth Legislation, Policies and Guidelines

Legislation / Regulation / Guidelines	Scope	Application to Activity	Administering Authority
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	The Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (ATSIHP Act) is Commonwealth legislation that can be used by Aboriginal and Torres Strait Islander people to make applications to protect places and objects from injury or desecration. The places or objects in question must be of particular significance in accordance with Aboriginal tradition. Areas or objects protected under this Act are included in the National Heritage List and Commonwealth Heritage List.	Areas or objects protected under this Act may be present within the operational area, and monitoring area as detailed in Section 4.4.4.	DCCEEW
Australian Ballast Water Management Requirements Version 8 (DAWE, 2020a)	The Australian Ballast Water Management Requirements set out the obligations on vessel operators with regards to the management of ballast water and ballast tank sediment when operating within Australian seas.	Provides requirements on how vessel operators should manage ballast water during the Project to comply with the Biosecurity Act.	Department of Agriculture, Fisheries and Forestry (DAFF)
Australian Biofouling Management Requirements (DAFF, 2023)	The Australian biofouling management requirements set out obligations of operators of international commercial vessels for the management of biofouling when operating vessels under biosecurity control within Australian territorial seas.	Provides requirements on how operators of international commercial vessels should manage biofouling when operating during the Project to comply with the Biosecurity Act.	DAFF
Air Navigation Act 1920	This Act is responsible for managing navigation within the avian environment.	Helicopter and other aircraft activities occurring throughout all phases of the Project are required to abide to the requirements of this Act.	Department of Infrastructure, Transport, Regional Development and Communications (DITRDC)
Australian Heritage Council Act 2003	This Act was formed to establish the Australian Heritage Council	The Act applies to any activities, such as the Project,	DCCEEW

Legislation / Regulation / Guidelines	Scope	Application to Activity	Administering Authority
	and associated functions. The act also classifies areas that have heritage value, including those identified on the Commonwealth Heritage List, World Heritage List and National Heritage List.	that may impact on the heritage values of National or Commonwealth listed properties.	
Australian Maritime Safety Authority Act 1990	The main objects of this Act are: • To promote maritime safety. • To protect the marine environment from: – pollution from ships – other environmental damage caused by shipping. • To provide for a national search and rescue service. • To promote the efficient provision of services by the Authority. In Commonwealth waters AMSA is the Statutory Agency for vessels and must be notified of all incidents involving a vessel. In Commonwealth waters AMSA is the Control Agency for all ship-sourced marine pollution incidents and will respond in accordance with the National Plan for Maritime Environmental Emergencies. Under the National Plan AMSA may support oil spill response for non-ship sourced pollution incidents on the formal request of the respective incident controller.	The Act is applicable to all incidents that may occur within Commonwealth waters during the Project which require AMSA to lead or support the response to pollution in the marine environment.	Australia Maritime Safety Authority (AMSA)
Australian Radiation Protection and Nuclear Safety Act 1998	This Act aims to protect the health and safety of people and the environment from radiation effects.	The use of radioactive material (e.g. during formation evaluation) must comply with the Act.	Department of Health and Aged Care (DoHAC)
Biosecurity Act 2015 (& Regulations 2016)	The objects of this Act are: (a) to provide for managing the following: (i) biosecurity risks (ii) the risk of contagion of a listed human disease (iii) the risk of listed human diseases entering Australian territory or a part of Australian	The Biosecurity Act and regulations apply to 'Australian territory' which is the airspace over and the coastal seas out to 12 nm from the coastline. Provides regulations for the vessels used during the Project regarding ballast water and	DAFF

Legislation / Regulation / Guidelines	Scope	Application to Activity	Administering Authority
	territory, or emerging, establishing themselves or spreading in Australian territory or a part of Australian territory (iv) risks related to ballast water. (v) biosecurity emergencies and human biosecurity emergencies (b) to give effect to Australia's international rights and obligations, including under the International Health Regulations, the Sanitary and Phytosanitary Agreement and the Biodiversity Convention.	biofouling within Australian waters.	
Climate Change Act 2022 (Cwth)	This Act sets out Australia's greenhouse gas emissions reduction targets. As the Nationally Determined Contributions (NDC) are at the heart of the Paris Agreement, NDCs embody efforts by each country to reduce national emissions and adapt to the impacts of climate change.	Activities within this EP will be conducted in a manner consistent with Australia's GHG emission reduction targets.	DCCEEW
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (and Regulations 2000)	The Act aims to: • Protect MNES. • Provides for Commonwealth environmental assessment and approval processes. • Provides an integrated system for biodiversity conservation and management of protected areas. MNES includes: • World heritage properties • Places on the National Heritage List • Places on the Commonwealth Heritage List • Ramsar wetlands • Listed threatened species and communities • Migratory species under international agreements • Nuclear actions • Commonwealth marine environment	Petroleum activities are excluded from within the boundaries of a World Heritage Area (Sub regulation 10A(f). The activity is not within a World Heritage Area. The EP must describe matters protected under Part 3 of the EPBC Act and assess any impacts and risks to these. Section 3 of the EP describes matters protected under Part 3 of the EPBC Act. The EP must assess any actual or potential impacts or risks to MNES from the activity. Part 8 of the regulations establish caution zones and actions to avoid interfering with cetaceans.	DCCEEW

Legislation / Regulation / Guidelines	Scope	Application to Activity	Administering Authority
	• Great Barrier Reef Marine Park • Water trigger for coal seam gas and coal mining developments. For offshore petroleum activities, the assessment process is overseen by NOPSEMA as the delegated authority under the EPBC Act.		
Environment Protection (Sea Dumping) Act 1981	Aims to prevent the deliberate disposal of wastes (loading, dumping, and incineration) at sea from vessels, aircraft, and platforms.	May be triggered in the event equipment remains on the seabed following decommissioning during the Project. This is not the base case for planning purposes.	DCCEEW
Fisheries Management Act 1991	This Act and associated regulations protect Australia's fishery resources and establish responsibilities in ecologically sustainable development.	Where activities overlap Commonwealth-managed fisheries.	AFMA DAFF
Industrial Chemicals (Notification and Assessment Act) 1989	This Act enforces restrictions on using particular chemicals that may have detrimental and harmful effects on health and the environment and creates a national register if chemicals used in the industry.	Where relevant, chemicals used during the Project will be considered under the requirements of this Act prior to use.	DoHAC
Industrial Chemicals Environmental Management (Register) Act 2021 (ICEMR Act)	The Act establishes the Industrial Chemicals Environmental Management Standard (IChEMS) to manage environmental risks from industrial chemicals, including the IChEMS Register which lists chemicals and assigns risk management measures.	Management measures identified under IChEMS may have implications for the import and use of particular chemicals and products for the petroleum activity (e.g. fire-fighting foams).	DCCEEW
National Greenhouse and Energy Reporting Act 2007 (NGER Act)	A national framework for reporting and disseminating company information about greenhouse gas emissions, energy production and energy consumption. It is administered by the Clean Energy Regulator.	Activities associated with the project will result in the generation of atmospheric emissions and greenhouse gases. Requirements of the Act must be adhered to including energy and greenhouse gas reporting.	The Clean Energy Regulator
Navigation Act 2012	Regulates international ship and seafarer safety, shipping aspects of protecting the marine environment and the actions of seafarers in Australian waters. It gives effect to the relevant international conventions	All ships involved in petroleum activities, such as the Project, in Australian waters are required to abide to the requirements under this Act. Several Marine Orders (MO) are enacted under this Act	AMSA

Legislation / Regulation / Guidelines	Scope	Application to Activity	Administering Authority
	(MARPOL 73/78, COLREGS 1972) relating to maritime issues to which Australia is a signatory. The Act also has subordinate legislation contained in Regulations and Marine Orders.	which relate to offshore petroleum activities, including: • MO 21: Safety and emergency arrangements • MO 30: Prevention of collisions • MO 31: SOLAS and non-SOLAS certification.	
Offshore Petroleum and Greenhouse Gas Storage (OPGGS) Act 2006 Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations (OPGGS(E)R 2023	The Act addresses all licensing, health, safety, environmental and royalty issues for offshore petroleum exploration and development operations extending beyond the three-nautical mile limit. Part 4 of the OPGGS(E) regulations specify that an EP must be prepared for any petroleum activity and that activities are undertaken in an ecologically sustainable manner and in accordance with an accepted EP.	The OPGGS Act provides the regulatory framework for all offshore petroleum exploration and production activities in Commonwealth waters, such as the Project, to ensure that these activities are carried out: Consistent with the principles of ecologically sustainable development as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). So that environmental impacts and risks of the activity are reduced to ALARP. So that environmental impacts and risks of the activity are of an acceptable level.	NOPSEMA
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 *Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994*	The Act aims to protect the marine environment from pollution by oil and other harmful substances discharged from ships in Australian waters. It also invokes certain requirements of the MARPOL Convention such as those relating to discharge of noxious liquid substances, sewage, garbage and air pollution. Requires ships greater than 400 gross tonnes to have pollution emergency plans in place and provides for emergency discharges from ships.	All ships involved in the Project are required to abide to the requirements under this Act. Several MOs are enacted under this Act relating to offshore petroleum activities, including: • MO Part 91: Marine Pollution Prevention – Oil • MO Part 93: Marine Pollution Prevention – Noxious Liquid Substances • MO Part 94: Marine Pollution Prevention – Packaged Harmful Substances in Packaged Forms	AMSA

Legislation / Regulation / Guidelines	Scope	Application to Activity	Administering Authority
		• MO Part 95: Marine Pollution Prevention – Garbage • MO Part 96: Marine Pollution Prevention – Sewage • MO Part 97: Marine Pollution Prevention – Air Pollution • MO Part 98: Marine Pollution Prevention – Anti-fouling Systems.	
Protection of the Sea (Harmful Antifouling Systems) Act 2006	The Act aims to protect the marine environment from the effects of harmful anti-fouling systems. Under this Act, it is an offence to engage in negligent conduct that results in a harmful anti-fouling compound being applied to a ship. This Act also requires that Australian ships must hold 'anti-fouling certificates', provided they meet certain criteria.	All ships involved in the Project are required to abide to the requirements under this Act. The Marine Order MO 98: Marine Pollution Prevention – Anti-fouling Systems is enacted under this Act.	AMSA
Underwater Cultural Heritage Act 2018	Protects the heritage values of shipwrecks, sunken aircraft and other underwater cultural heritage (older than 75 years) below the low water mark.	Anyone who finds the remains of a ship, sunken aircraft or other underwater cultural heritage article needs to notify the relevant authorities, as soon as possible but ideally no later than after one week, and to give them information about what has been found and its location.	DCCEEW

1.3.2 State Legislation

There are no planned activities in state waters. However, the activities in commonwealth waters carry a risk of a loss of hydrocarbon inventory during well construction or from a release from vessel fuel tanks. In the unlikely event of an incident of this nature occurring, there is the potential for the spill to impact on state waters and/or shorelines. Relevant state legislation is listed below.

Legislation/Regulation	Scope	Application to Activity
Victoria		
Aboriginal Heritage Act 2006 (& Regulations 2018)	The primarily purpose of the Act is to provide for the protection of Aboriginal cultural heritage in Victoria.	There is the potential for First Nations cultural heritage, and Registered Aboriginal Parties (RAPs), to be located within or

Legislation/Regulation	Scope	Application to Activity
		associated with the operational area, and monitoring area. Section 4.4.4 identifies cultural receptors within the monitoring area.
Environment Protection Act 2017 (& various Regulations)	Controls discharges and emissions (air, water, noise) to the environment within Victoria. Provides for the maintenance and, where necessary, restoration of appropriate environmental quality and is relevant to oil pollution in Victorian state waters.	Planned and unplanned vessel discharges including spill response activities, during the activity are detailed in Section 6 and 7.
Emergency Management Act 2013	Provides for the establishment of governance arrangements for emergency management in Victoria. Provides for the emergency response structure for managing emergency incidents within Victorian State waters, triggered in the event of a spill impacting or potentially impacting State waters.	Emergency management structure would be triggered in the event that a hydrocarbon spill that extends into Victorian waters. Refer to OPEP.
Fisheries Act 1995 (& Regulations 2019)	Provides a legislative framework for the regulation, management and conservation of Victorian fisheries including aquatic habitats.	Commercial and recreational fishing activities within Victorian jurisdiction overlapped by the operational area and monitoring area are described in Section 4.4.3. Impacts and risks to commercial and recreational fishing are assessed in Section 6.
Flora and Fauna Guarantee Act 1988 (& Regulations 2020)	Purpose is to protect rare and threatened species; and enable and promote the conservation of Victoria's native flora and fauna. Where a species has been listed as threatened an Action statement is prepared setting out the actions that have or need to be taken to conserve and manage the species and community.	Triggered if an incident results in the injury or death of a FFG Act listed species (e.g. collision with a whale). Incident reporting requirements are detailed in Section 12.14.
Heritage Act 2017	Purpose is to provide for the protection and conservation of the cultural heritage of Victoria. The Act provides procedures to identify places of state heritage significance, and of historical archaeological value and establishes processes for obtaining approvals for changes to those places.	Possibly triggered in the event of impacts to a known or previously un-located shipwreck in Victorian State waters whilst undertaking emergency response activities. Incident reporting requirements are detailed in Section 11.14.
Marine (Drug, Alcohol and Pollution Control) Act 1988	Concerns the registration of vessels, pollution of the sea, and the safe and efficient operation of vessels on State waters. Outlines the Victorian Government response structure and contingency planning arrangements that	Applies to all vessel masters, owners, and crew that are operating vessels within Victorian State waters responding to a spill event.

Legislation/Regulation	Scope	Application to Activity
	must be implemented for marine pollution incidents that occur in Victorian waters.	
Marine Safety Act 2010 (& Regulations 2023)	Provides for safe marine operations in Victoria. Defines marine incidents and the reporting of such incidents to the Victorian Director of Transport Safety. Applies to vessel masters, owners, crew operating vessels in Victorian State waters.	Applies to all vessel masters, owners, and crew that are operating vessels in Victorian State waters under emergency response activities.
National Parks Act 1975 (& Regulations 2013)	Provide for the preservation and protection of the natural and cultural heritage values of parks, including marine national parks and coastal parks.	Victorian marine and coastal protected and sensitive areas in the monitoring area are described in Section 4.4.2. Reporting requirements in the event of a spill impacting or with the potential to impact State waters are detailed in the OPEP
Pollution of Waters by Oil and Noxious Substances Act 1986 (POWBONS) (& Regulations 2022)	Established to protect the sea and other waters from pollution by oil and noxious substances. Implements the MARPOL Convention (the International Convention for the Prevention of Pollution from Ships 1973) in Victorian State waters.	Triggered in the event of a hydrocarbon spill impacting or potentially impacting state waters. Reporting requirements in the event of a spill impacting or with the potential to impact State waters is detailed in the OPEP.
Traditional Owner Settlement Act 2010	The purposes of this Act are to advance reconciliation and promote good relations between the State and traditional owners and to recognise traditional owner groups based on their traditional and cultural associations to certain land in Victoria.	There is the potential for aboriginal heritage and RAPs within the monitoring area. Section 4.4.4 identifies cultural receptors within the monitoring area.
***Wildlife Act 1975* (& Regulations 2013)**	Promote the protection The Wildlife (Marine Mammal) Regulations 2019 prescribe minimum distances to whales and seals/seal colonies, restrictions on feeding/touching and restriction of noise within a caution zone of a marine mammal (dolphins (150 m), whales (300 m) and seals (50 m).	Applies where vessels are within Victorian State waters responding to a spill event. Prescribes minimum proximity distances to whales, dolphins and seals will be maintained. Triggered if an incident results in the injury or mortality of a whale, dolphin or seal. Incident reporting requirements are detailed in Section 12.4.

1.3.3 International Agreements

The United Nations Convention on the Law of the Sea 1982 (UNCLOS) is the principle international agreement which governs petroleum operations in Commonwealth waters. Additionally, Australia is a signatory to several international conventions with relevance to the development which are listed below.

Agreement/Convention	Scope	Application to Activity
International Convention for the Prevention of Pollution from ships, London, 1973/1978 (commonly known as MARPOL 73/78	Provides advice on the prevention and minimisation of accidental pollution and pollution that results from routine operations.	Guidance on the prevention of all potential and planned marine pollution associated with the EP. The *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and subsidiary Marine Orders give effect to MARPOL 73/78.
International Convention of Civil Liability for Oil Pollution Damage, 1969 and 1992 (CLC 69; CLC 92)	Ensures that in the case of oil pollution damage that results from maritime casualties involving oil-carrying ships that there is adequate compensation made for those affected.	Provides insight into the ship's liability in the case of a maritime casualty. The *Australian Maritime Safety Authority Act 1990* gives effect to this convention.
Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGS)	Designed to create consistent guidelines for vessels operating in the sea and the responsibilities of their staff. Includes the risk of collision, a safe speed of travel and traffic separation schemes in areas of high traffic.	Provides instruction on the rules of operating vessels at sea in order to ensure safe travel. The *Navigation Act 2012* and subsidiary Marine Orders give effect to the regulations.
Convention for the Safety of Life at Sea 1974 (SOLAS)	This convention provides internationally agreed minimum standards for the construction, equipment and operation of vessels. It is implemented in Commonwealth law by the *Navigation Act 2012* and a series of Marine Orders made under this Act.	Provides requirements that all vessels operating within Australian waters must comply with. The *Australian Maritime Safety Authority Act 1990* gives effect to this convention.
Convention on the International Maritime Organisation 1948	Designed to promote efficient and sustainable shipping through international cooperation that focuses on safe, secure, environmentally sound practices.	Advice on how to travel overseas efficiently and sustainably in relation to navigation, maritime safety and marine pollution. The *Australian Maritime Safety Authority Act 1990* gives effect to this convention.
International Convention on Harmful Anti Fouling Systems 2001 (AFS Convention)	Designed to protect the marine environment from harmful anti-fouling systems used on ships by either prohibiting or restricting their use.	Guidance for evaluation of a vessels condition and the process of applying, maintaining, removing and disposing of anti-fouling coatings as required. The Protection of the *Sea (Harmful Anti-fouling Systems) Act 2006* and subsidiary Marine Order give effect to the Convention.

Agreement/Convention	Scope	Application to Activity
International Convention on the Control and Management of Ship's Ballast Water and Sediment (Ballast Water Management Convention)	Adopted with aims to prevent the international spread of non-native marine species by creating standards and procedures for the regulation and control of ships ballast water and sediments.	Guidance for ballast water management to reduce the risk of transfer of IMS. The *Biosecurity Act 2015* gives effect to the Convention.
International Maritime Organization (IMO) Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines)	Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species	Specific requirements that vessels have a biofouling management plan and a biofouling record book.
International Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989 (Basel Convention)	Regulates the transboundary movements of hazardous waste to ensure that they are managed and disposed of in an environmentally safe manner. There is expectation that parties will also minimise the waste created and transported.	Provides instruction on the appropriate handling, export and disposal of hazardous waste. The *Hazardous Waste (Regulation of Exports and Imports) Act 1989* gives effect to the convention.
Kyoto Protocol 1997	Designed to have industrialised countries commit to implementing policies and measures that reduce and limit their greenhouse gas emissions. Australia met and exceeded its first period *Kyoto Protocol* target of 108 per cent of 1990 emissions levels by 2012, and is now replaced by the Paris Agreement 2016.	The Protocol has informed aspects of national greenhouse gas emissions management legislation, targets and policy within Australia since ratification in 2007.
Paris Agreement 2016 under the United Nations Framework Convention on Climate Change	Objective is to limit the global temperature rise to 2 degrees while attempting to limit it even further to 1.5 degrees in comparison to pre-industrial levels. Commits parties to establish and meet national emissions reduction targets to limit global temperature rise.	The Australian Government has and continues to develop legislation to implement the commitments made in the Paris Agreement. This legislation and associated policies influence how emissions are managed by industry, to within national targets. The *Climate Change Act 2022* (Cwth*)* gives effect to the Agreement.
United Nations Framework Convention on Climate Change 1992	Objective is to stabilise global greenhouse gas concentrations at a level that allows ecosystems to adapt naturally to a changing climate.	Established the framework by which countries agree and ratify actions to manage climate change, such as the Kyoto Protocol and Paris Agreement.
International Convention on the Conservation of Migratory Species of Wild Animals 1979 (Bonn Convention)	An environmental treaty that utilises international coordination in the advocacy of conservation and	Guidance on the conservation responsibilities regarding migratory species. The *EPBC Act* gives effect to the Bonn Convention through listing species

Agreement/Convention	Scope	Application to Activity
	sustainable use of migratory species, their habitats and migration routes.	as migratory under Part 3 of the Act.
Agreement on the Conservation of Albatrosses and Petrels (ACAP)	Multilateral agreement that coordinates international activities with a purpose to conserve albatross and petrel species and mitigate threats to these populations.	Advice on the conservation responsibilities regarding albatross and petrel species. The EPBC Act gives effect to ACAP by listing migratory albatross and petrel species conservation status under the EPBC Act.
China Australia Migratory Birds Agreement (CAMBA)	Bilateral agreement between China and Australia to provide protection and conservation of migratory birds that use the East Asian – Australasian Flyway and their important habitats.	Advice on the conservation responsibilities regarding bird species that may use the Project area as a migratory flyway between China and Australia. The *EPBC Act* gives effect to CAMBA by listing migratory birds recognised by the agreement as migratory under the *EPBC Act*.
Japan Australia Migratory Birds Agreement (JAMBA)	Bilateral agreement between Japan and Australia to provide protection and conservation of migratory birds that use the East Asian – Australasian Flyway and their important habitats.	Guidance on the conservation responsibilities regarding bird species that may use the Project area as a migratory flyway between Japan and Australia. The *EPBC Act* gives effect to JAMBA by listing migratory birds recognised by the agreement as migratory under the *EPBC Act*.
The Republic of Korea Migratory Birds Agreement (ROKAMBA).	Bilateral agreement between the Republic of Korea and Australia to provide protection and conservation of migratory birds that use the East Asian – Australasian Flyway and their important habitats.	Advice on the conservation responsibilities regarding bird species that may use Project area as a migratory flyway between the Republic of Korea and Australia. The *EPBC Act* gives effect to ROKAMBA by listing migratory birds recognised by the agreement as migratory under the *EPBC Act.*
The Minamata Convention on Mercury	The convention calls on signatories to protect human and environmental health from anthropogenic releases of mercury. The Convention came into force on in 2017 and was ratified in Australia in December 2021.	Australia is a signatory to the Convention. The Convention covers control and reduction of mercury in a range of processes and industries including gas exploration and production and is relevant to end-of-life aspects such as waste and materials management.
Convention Concerning the Protection of the World Cultural and Natural Heritage 1972	Designed to acknowledge and protect areas of cultural and natural heritage across the world.	Guidance around recognising protected areas and areas of cultural and natural heritage and mitigating any potential effects that a Project may have on them.

Agreement/Convention	Scope	Application to Activity
Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report	The IPCC released four reports relating climate change and anthropogenic influence and deducing the impact that climate change has had on ecosystems, biodiversity, humans, and cities. Convention on Climate Change.	Provides an international scientific up to date state of knowledge that relates climate change from human activities, and its observed and potential impacts.

Appendix 4 - Description of the Environment

Description of the Environment

Role	Name	Signature
Document Originator:	Environment Consultant	
Document Reviewer:	Principal Environment and Approvals Advisor	
Document Approver:	Environment & Sustainability Manager	

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Acronyms and Abbreviations

Acronym	Description
AAQ	Ambient Air Quality
ACMA	Australian Communications and Media Authority
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic office
ALA	Atlas of Living Australia
ALARP	As Low as Reasonably Practicable
AM	Australian Museum
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
AMSIS	Australian Marine Spatial Information System
APPEA	Australian Petroleum Production & Exploration Association
BAM	Basker Manifold
BHPP	BHP Petroleum International Pty Ltd
BIA	Biologically Important Area
BKO	Breeding Known to Occur
BLO	Breeding Likely to Occur
BMG	Basker-Manta-Gummy
BMO	Breeding May Occur
BP	British Petroleum
BSCZSF	Bass Strait Central Zone Scallop Fishery
CAES	Catch and Effort System
CAMBA	Agreement Between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment
CD	Conservation Dependent
CE	Critically Endangered
CEO	Chief Executive Officer
CFSR	Climate Forecast System Reanalysis
CGG	CGG Services (Australia) Pty Ltd
CHN	Casino, Netherby, Henry
CO	Carbon Monoxide
CSF	Coral Sea Fishery
CSMR	Coral Sea Marine Region
CTS	Commonwealth Trawl Sector
CZ	Central Zone
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, Energy, the Environment and Wate
DEE	Department of the Environment and Energy (previously Department of Sustainability, Environment, Water, Population & Communities (SEWPC), Department of Environment Heritage Water and the Arts (DEWHA), DEH and Environment Australia)
DEECA	Department of Energy, Environment and Climate Action
DEWHA	Department of Environment Heritage Water and the Arts

Acronym	Description
DNRET	Department of Natural Resources and Environment Tasmania
DPI	Department of Primary Industries
EAAF	East Asian - Australasian Flyway
ECDTS	East Coast Deepwater Trawl Sector
ECM	Estuarine, Coastal and Marine
EEZ	Exclusive Economic Zone
EHU	Electro-hydraulic Umbilical
EMBA	Environment that May Be Affected
EMP	Emergency Management Plan
ENE	East-northeast
EP	Environment Plan
EPA	Environmental Protection Authority
EPBC	Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
ESF	Eastern Skipjack Fishery
ETBF	Eastern Tuna and Billfish Fishery
EZ	Eastern Zone
FKO	Foraging Known to Occur
FLO	Foraging Likely to Occur
FMO	Foraging May to Occur
FTE	Full-Time Equivalent
GAB	Great Australian Bight
GABTS	Great Australian Bight Trawl Sector
GBR	Great Barrier Reef
GHTS	Gillnet, Hook and Trap Sector
GL	Gigalitre
GLNG	Gladstone Liquefied Natural Gas
GMTOAC	Gunditj Mirring Traditional Owners Aboriginal Corporation
GSP	Gross State Product
GVP	Gross Value Product
HAT	Highest Astronomical Tide
HMAS	Her Majesty's Australian Ship
HMS	His / Her Majesty's Ship
HMVS	Her Majesty's Victorian Ship
HSE	Health, Safety and Environment
IA	Vertical Seismic Profiling
ICOLL	Intermittently Closed and Open Lakes and Lagoons
ICOMOS	International Council on Monuments and Sites
ID	Internal Diameter

Acronym	Description
ILUA	Indigenous Land Use Agreements
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMOS	Integrated Marine Observing System
IMR	Inspection Maintenance & Repair
IMS	Invasive Marine Species
IPA	Indigenous Protected Area
IUCN	International Union for Conservation of Nature
JAMBA	Agreement Between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment
KAVHA	Kingston and Arthurs Vale Historic Area
KEF	Key Ecological Feature
KO	Species Or Species Habitat Known to Occur Within Area
LNG	Liquefied Natural Gas
LO	Species Or Species Habitat Likely to Occur Within Area
MKO	Migration Known to Occur within Area
MNES	Matters of National Environmental Significance
MO	# Species of Species Habitat May Occur Within Area or Marine Orders
MODIS	Moderate Resolution Imaging Spectroradiometer
MrKO	Migration Route Known to Occur within Area
MrLO	Migration Route Likely to Occur within Area
MSS	Marine Seismic Survey
MV	Merchant Vessel
N2O	Nitrous Oxide
NIMPIS	National Introduced Marine Pest Information System
NISB	National Intertidal/Subtidal Benthic
NNTT	National Native Title Tribunal
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National offshore Petroleum Titles Administrator
NRE	Department of Natural Resources and Environment (Tas)
NSW	New South Wales
NZ	New Zealand
O_3	Ozone
OCS	Offshore Constitutional Settlement
OPGGS	Offshore Petroleum and Greenhouse Gas Storage (Act 2006)
OPP	Offshore Project Proposal
OSRA	Oil Spill Risk Analysis
OW	Offshore Wind
OWF	Offshore Wind Farm
PIRSA	Department of Primary Industries and Regions South Australia
PMST	EPBC Act Protected Matters Search Tool

Acronym	Description
PPBZ	Port Phillip Bay Zone
QLD	Queensland
QM	Queensland Museum
QPWS	Queensland Parks and Wildlife Service
QX	Queensland Unknown (Marteilia sydneyi)
RAP	Reconciliation Action Plan
RARB	Recognised Aboriginal Representative Body
RKO	Roosting Known to Occur within Area
RLO	Roosting Likely to Occur within Area
RMO	Roosting May Occur Within Area
RNTBC	Registered Native Title Body Corporate
ROKAMBA	Agreement Between the Government of Australia and the Government of the Republic of Korea on the Protection of Migratory Birds
ROTAP	Rare or Threatened Australian Plants
ROV	Remote Observation Vehicle
SA	South Australia
SBT	Southern Bluefin Tuna
SBTF	Southern Bluefin Tuna Fishery
SCDS	United Nations Fish Stocks Agreements
SCSQ	Southern and Eastern Scalefish and Shark Fishery - Trawl Squid Catch Fishery
SCTR	Southern and Eastern Scalefish and Shark Fishery - Trawl Sector trawl sub-sector
SE	South-East
SEA	Strategic Environmental Assessment
SEC	South Eastern Corner
SEMR	South-East Marine Region
SEPP	State Environmental Planning Policy
SESSF	Southern and Eastern Scalefish and Shark Fishery
SETFIA	South East Trawl Fishing Industry association
SFR	Statutory Fishing Rights
SGSHS	Shark Gillnet and Shark Hook Sector
SHS	Scalefish Hook Sector
SOTS	Star of the South Wind Farm
SPF	Small Pelagic Fishery
SRL	Southern Rock Lobster
SS	Steam Ship
SSCK	Southern and Eastern Scalefish and Shark Fishery - Scalefish Hook Fishery
SSJF	Southern Squid Jig Fishery
SSKK	Southern and Eastern Scalefish and Shark Fishery - Gillnet Hook and trap sector shark hook sub-sector
STF	Skipjack Tuna Fishery

Acronym	Description
SW	Southwest
SWV	South Western Victorian
TAC	Total Allowable Catch
TEC	Threatened Ecological Community
TEMR	Temperate East Marine Region
TP	Tasman-Pacific
TSSC	Threatened Species Scientific Committee
UNCLOS	United Nations Convention on the Law of the Sea 1982
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UXO	Unexploded ordnance
VFA	Victorian Fisheries Authority
VHR	The Victorian Heritage Register
VIC	Victoria
WA	Western Australia
WTBF	Western Tuna and Billfish Fishery
WZ	Western Zone

1.0 Introduction

1.1 Regulatory Context

The Regulation 5 of the Offshore Petroleum Greenhouse and Gas Storage (Environment) (OPGGS(E)) Regulations 2023 Commonwealth define 'environment' as the ecosystems and their constituent parts, natural and physical resources, qualities and characteristics of location, places and areas, the heritage value of places and includes the social, economic and cultural features of those matters. In accordance with Regulation 21(2) of the OPGGS(E) Regulations, this document describes the physical (Section 2.0), ecological (Section 3.0), conservation values and sensitivities (Section 4.0), and social (Section 5.0) components of the environment.

A greater level of detail is provided for those particular values and sensitivities as defined by Regulation 21(3) of the OPGGS(E) Regulations which states that particular relevant values and sensitivities may include any of the following:

a. The world heritage values of a declared World Heritage property.
b. The national heritage values of a National Heritage place.
c. The ecological character of a declared Ramsar wetland.
d. The presence of a listed threatened species or listed threatened ecological community.
e. The presence of a listed migratory species.
f. Any values and sensitivities that exist in, or in relation to, part or all of:
    i. a Commonwealth marine area; or
    ii. Commonwealth land.

With regards to 21(3)(d) and (e) more detail has been provided where threatened or migratory species have a spatially defined biologically important area (BIA), habitat critical to survival or identified biologically important behaviour such as breeding, foraging, resting or migration.

BIAs are areas and times used by protected marine species for carrying out critical life functions as listed above (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2024n). BIAs can be located anywhere within the Australian marine environment and may also be designated over terrestrial areas (i.e., turtle nesting beaches). BIAs are:

- Designed to inform decision making about actions which may impact protected species.
- Described in conservation plans for protected marine species including statutory recovery plans, wildlife conservation plans, and conservation advice documents (DCCEEW, 2024n).

It is important to note that BIAs do not represent the species full range and that areas without BIAs may still support biologically important behaviours (DCCEEW, 2024n).

BIAs within this document have been described and defined by using the downloadable DCCEEW BIA shapefile dataset (DCCEEW, 2024p). At the time of updating this Master Existing Environment (August 2025), Australian Marine Spatial Information System (AMSIS) had not released the updated BIA data for the recently updated BIAs. Therefore, Amplitude Energy acknowledges that there will be a disconnect between AMSIS, PMST reports and the EP content until AMSIS releases this data. Note: the AMSIS has provided the data for the updated BIAs for the southern right whale as per the recently released National Recovery Plan (DCCEEW, 2024l).

With regards to 21(3)(f) more detail has been provided for:

- Key Ecological Features (KEFs) as they are considered as conservation values under a Commonwealth Marine Area.
- Australian Marine Parks (AMPs) as they are enacted under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Important habitat for migratory species is defined within the Matters of National Environmental Significance Significant Impact Guidelines 1.1 (CoA, 2013) as:

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or
- habitat that is of critical importance to the species at particular life-cycle stages, and/or
- habitat utilised by a migratory species which is at the limit of the species range, and/or
- habitat within an area where the species is declining.

1.2 Environmental Sectors

Due to the extent of the area being described, smaller Environmental Sectors have been defined (Figure 1-1) based on geology (e.g. petroleum geology) and ecology (e.g. IMCRA regions; Figure 1-2); these sectors are used throughout this document (Table 1-1).

Amplitude Energy petroleum titles are located in the Otway and Gippsland Environmental Sectors, more detailed information is provided about receptors in each of these sectors, given the planned impacts that may occur associated with petroleum activities in these sectors.

Table 1-1: Bioregions and Geology of the Environmental Sectors

Sector	General Boundary	IMCRA Provincial Bioregions[1]	Petroleum Geology[2]
Otway	Cape Jaffa (South Australia) to Cape Otway (Victoria); west of King Island to Cape Grim (northwest Tasmania)	Western Bass Strait IMCRA Transition West Tasmania Transition Spencer Gulf Province Southern Province	Otway Basin
Bass Strait	Cape Otway to Woodside Beach (Victoria); northern Tasmanian coast; and includes King and Flinders Island (and associated island chains)	Western Bass Strait IMCRA Transition Bass Strait IMCRA Province Southeast IMCRA Transition	-
Gippsland	Woodside Beach (Victoria) to Batemans Bay (New South Wales); east of Flinders Island to Eddystone Point (north-east Tasmania)	Southeast IMCRA Transition Southeast Transition	Gippsland Basin
Sorell	Western coast of Tasmania, from Cape Grim to South East Cape	Tasmanian IMCRA Province Tasmania Province West Tasmania Transition	Sorell Basin
SE Tasmania	Eastern coast of Tasmania, from Eddystone Point to South East Cape	Tasmanian IMCRA Province Tasmania Province	-
Central NSW	Batemans Bay to Coffs Harbour (New South Wales)	Central Eastern IMCRA Province Central Eastern Province	Sydney Basin

Sector	General Boundary	IMCRA Provincial Bioregions[1]	Petroleum Geology[2]
SE Queensland	Coffs Harbour (New South Wales) to Gladstone (Queensland)	Central Eastern IMCRA Province Central Eastern Transition Kenn Transition Kenn Province Central Eastern Province	Capricorn Basin Clarence-Morton Basin Maryborough Basin Nambour Basin
Lord Howe	Lord Howe Island	Tasman Basin Province Lord Howe Province	Lord Howe Rise
Norfolk Island	Norfolk Island	Norfolk Island Province	-

[1] IMCRA regions as described by Commonwealth of Australia (2006)

[2] Petroleum geology as described by Geoscience Australia (2017)

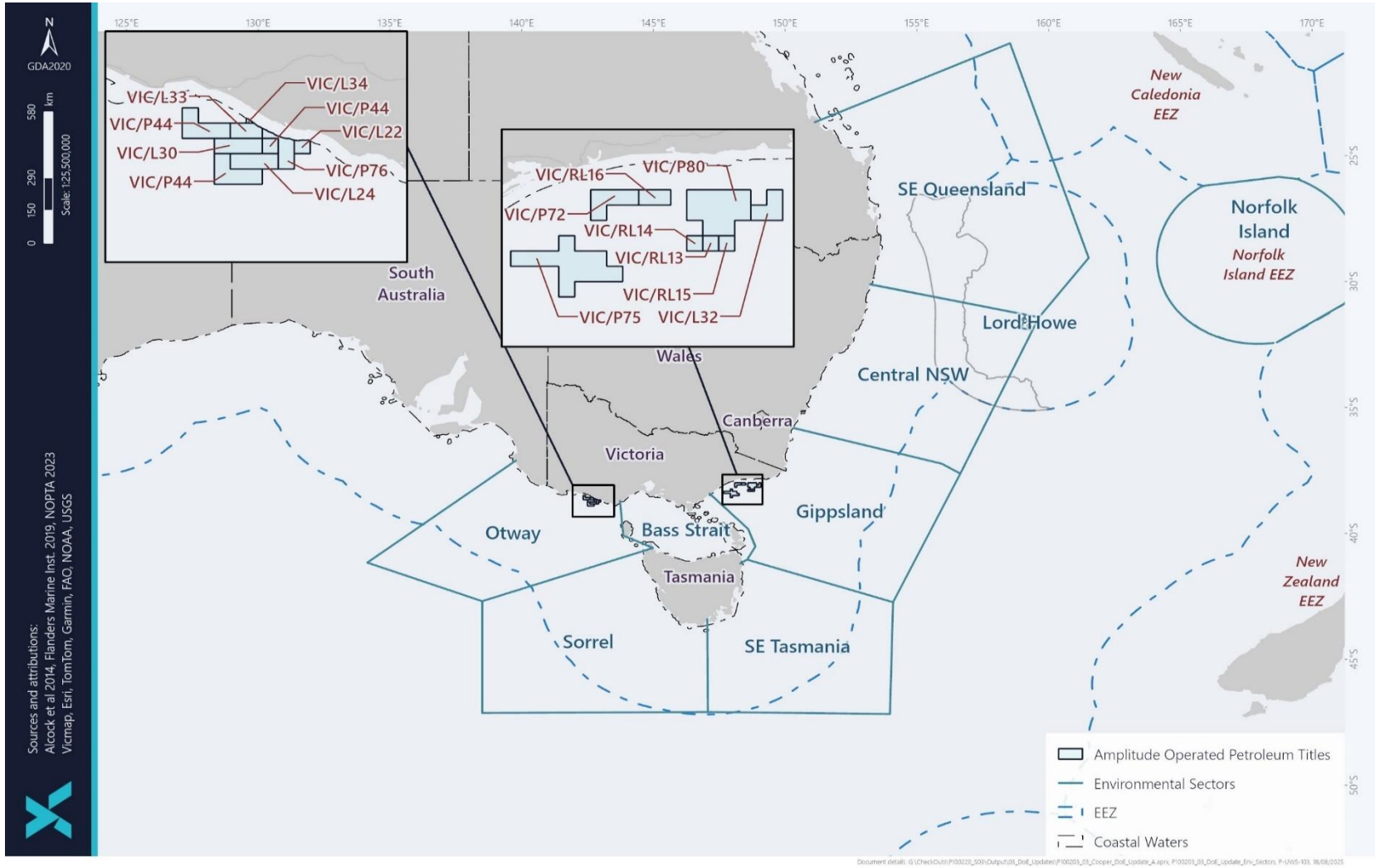


Figure 1-1: Environmental Sectors

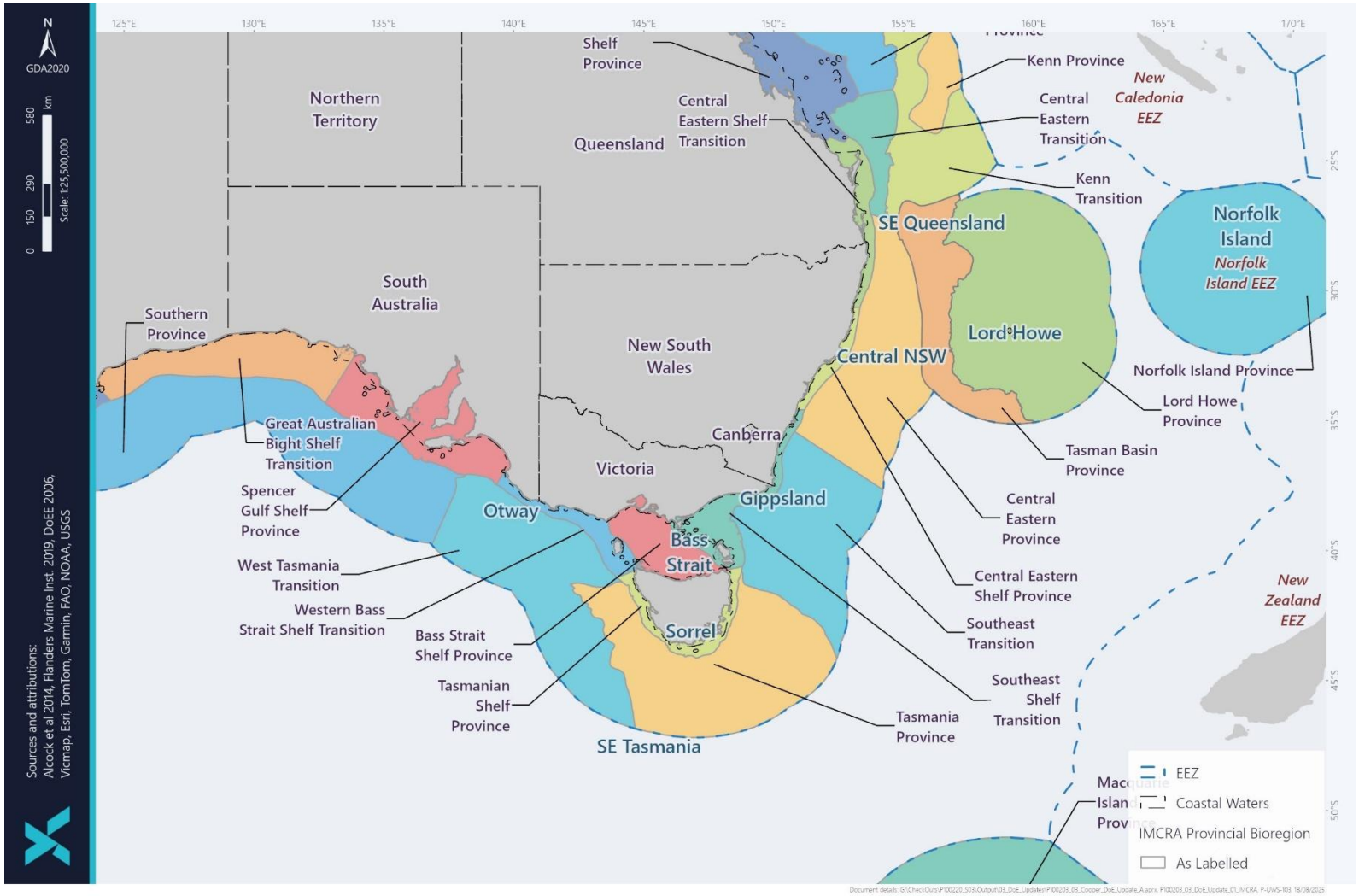


Figure 1-2: IMCRA Provincial Bioregions

1.3 Amplitude Facilities Context

This document serves as a comprehensive description of the environment to cover all offshore activities undertaken by Amplitude Energy. It describes the physical, ecological, conservation values and sensitivities, and social components found within the Environmental Sectors (*Figure 1-1*) which encompass all Amplitude Energy activities from the following key offshore regions:

- Otway Basin, which includes:
  - Activities carried out under the ***East Coast Supply Offshore Project Proposal (OPP)*** (Cooper Energy, 2025a).
  - Activities conducted as part of the ***Athena Supply Project Environment Plan (EP)*** (Cooper Energy 2025b).
  - Operation of the Casino, Netherby and Henry pipeline and associated wells conducted under the ***Offshore Otway Operations - Casino, Henry and Netherby Environment Plan*** (Cooper Energy, 2024b).
- Gippsland Basin, which includes:
  - Activities under the ***BMG Closure Project Phase 2 EP*** (Amplitude Energy, 2024a).
  - Ongoing activities under the ***Gippsland Offshore Operations EP*** (Cooper Energy, 2024c).

2.0 Physical Environment

2.1 Bathymetry and Seabed Features

The geomorphology of Australia's continental margin is varied, with a number of different geomorphic features present, including basins, canyons, terraces, seamounts and plateaus (Figure 2-1, Figure 2-2). In the south-east, the continental shelf is broad, extending offshore to approximately 200 m water depth; in contrast, the shelf along eastern Australia is narrower and shallower, varying between approximately 10 km and 75 km offshore, and between 70–165 m water depth (Harris et al., 2005). Some of the notable features on the continental shelf include the Otway Depression and Otway Shelf, King Island Rise, Bass Basin and Gippsland Shelf (Figure 2-1, Figure 2-2Geomorphic features on the continental slope and abyssal plain include: Bass Canyon, East Tasman Saddle and East Tasman Plateau, South Tasman Rise, Stradbroke Seamount and Moreton Seamount (Figure 2-1, Figure 2-2).

Bass Basin, a seaway separating the mainland and Tasmania, is a shallow depression approximately 120 km by 400 km, with water depths up to approximately 90 m (average water depth of approximately 60 m) (Figure 3-3). The basin is bounded on the eastern and western margin by two granite plateaus: the Bassian Rise, and King Island Rise. Within the Bass Basin, Bassian Rise (eastern margin) separates Bass Basin from the Gippsland Basin and is associated with the Furneaux Islands. King Island Rise (western margin) includes the shallow (<40 m water depth) Tail Bank, and King Island itself; and separates Bass Basin from Otway Basin. To the southwest, there is a relatively narrow, 60 m-deep channel between King Island and Tasmania. Sandwaves and tidal current ridges occur on the seabed of both Bassian and King Island Rises. The largest of the tidal sand ridges, Moriarty Bank, lies east of Clarke Island and is approximately 20 km long and 4 km wide, orientated east-west, sub-parallel to the flow of tidal currents (Harris et al., 2005). East of Bass Strait, on the continental slope and rise, are a number of submarine canyons; the largest of which is Bass Canyon. This submarine canyon is oriented east-southeast and is 10–15 km wide at its mouth, and approximately 60 km long (Harris et al., 2005). This canyon area is associated with two Key Ecological Features: Bass Cascade, and Big Horseshoe Canyon (see Section 4.6). Similarly, east of Tasmania and

east of King Island Rise, there are a series of canyons through the continental slope. At abyssal water depths, south of Tasmania, the seabed is characterised by gently undulating relief with irregular faulted basement blocks and seamounts.

The volcanic seamounts of the Tasmantid Seamount Chain occur on the abyssal plain east of Australia, including Moreton Seamount, Brisbane Guyot, Queensland Guyot, Stradbroke Seamount, Derwent-Hunter Guyot, Barcoo Bank and Taupo Bank. These seamounts vary in size, Stradbroke Seamount rises to 900 m water depth, while Barcoo Bank rises to less than 1,400 m water depth (Harris et al., 2005).

The seabed within the vicinity of the Gippsland sector tends to be slightly undulating (gradients <2°) and smooth. Noting however that the Basker-6 flowline (located between the BAM and Basker-6 wellhead) crosses the upper levels of the Bass Canyon scarp (decreasing from ~155–216 m water depth), and as a result has unique characteristics (Amplitude Energy, 2024).

There have been no seabed anomalies identified in the Gippsland Environmental Sector from geophysical surveys. The seabed at and around the (BMG) wells tend to be featureless with the seabed comprised of silty sand. The underlying geological structure tends to be dipping and slightly irregular, grading from silty fine sand at the seabed to over consolidated sandy silty clay at 10 m below seabed. The flowline route also crosses a narrow zone of what has been interpreted as variably cemented silty sand and gravel, which corresponds with the area of steepest gradient along the scarp edge (Amplitude Energy, 2024).

Basker-6 flowline route can be divided into three zones; above the Bass Canyon Scarp (~ 150 m); on the Bass Canyon Scarp (~150 m to ~220 m with maximum slope ~ 20°) and below the Bass Canyon Scarp (~ 220 m to 270 m) towards the Basker-6 well (Amplitude Energy, 2024; CTC Marine, 2011). Geotechnical survey conducted (CTC Marine, 2011), reported that the zone above the Bass Canyon Scarp tend to be flat and featureless, comprising silty fine sand with an increase in shell towards the scarp edge. While the seabed on Bass Canyon Scarp was “irregular in profile, consistent with erosion”, with sediments comprising of clayey silty sand with a high proportion of shell and other carbonate fragments and areas of cemented soil at the base of the slope. Seabed below Bass Canyon Scarp was reported to have a gently undulating topography formed by slump material from the scarp area.

More recent surveys conducted in 2020 confirmed that seabed surrounding subsea infrastructure tends to be dominated by a mix of sand and pebble/gravel (Ierodiaconou, 2021).

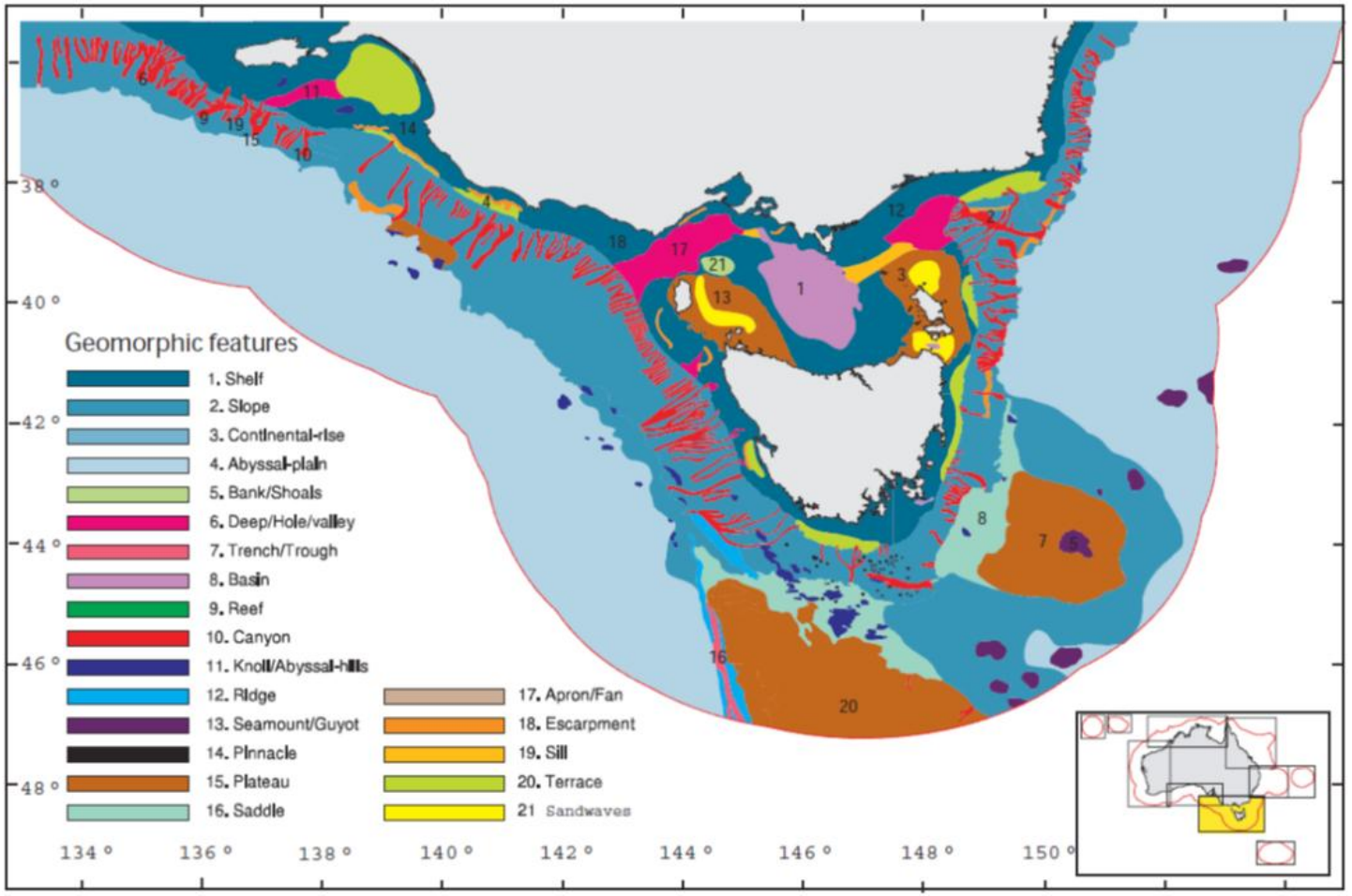


Figure 2-1: Geomorphic Features of the South-east Margin (Harris et al., 2005)

Notes: Features within the Environmental Sectors, as labelled on above figure – (1) Bass Basin, (2) Bass Canyon, (3) Bassian Rise, (4) Beachport Plateau, (5) Cascade Seamount, (7) East Tasman Plateau, (8) East Tasman Saddle, (10) Flinders Canyon, (12) Gippsland Shelf, (13) King Island Rise, (14) Lacepede Shelf, (16) Needwonne Ridge, (17) Otway Depression, (18) Otway Shelf, (20) South Tasman Rise, (21) South Tasman Saddle, (22) Tail Bank, (23) Toofee Ridge.

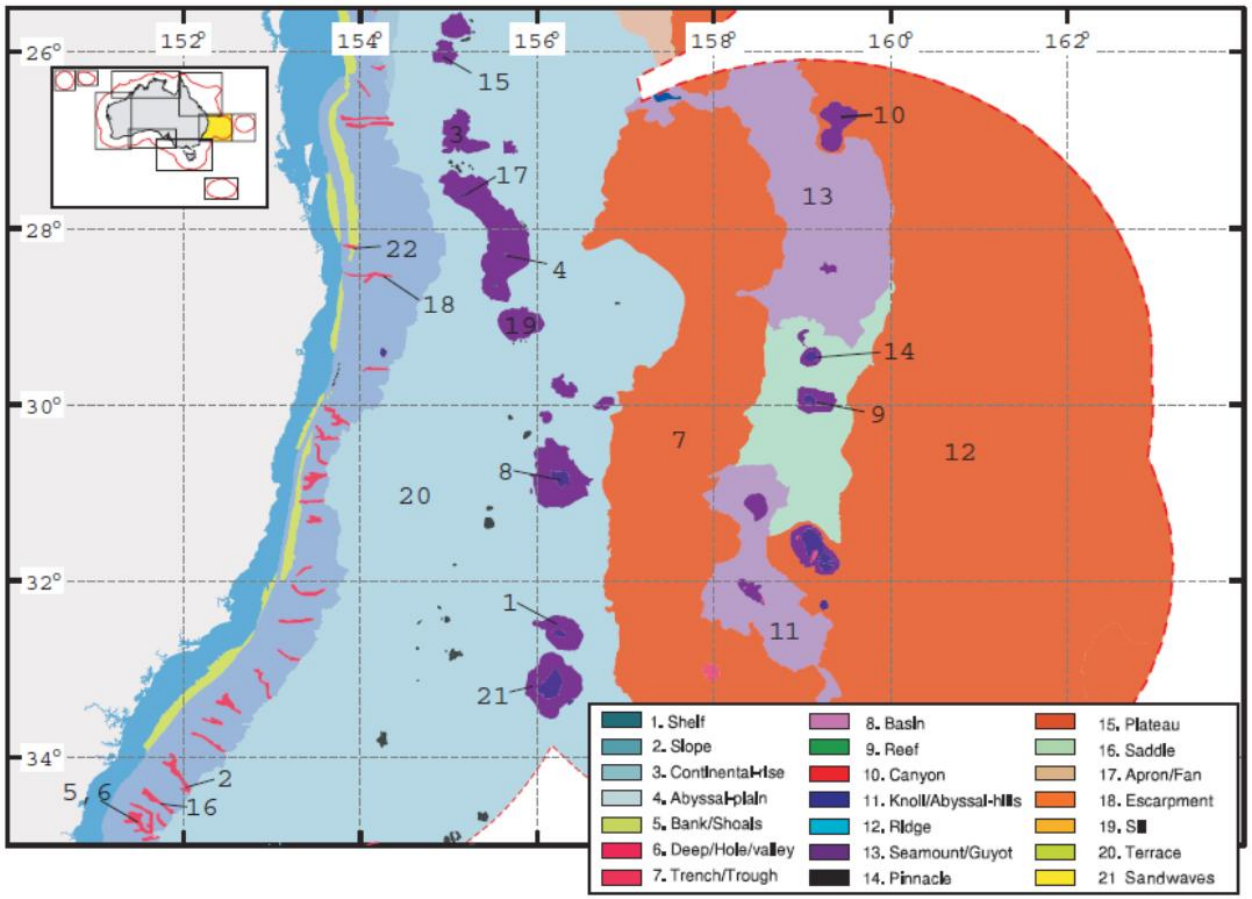


Figure 2-2: Geomorphic Features of the Eastern Margin (Harris et al., 2005)

Note: Features within the Environmental Sectors, as labelled on above figure – (1) Barcoo Bank, (2) Beecroft Canyon, (3) Brisbane Guyot, (4) Brittania Guyots, (5) Conjola Canyon A, (6) Conjola Canyon B, (7) Dampier Ridge, (8) Derwent-Hunter Guyot, (9) Elizabeth Reef, (10) Gifford Guyot, (11) Lord Howe Basin, (12) Lord Howe Rise, (13) Middleton Basin, (14) Middleton Reef, (15) Moreton Seamount, (16) Perpendicular Canyon, (17) Queensland Guyot, (18) Richmond Canyon, (19) Stradbroke Seamount, (20) Tasman Basin, (21) Taupo Bank, (22) Tweed Canyon.

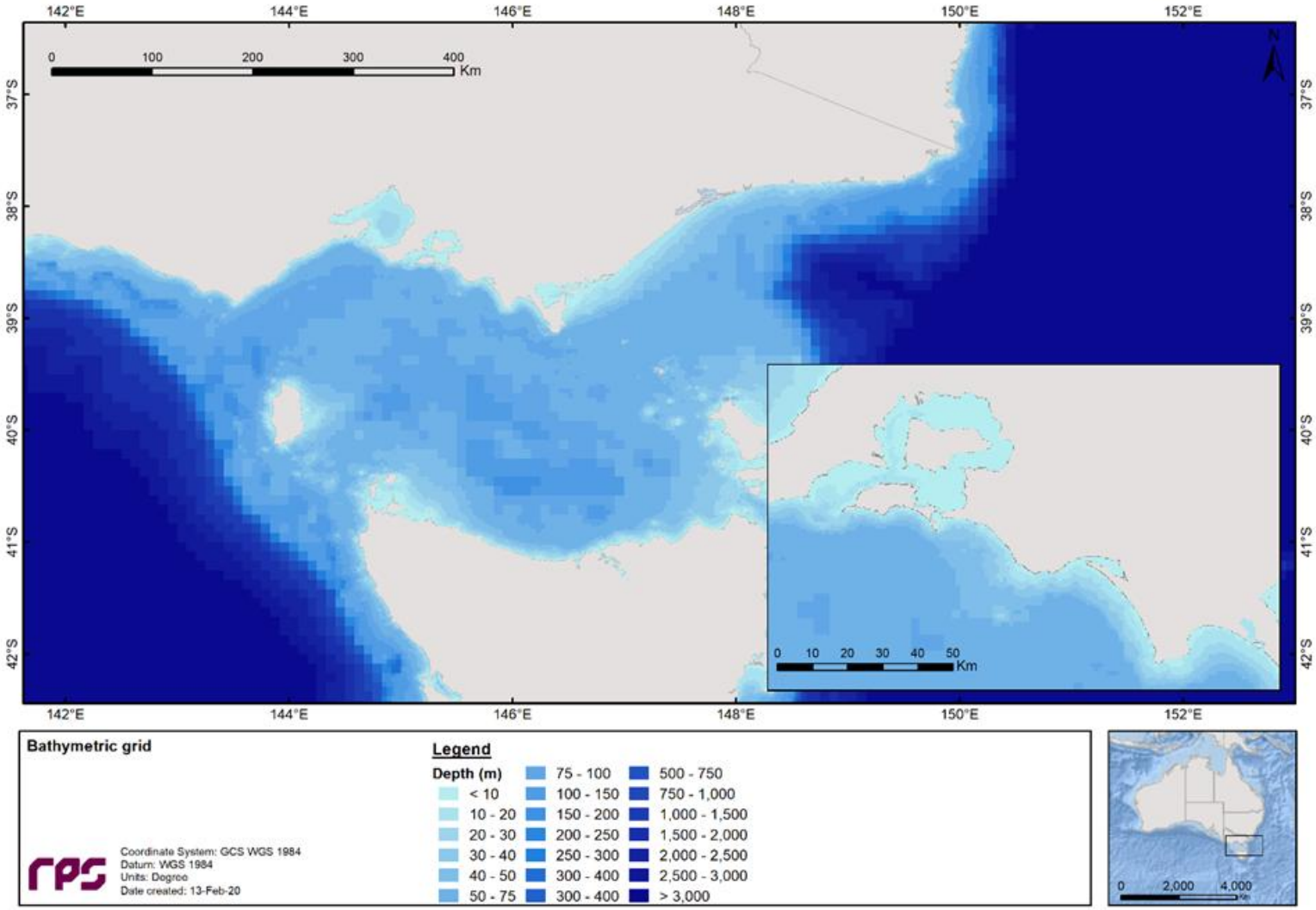


Figure 2-3: Bathymetry Defined throughout Bass Strait Region (RPS, 2024)

2.2 Oceanography

2.2.1 Currents

Australia is heavily influenced by four major currents: East Australian Current, Leeuwin Current, Indonesian Throughflow, and the Antarctic Circumpolar Current (Figure 2-4). These four currents have a driving influence on the conditions and biodiversity in Australian oceans and coastal environments. There are also a number of smaller and more complex current systems. All these ocean features can change from season to season, and may be more or less extensive and energetic, depending on climate factors.

The East Australian Current flows south along the east coast of Australia from near Queensland's Fraser Island to Tasmania; and is an important feature of the Tasman Sea. This area has been warming faster than other parts of the ocean (CSIRO, no date). This has been driven by changes in atmospheric circulation causing an increase in strength of the South Pacific Gyre, resulting in the strengthening of the East Australian Current, so that the warm tropical waters from the Coral Sea region are forced further south, warming the Tasman Sea (CSIRO, no date).

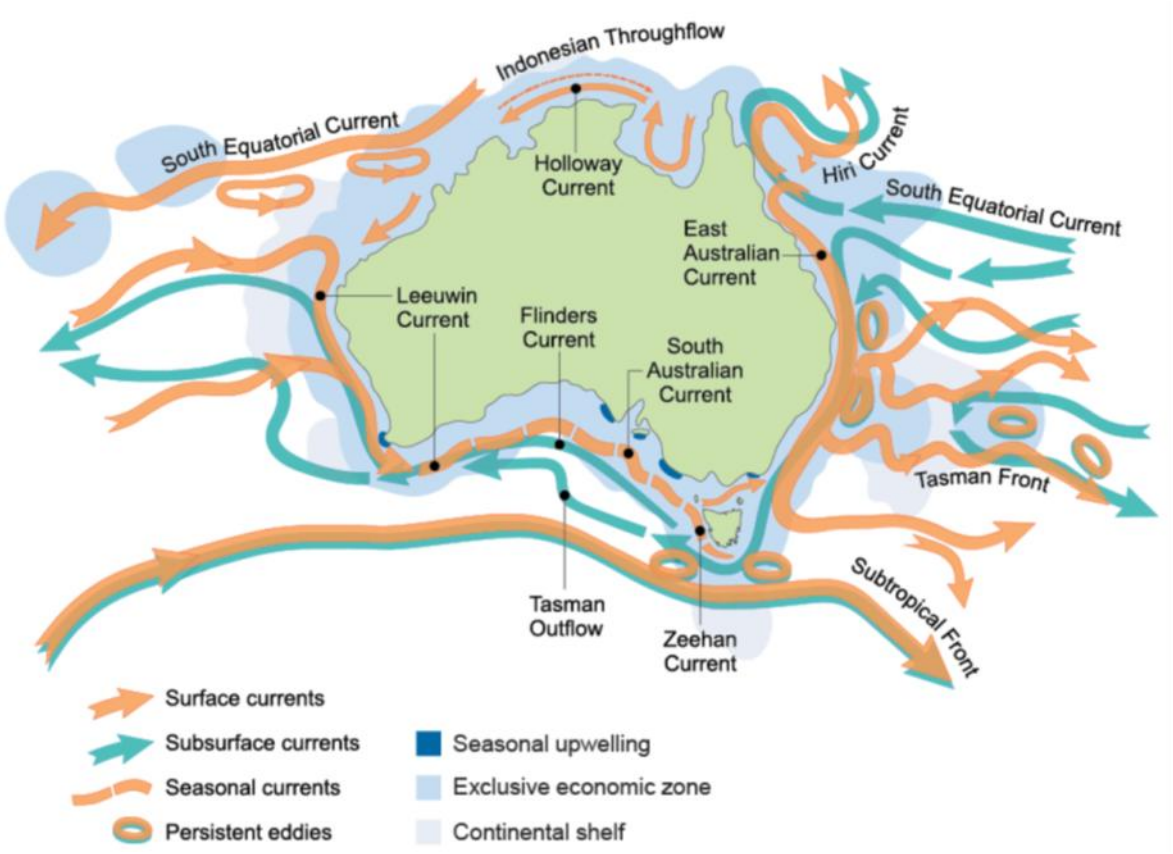


Figure 2-4: Major Ocean Currents and Features of Australia's Marine Environment (Source: CSIRO, no date)

The Bass Strait region has a reputation for high winds and strong tidal currents (Jones, 1980). Currents within the Strait are primarily driven by tides, winds and density driven flows. Tides are semi-diurnal with some diurnal inequalities, generating tidal movements with a predominantly north-east to south-west orientation; with speeds ranging 0.1–2.5 m/s (Fandry, 1983). Tidal flows in

Bass Strait come from the east and west during a rising (flood) tide, and flow out to the east and west during a falling (ebb) tide. During winter, the South Australian Current (fed by the Leeuwin Current in the Northwest Shelf), which bifurcates with one extension moving through the Bass Strait, and another forming the Zeehan Current off western Tasmania (Sandery and Kämpf, 2007). During summer, water flow reverses off Tasmania, King Island and the Otway Basin travelling eastward, as the coastal current develops due to south-easterly winds. In winter and spring, waters within the strait are well mixed with no obvious stratification, while during summer the central regions of the strait become stratified (RPS, 2024).

Bass Strait is a high-energy environment exposed to frequent storms and significant wave heights. The Otway coast has a predominantly south-westerly aspect and is highly exposed to swell from the Southern Ocean. Storms in Bass Strait can generate wave heights of 5 m or more (Cooper Energy, 2019). In-situ wave measurements in the northern portion of the Casino pipeline, showed 2.0–3.5 m waves occur for 50% of the time, and waves over 7.6 m can occur during winter (Santos, 2004).

Within the Gippsland region, surface currents generally flow in a northeast to southwest axis with different intensities depending on the month. The average current speed ranged between 0.18 m/s and 0.24 m/s while maximum current speeds ranged between 0.59 m/s (December) and 0.96 m/s (March) (RPS, 2021).

Within the Otway region, surface currents vary depending on the month, however, typically flow east-southeast during the winter months. The average current speed ranged between 0.15 m/s and 0.24 m/s while maximum current speeds ranged between 0.68 m/s (January) and 1.07 m/s (July) (RPS, 2024).

The Key Ecological Feature (KEF) known as the Bass Cascade is present during winter, when down-welling is caused by the cooling of shallow waters of Bass Strait into Gippsland Basin. Down-welling currents that originate in the shallow eastern waters of Bass Strait flow down the continental slope to depths of several hundred metres or more into the Tasman Sea.

2.2.2 Sea Temperature and Salinity

Sea-surface temperatures vary seasonally from ~13.3°C (Sept) to ~18.6°C (Jan/Feb/Mar) within the Otway region (RPS, 2024).

Typically, seawater temperature decreases with depth, particularly in the summer months, while during the winter months the shallower continental shelf waters of the Otway Basin become well mixed due to the strong winds and high waves which results in a small temperature variation between the surface and seabed (RPS, 2023).

Waters of eastern Bass Strait are generally well mixed, but surface warming sometimes cause weak stratification in calm summer conditions. During these times mixing and interaction between varying water masses leads to variations in horizontal water temperature and a thermocline (temperature profile) develops. The thermocline acts as a low-friction layer separating the wind-driven motions of the upper well-mixed layer of Bass Strait from the bottom well-mixed layer (Esso, 2009).

The southwest region of Victorian area has significant upwelling of colder, nutrient rich deep-water during summer (i.e., the Bonney Coast Upwelling KEF) that can cause sea surface temperatures to decrease by 3°C compared with offshore waters (Butler et al., 2002).

2.3 Air Quality and Climate

Australia's size and geography gives rise to a diverse range of climate patterns across the continent and offshore islands. The south-eastern coast (Victoria, Tasmania, New South Wales) is primarily described as being 'temperate'; and the region extending into southern Queensland becomes 'subtropical'. There are seasonal variations in mean temperatures and rainfall, with northern Australia (including Queensland), having higher summer rainfall, compared to southern Australia when winter rainfall is more dominant (Figure 2-5, Figure 2-6).

Victorian's climate can be characterised as cool temperate, with cool wet winters and cool summers. The conditions are primarily influenced by weather patterns originating in the Southern Ocean. It is dominated by sub-tropical high-pressure systems in summer and sub-polar low-pressure systems in winter. The low-pressure systems are accompanied by strong westerly winds and rain-bearing cold fronts that move from west to east across the region.

Bass Strait is located on the northern edge of the westerly wind belt known as the Roaring Forties. Hindcast modelled wind data from the National Centres for Environmental Predictions Climate Forecast System Reanalysis for the period 2008 to 2012 (inclusive), showed winds were typically from a westerly (west-southwest to west-northwest) direction, with average monthly wind speeds ranging from 14.1–16.5 knots.

The modelling results shown in Figure 2-7 demonstrate that the Otway Basin typically experience moderate winds all year round, with average wind speeds recorded to ranging from 14 knots during summer to 19 knots during winter months. Maximum monthly speeds ranged between 39 knots (January) up to 53 knots (June). The dominant wind direction varies throughout the year, though westerly winds tend to dominate during September to November (RPS, 2024).

In comparison, the dataset shown in Figure 2-8 demonstrates that the Gippsland Basin typically experiences moderate to strong winds all year round and although the monthly average wind speeds remain under 10 knots, winds can at times blow over 25 knots. Winds in the region typically blow from the southwest during the summer months and west-southwest during the winter months (RPS, 2021).

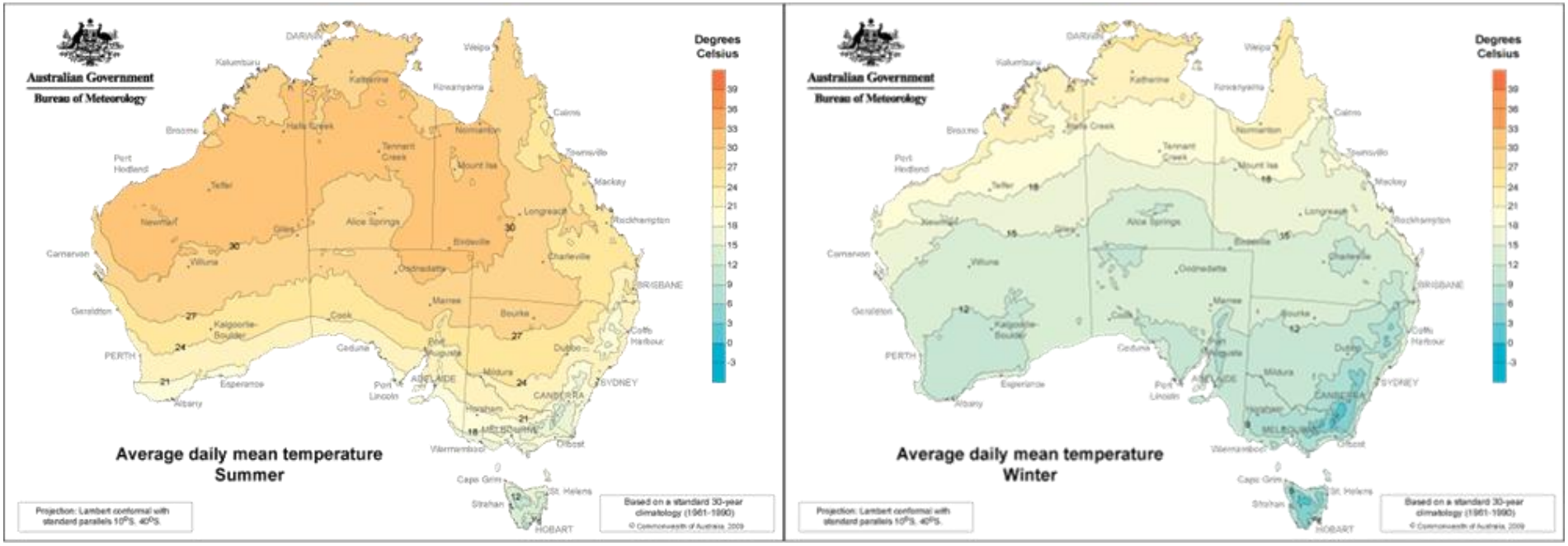


Figure 2-5: Average Daily Mean Temperatures in Summer (left) and Winter (right) (Source: BoM, 2016)

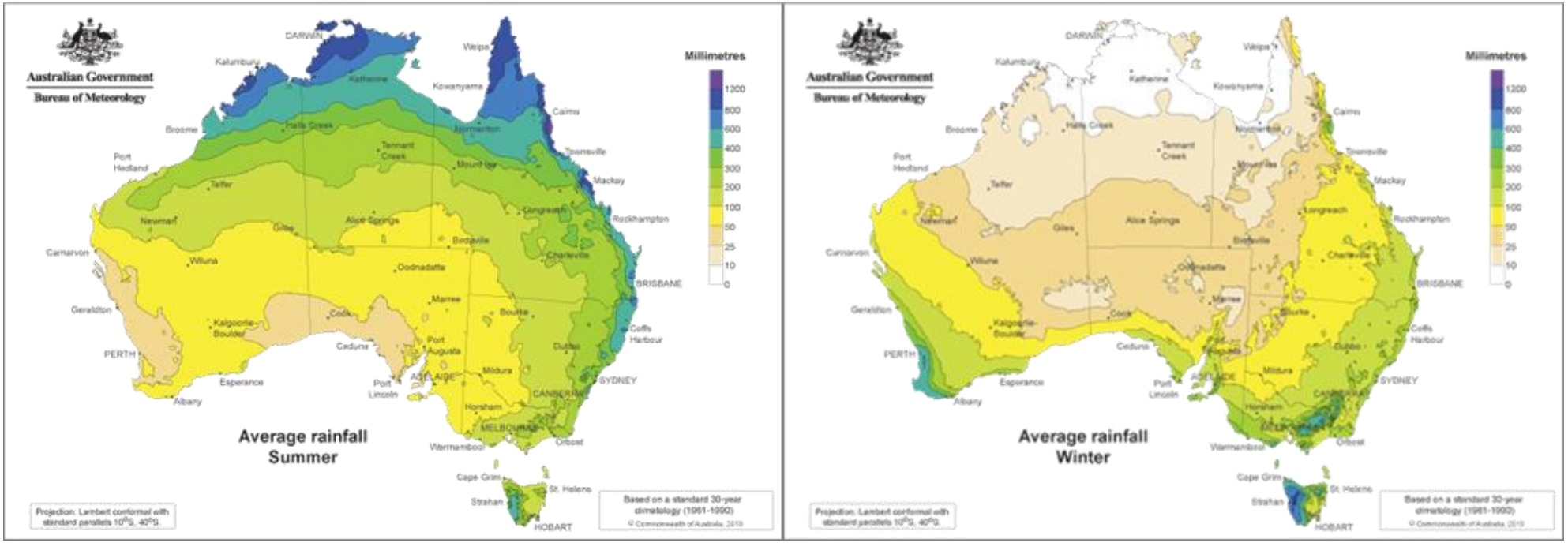


Figure 2-6: Average Rainfall in Summer (left) and Winter (right) (Source: BoM, 2016)

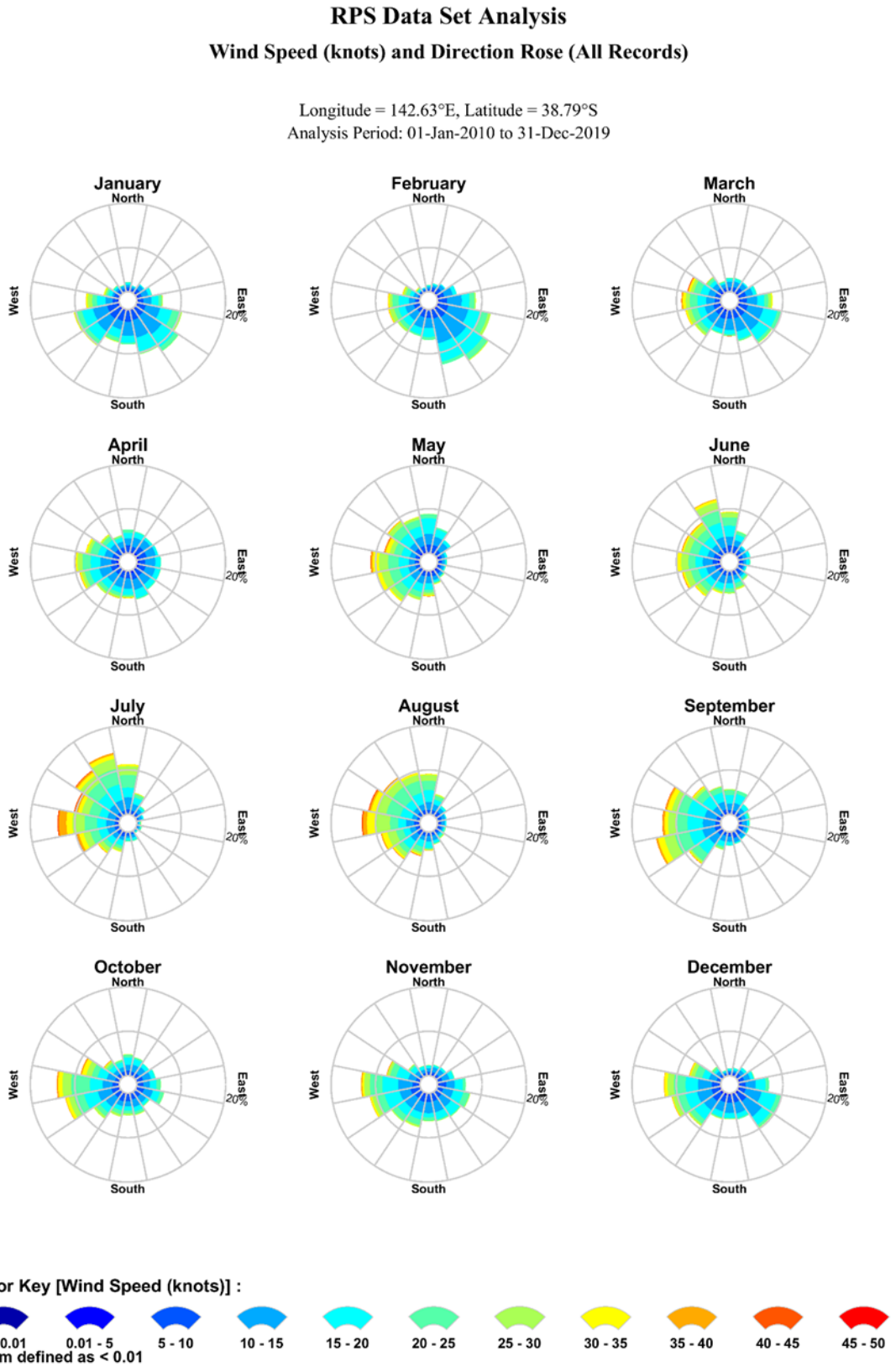


Figure 2-7: Modelled Monthly Wind Rose Distributions from 2010–2019 (inclusive) for the Node Nearby the Elanora-ST1 (Isabella) Well within the Otway Basin (RPS, 2024).

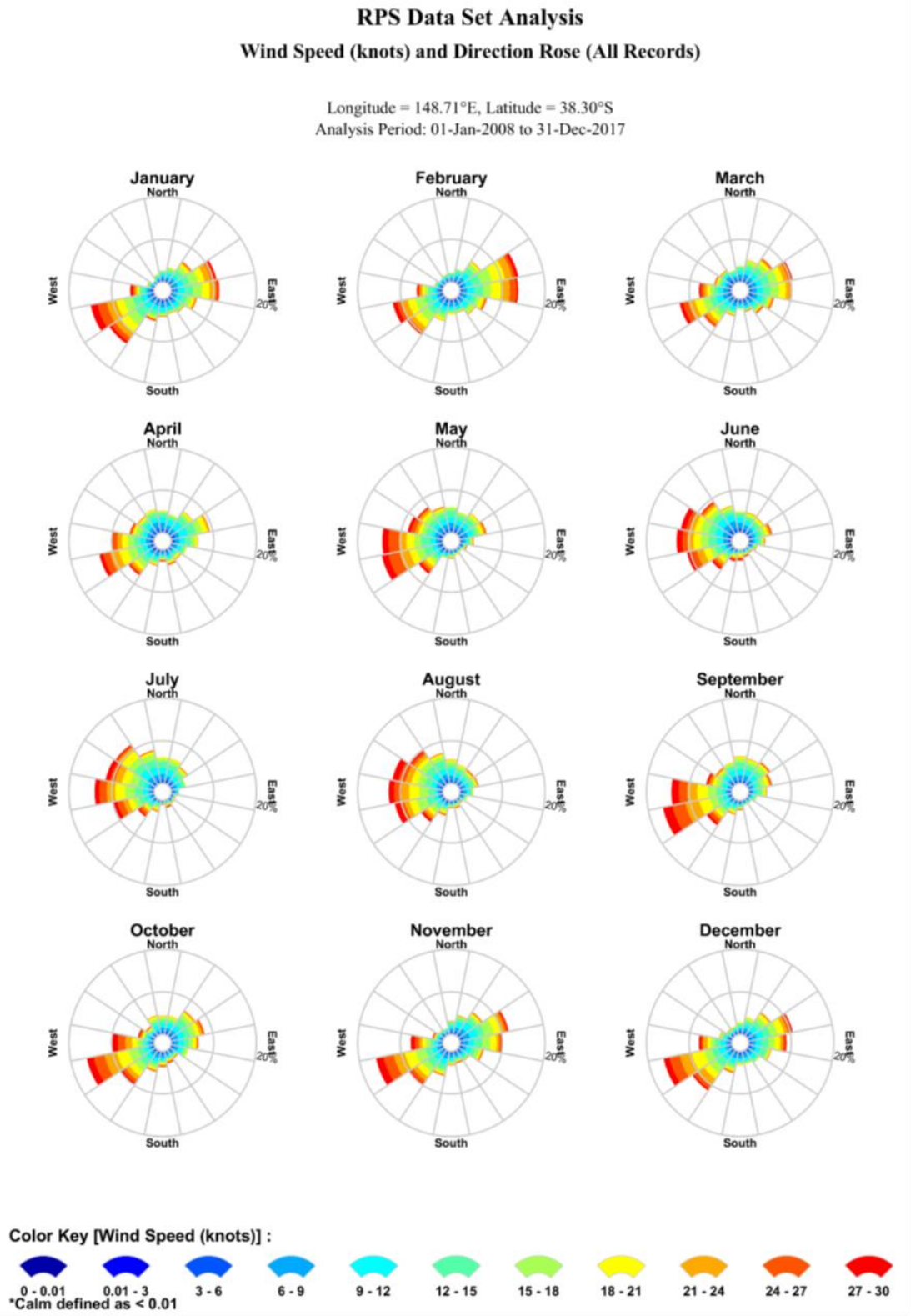


Figure 2-8: Monthly Wind Rose Distributions Derived from CFSR Model from 2008 to 2017 (inclusive), for the Wind Node Closest to the B2 and M2A Release Locations within the Gippsland Region (RPS, 2021).

Historical air quality data is available from the Environment Protection Authority (EPA) Victoria air quality monitoring stations, and Cape Grim Baseline Air Pollution Station on Tasmania's west coast, which is one of the three premier baseline air pollution stations in the World Meteorological Organisation-Global Atmosphere Watch (WMO-GAW) network, measuring greenhouse and ozone depleting gases and aerosols in clean air environments.

The Victorian air quality data is collected at 15 performance monitoring stations representing predominantly urban and industrial environments in the Port Phillip and Latrobe Valley regions of Victoria. Results are assessed against the requirements of the National Environment Protection (Ambient Air Quality) Measure for the pollutants carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulphur dioxide (SO_2), lead (Pb), particles less than 10 micrometres in diameter (PM_{10}) and particles less than 2.5 micrometres in diameter ($PM_{2.5}$). The most recent annual air monitoring report shows Victoria's air quality in 2015 was generally good with AAQ NEPM (Ambient Air Quality National Environmental Protection Measure) goals and standards being met for carbon monoxide (CO), nitrogen dioxide (NO2), Ozone (O_3) and sulphur dioxide (SO_2). There were some exceedances for particles.

The Cape Grim station monitors greenhouse gases (GHGs), including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and synthetic GHGs such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). Historical air quality data from Cape Grim show that most GHGs have shown continuous increases in concentration since the mid-to-late 1970s with carbon dioxide levels increasing by more than 15% since 1976, and concentrations of methane and nitrous oxide increasing by around 20% and 8% respectively since 1978. The increase in methane levels however has slowed recently and CFCs and halons are in decline. Increases have been attributed to anthropogenic causes, for example, fossil fuel consumption and agricultural practices (CSIRO, 2017). Increases have been attributed to anthropogenic causes, for example, fossil fuel consumption and agricultural practices (CSIRO, 2020).

2.4 Ambient Underwater Noise

Physical and biological processes contribute to natural background sound. Physical processes include that of wind and waves whilst biological noise sources include vocalisations of marine mammals and other marine species.

Iceberg calving, shoaling and disintegration has recently been identified as a dominant source of low frequency (<100 Hz) noise in the Southern Ocean. Wind is also a major contributor to noise between 30–100 Hz and can reach 85-95 dB re 1µPa^2/Hz under extreme conditions (WDCS, 2004). Rain may produce short periods of high underwater sound with a flat frequency spectrum to levels of 80 dB re 1µPa^2/Hz and magnitude four earthquakes have been reported to have spectral levels reaching 119 dB re 1µPa^2/Hz at frequency ranges 5-15 Hz. It is noted that earthquakes of this magnitude are relatively frequent along Australia's continental shelf in the southern margin (i.e., tens of small earthquakes per year) (McCauley & Duncan, 2001). Figure 2-9 provides generalised ambient noise spectra attributable to varies sources completed by Wenz (1962; cited in Richardson et al. 1995).

The South-east Marine Region is one of the busiest shipping regions in Australia and the Bass Strait is one of Australia's busiest shipping routes. Typical predominant frequencies of commercial shipping occur within the range of 10 Hz to 1 kHz with some frequencies reaching the tens of kHz (Southall et al., 2017). A study of multiple vessel classes commissioned by the Vancouver Fraser Port Authority (2018) measured and was able to attribute source levels to those different classes of vessels. The quietest vessel class were naval vessels, with a lowest radiated noise level of 160.9 dB re: 1 µPa^{2}m^2.s. The loudest class was container ships over 200 m in length. The highest mean (average)

radiated noise level at 189.7 dB re: 1 µPa^{2}m^2.s and loudest recorded ship in class of 204.2 dB re: 1 µPa^{2}m^2.s.

Since 2009 (paused 2017-2018 due to funding gap), the Integrated Marine Observing System (IMOS) has been recording underwater sound south of Portland, Victoria (38° 32.5' S, 115° 0.1' E). Prominent sound sources identified in recordings include blue and fin whales at frequencies below 100 Hz, ship noise at 20 to 200 Hz and fish at 1 to 2 kHz (Erbe et al. 2016). In the Gippsland Basin, primary contributors to background sound levels were wind, rain and current- and wave-associated sound at low frequencies under 2 kHz (Przeslawski et al. 2016). Biological sound sources including dolphin vocalisations were also recorded (Przeslawski et al. 2016). Ambient noise level in the Gippsland Basin at 100-500 Hz varied depending on recording location between 89.2 to 109.9 dB re 1 µPa^2/Hz, likely due to a varied increase in distance from shipping activity, and water depth.

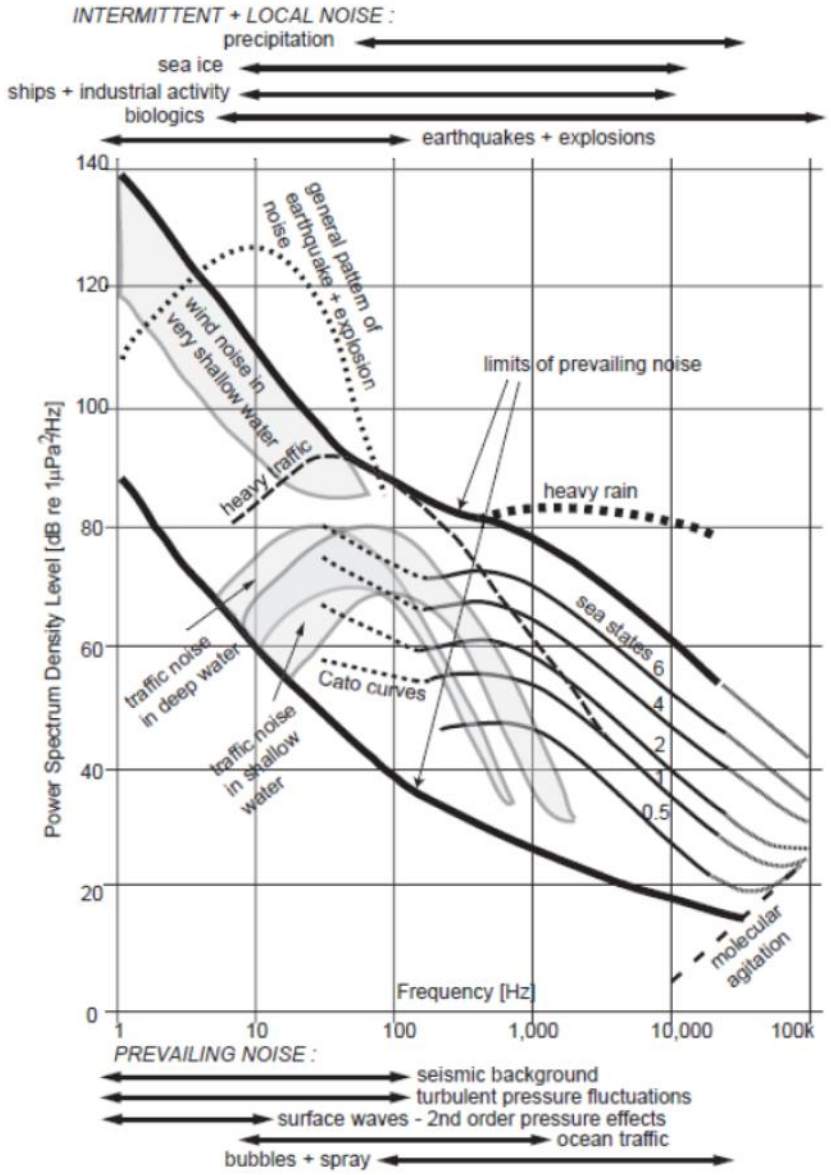


Figure 2-9: Generalised Ambient Noise Spectra (Source: Richardson et al., 1995)

3.0 Ecological Environment

3.1 Shorelines

The coastal environment throughout southern and eastern Australia is varied, and includes areas of rocky cliffs, sandy beaches, and tidal flats (Table 3-1). Each of these shoreline types has the potential to support different flora and fauna assemblage due to the different physical factors (e.g., waves, tides, light etc.) influencing the habitat.

Smartline[1] established a nationally consistent map of the coastal landform types (geomorphology) of continental Australia and most adjacent islands (OzCoasts, 2015a; Sharples et al., 2009). The single line consists of multiple attributes describing landform characteristics of the coastal area (defined as a nominal distance of 500 m inland and offshore from mean high water), including distinct attributes for the backshore, intertidal and subtidal regions (Figure 3-1) (Sharples et al., 2009).

The Smartline system also includes an 'exposure' attribute, which is the degree of exposure of a shoreline segment to oceanic swell and storm wave energy (i.e., it is not a measure of actual wave energy received). The categories represent the degree of exposure or sheltering of a coastal segment, e.g. coastal lagoons and estuaries are ranked with 'very low' exposure, while open coast environments may be 'moderate' or 'high'. This attribute of Smartline was primarily sourced from previous OSRA shoreline mapping (Sharples et al., 2009).

The coast of southern and eastern Australia has been mapped to show the variation in shoreline type (backshore, intertidal and subtidal attributes) and shoreline exposure (Figure 3-2).

Table 3-1: Shoreline Types within the Environmental Sectors

Shoreline type	Description
Cliff	Hard and soft rock features, over five metres in height. This is a common shoreline type along stretches of the Tasmanian coast, including Cape Pillar, Cape Raoul, and Cape Hauy, on the Tasman Peninsula.
Rocky	Hard and soft rocky shores, including bedrock outcrops, platforms, low cliffs (less than five metres), and scarps. Depending on exposure, rocky shores can be host to a diverse range of flora and fauna, including barnacles, mussels, sea anemones, sponges, sea snails, starfish and algae. Australian fur-seals are also known to use rocky shores for haul-out and/breeding. This is common shoreline along southern and eastern Australian coasts, including the limestone coast and features along the Great Ocean Road, Victoria.
Gravel/Cobble	Beaches dominated by unconsolidated sediment with particle sizes > 2mm. Gravel beaches are typically steeper than sandy beaches, and fauna can include a variety of infauna, or small crustaceans. These are often co-located near cliff or rocky shoreline types; therefore similarly, are quite common along the southern Tasmania coast.
Sandy	Sandy beaches are characterised by sand-sized (0.063–2 mm) particles; also includes mixed sandy beaches (i.e., sediments may include muds or gravel, but sand is the dominant particle size). Beaches are dynamic environments, naturally fluctuating in profile and particle distribution response to external forcing factors (e.g., waves, currents etc). Sandy

[1] The Smartline Project was commissioned by the Department of Climate Change and Geoscience Australia in 2007.

Shoreline type	Description
	beaches can support a variety of infauna and provide nesting and/or foraging habitat to shorebirds and seabirds and pinnipeds. Sand particles vary in size, structure and mineral content; this in turn affects the shape, colour and inhabitants, of the beach. This shoreline type is very common along the entire coast, including Ninety Mile Beach (East Gippsland, Victoria) and Apollo Bay (east of Cape Otway, Victoria).
Muddy	Shores with predominantly muddy (particle sizes <0.063 mm) shores. May also include mixed sediments (e.g., sands or gravel), where the mud fraction is dominant. This shoreline type typically occurs in more sheltered environments like estuaries or bays, including River Tamar estuary in northern Tasmania.
Tidal Flat	Shorelines exposed to high tidal variation; includes both sandy and muddy sediments. This shoreline type can often be associated with mangrove or saltmarsh environments. This shoreline type is typically patchy in southern Australia but does occur (e.g., Corner Inlet, Victoria); it is more common in northern Australia (e.g. Queensland).
Artificial	Man-made structures along the coast, including breakwaters, piers, jetties. This is a common feature in urban areas, although does not typically extend for long stretches of coast.

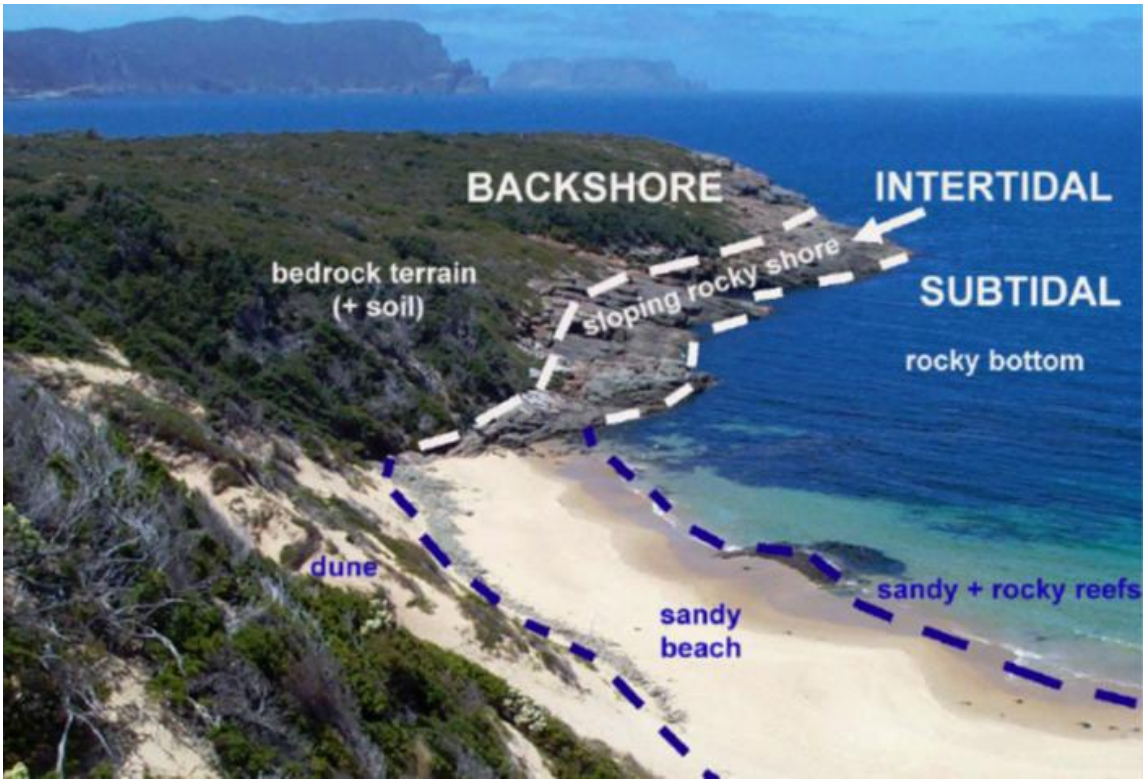


Figure 3-1: Example Illustration Showing Backshore, Intertidal and Subtidal zones within a Coastal Area (Source: Sharples et al., 2009)

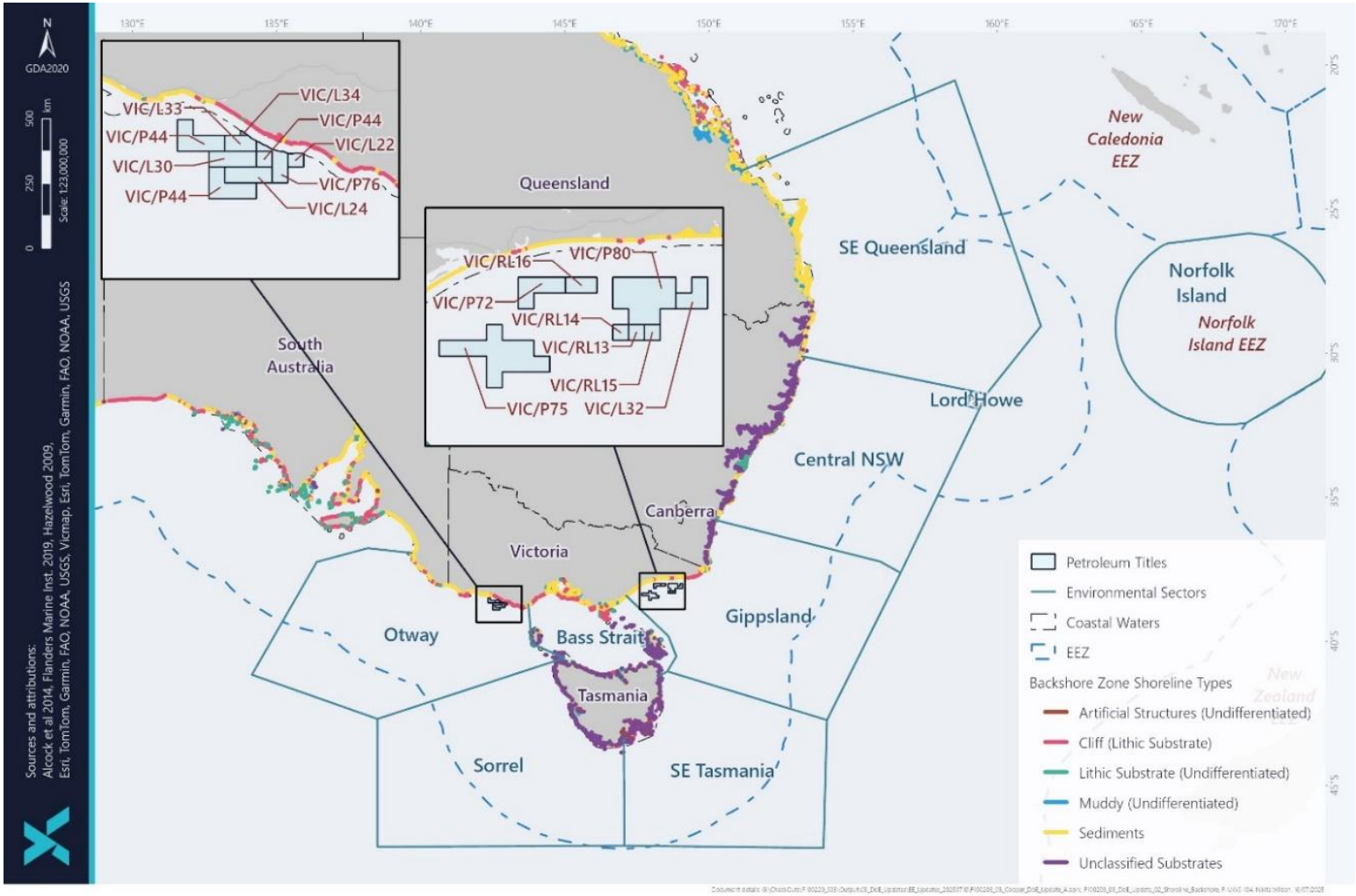


Figure 3-2: Shoreline Types (Backshore) and Shoreline Exposure within the Environmental Sectors

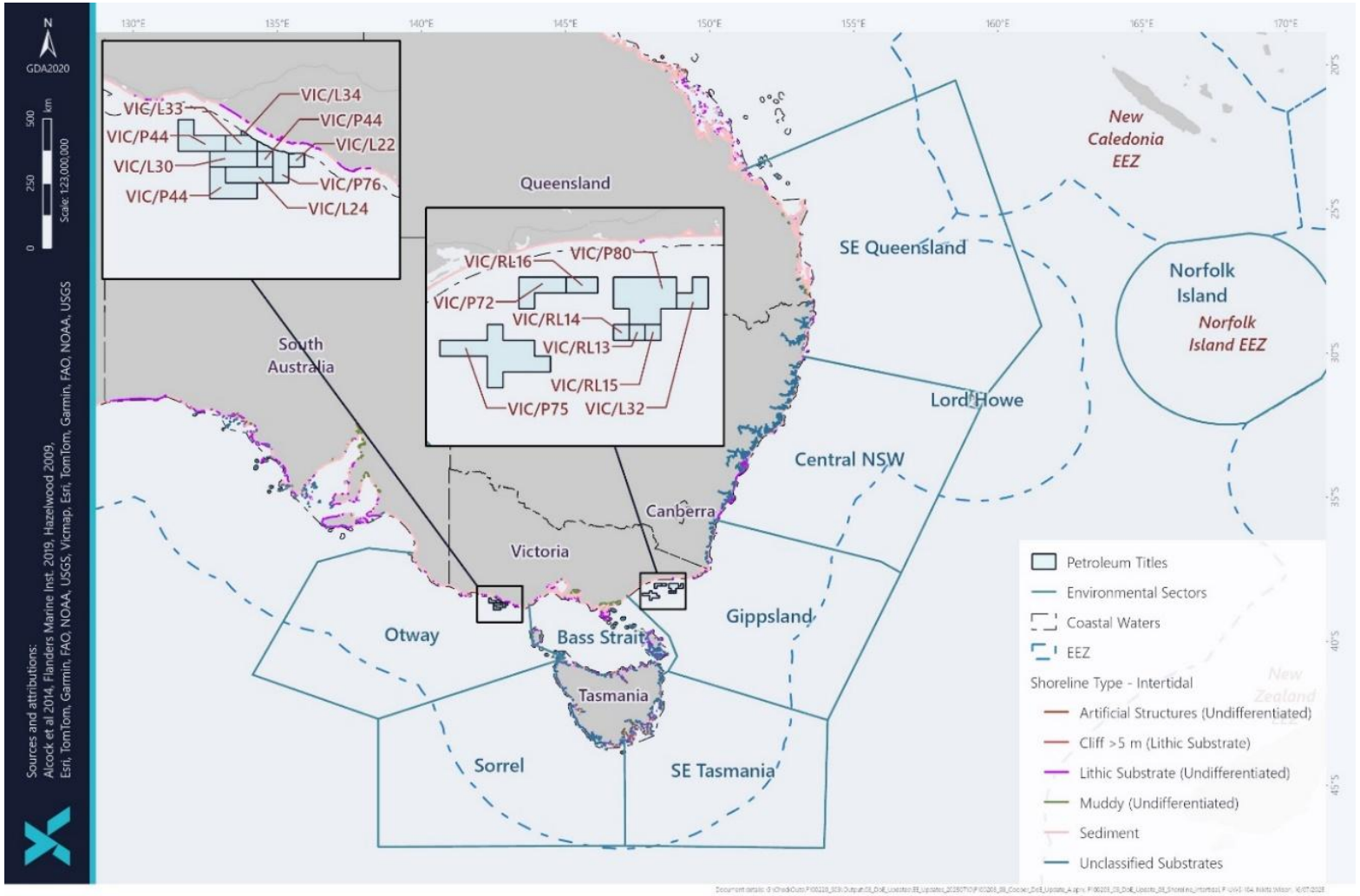


Figure 3-3: Shoreline Types (Intertidal) and Shoreline Exposure within the Environmental Sectors

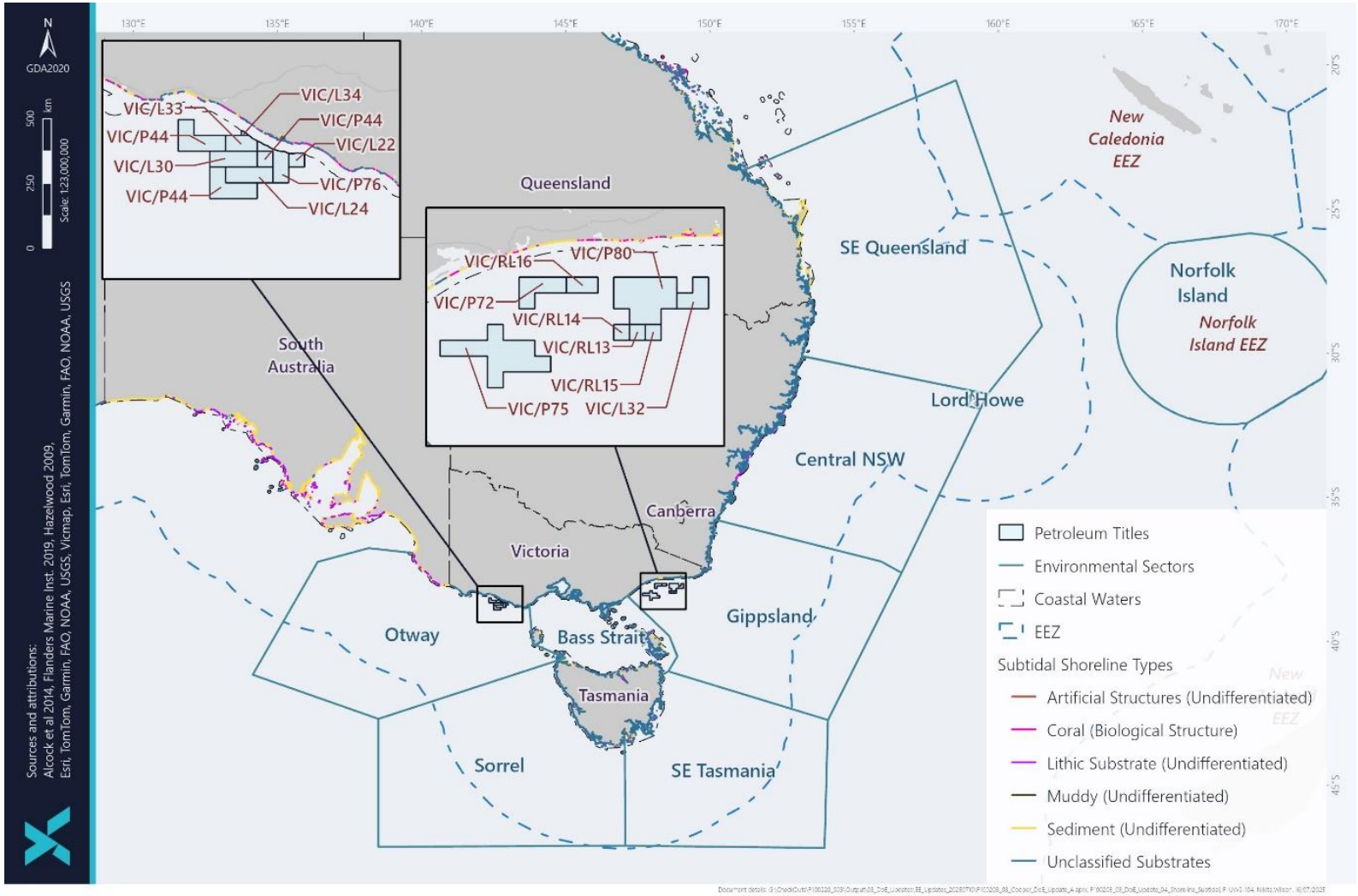


Figure 3-4: Shoreline Types (Subtidal) and Shoreline Exposure within the Environmental Sectors

3.2 Mangroves

Mangroves have been recorded in all Australian coastal states except Tasmania (Table 3-2, Figure 3-5). Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al., 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie et al., 2006). The 'Mangrove Dominated' habitat class includes areas with greater than 10% coverage of mangroves (Mount and Bricher, 2008; OzCoasts, 2015b). The mangroves in Victoria, found mostly along sheltered sections of the coast within inlets or bays, are the most southerly extent of mangroves found in the world (MESA, 2015). One species of mangrove, the white or grey mangrove (*Avicennia marina*) is the only species found in Victoria and is known to occur at Western Port and Corner Inlet, and also at larger estuaries like the Yarran and Barwon Rivers (Figure 3-5). The number of mangrove species increases as they occur further north, with six species found in New South Wales, and 39 in Queensland (MESA, 2015). In New South Wales, mangroves typically occur within tidal estuaries, coastal lakes and bays; but can occur across a diverse range of coastal and estuarine environments in Queensland (MESA, 2015).

The Estuarine, Coastal and Marine (ECM) National Habitat Map project[2] established a nationally consistent set of broad-scale habitat maps for Australia (Mount and Bricher, 2008). For the intertidal and subtidal environment, an area extending between approx. highest astronomical tide (HAT) and the outer limit of the photic benthic zone (approximately the 50-70 m depth contour), habitat classes were attributed using the National Intertidal/Subtidal Benthic (NISB) habitat classification scheme. The 'Mangrove Dominated' habitat class includes areas with greater than 10% coverage of mangroves (Figure 3-5) (Mount and Bricher, 2008; OzCoasts 2015b).

Table 3-2: Presence of Mangroves within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Mangroves (Dominant Habitat)[1]		✓	✓			✓	✓	✓	

[1] Mangrove as a dominant intertidal/subtidal habitat determined from national mapping available from OzCoasts (2015b), and local flora reports for Lord Howe Island (Sheringham et al., 2016).

[2] The Estuarine, Coastal and Marine National Habitat Map project was prepared for Department of Climate Change, and Land & Water Australia (specifically the National Land and Water Resources Audit).

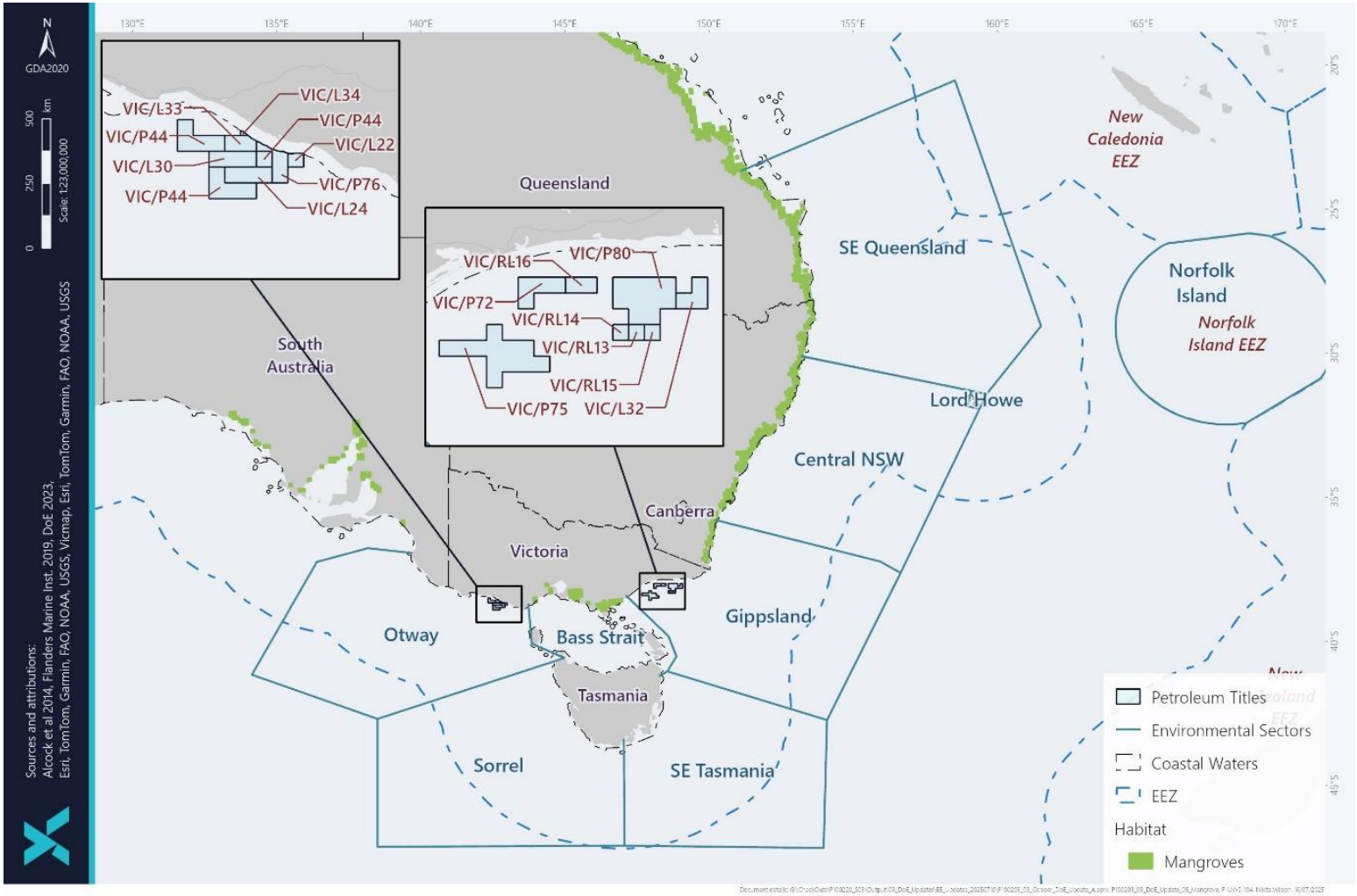


Figure 3-5: Distribution of Mangrove Dominated Habitat within the Photic Zone.
Note: Map shows the 'Mangrove Dominated' habitat from the NISB Habitat Classification Scheme.

3.3 Saltmarshes

Saltmarshes are terrestrial halophytic (salt-adapted) ecosystems that mostly occur in the upper-intertidal zone and are widespread along the coast (Table 3-3, Figure 3-6). The 'Saltmarsh Dominated' habitat class includes areas with greater than 10% coverage of saltmarshes (Mount and Bricher, 2008; OzCoasts 2015b).

Typically, these communities are dominated by dense stands of halophytic plants such as herbs, grasses and low shrubs. The diversity of saltmarsh plant species increases with increasing latitude (in contrast to mangroves). The vegetation in these environments is essential to the stability of the saltmarsh, as they trap and bind sediments. The sediments are generally sandy silts and clays and can often have high organic material content. Saltmarshes provide a habitat for a wide range of both marine and terrestrial fauna, including infauna and epifaunal invertebrates, fish and birds.

Saltmarsh is found along many parts of the Victorian coast, although is most extensive in western Port Phillip Bay, northern Western Port, within the Corner Inlet-Nooramunga complex, and behind the sand dunes of Ninety Mile Beach in Gippsland (Boon et al., 2011) (Figure 3-6). Saltmarsh environments are much more common in northern Australia (e.g., Queensland), compared to the temperate and southern coasts (i.e. New South Wales, Victoria, Tasmania) (Boon et al., 2011).

Table 3-3: Presence of Saltmarsh within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Saltmarsh (Dominant Habitat)[1]	✓	✓	✓	✓	✓	✓	✓	✓	
TEC: Subtropical and Temperate Coastal Saltmarsh[2]	✓	✓	✓	✓	✓	✓	✓		

[1] Saltmarsh as a dominant intertidal/subtidal habitat determined from national mapping available from OzCoasts (2015b), and local flora reports for Lord Howe Island (Sheringham et al., 2016).
[2] Presence of TEC determined from EPBC Protected Matters search reports.

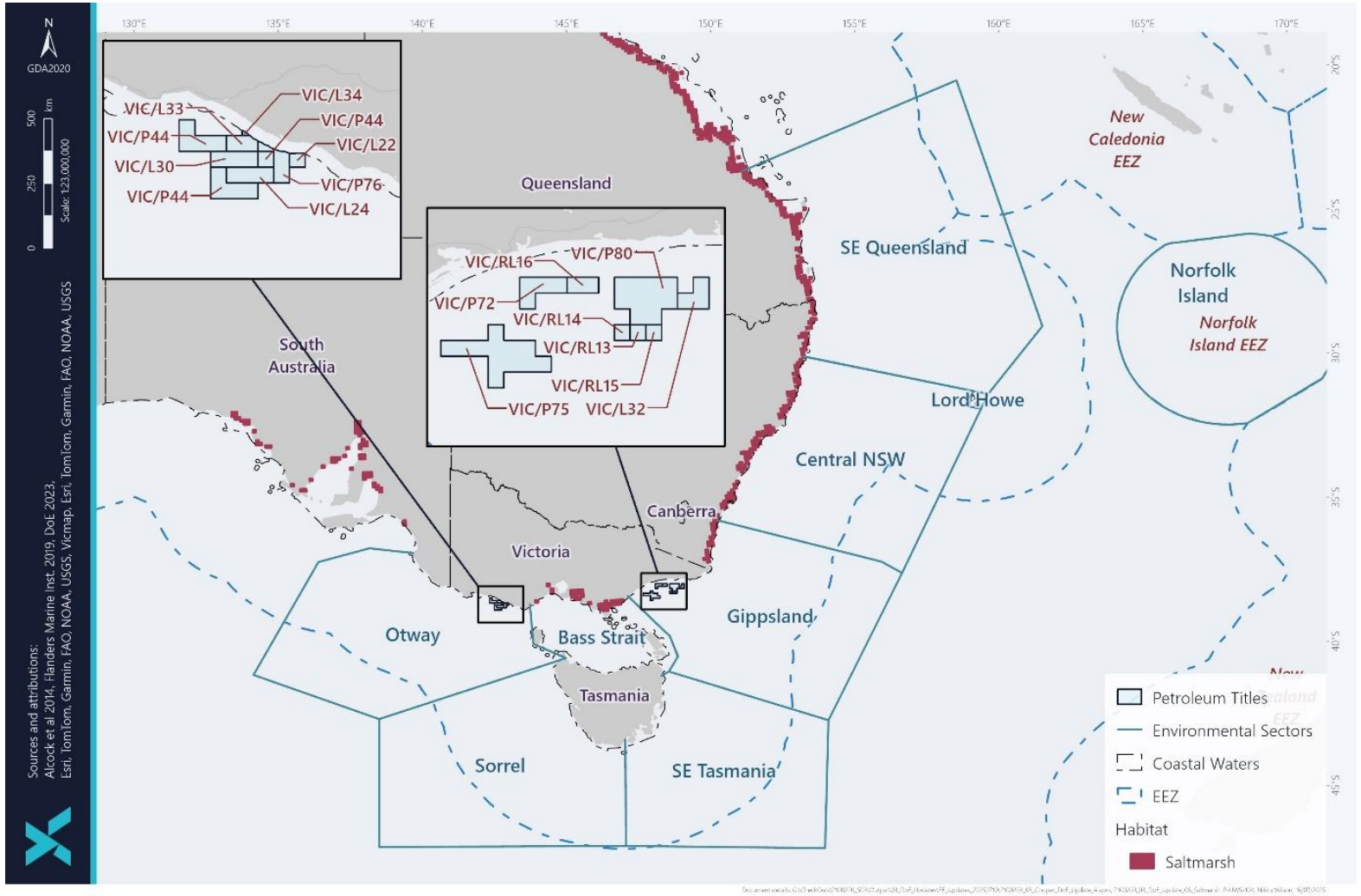


Figure 3-6: Distribution of Saltmarsh Dominated Habitat within the Photic Zone.
Note: Map shows the 'Saltmarsh Dominated' Habitat from the NISB Habitat Classification Scheme.

3.3.1 TEC: Assemblages or Species Associated with Open-coast Salt-Wedge Estuaries of Western and Central Victoria Ecological Community

The Assemblages or species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community is listed as an endangered TEC under the EPBC Act. The ecological community is a collection of native plants, animals and micro-organisms associated with the dynamic salt-wedge estuary systems that occur within the temperate climate, microtidal regime (<2 m), high wave energy coastline of western and central Victoria (DEE, 2018a). The composition of flora, Protista and fauna species may vary across the different estuaries within the ecological community. Invertebrate fauna species include worms, molluscs, crabs with estuarine fish to be considered the apex predators within the ecological community (DEE, 2018a). They contribute high levels of productivity to coastal and nearshore marine environments, and provide important refuge, nursery or breeding habitat for a wide range of invertebrates, fish and birds.

Of critical importance to the survival of the ecological community is a hydrological regime sufficient to ensure salinity stratification; salt-wedge dynamics; connectivity; and ecological function between the estuary, river and ocean (and floodplain wetland components where applicable). Changes in catchment management (e.g., land-use changes that change water flow, sediments, water seasonality etc.) have the potential to, and have previously, affected the survival of the ecological community (DELWP, 2017).

The ecological community currently encompasses 25 estuaries and is defined by the border between South Australia and Victoria and the most southerly point of Wilsons Promontory (refer to Table 3-4 and Figure 3-7) (DEE, 2018a).

Table 3-4: Presence of Assemblages or Species Associated with Open-coast Salt-wedge Estuaries of Western and Central Victoria

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Assemblages or species associated with open-coast salt-wedge estuaries of western and central Victoria	✓	✓							

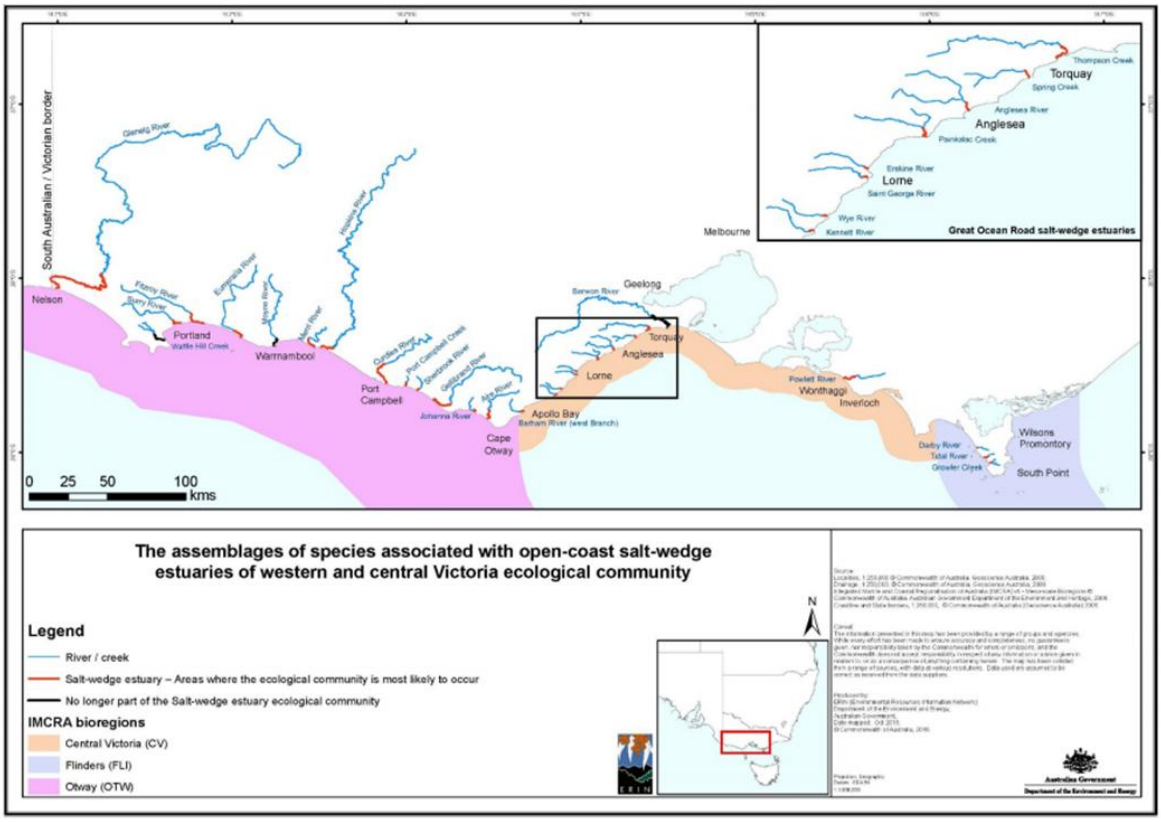


Figure 3-7: Distribution of Assemblages of species associated with Open-coast Salt-wedge Estuaries of Western and Central Victoria ecological community (Source: DEE, 2018a)

3.3.2 TEC: Subtropical and Temperate Coastal Saltmarsh

The 'Subtropical and Temperate Coastal Saltmarsh' is listed as a vulnerable Threatened Ecological Community (TEC) under the EPBC Act, and it's known distribution includes the southern and eastern coasts of Australia (Figure 3-8). The Subtropical and Temperate Coastal Saltmarsh ecological community occurs within a relatively narrow margin along the Australian coast, within the subtropical and temperate climatic zones; and includes coastal saltmarsh occurring on islands within these climatic zones (Threatened Species Scientific Committee (TSSC), 2013a). The physical environment for the ecological community is coastal areas under regular or intermittent tidal influence (TSSC, 2013a).

The ecological community consists mainly of salt-tolerant vegetation (halophytes) including grasses, herbs, sedges, rushes and shrubs (TSSC, 2013a). Many species of non-vascular plants are also found in saltmarsh, including epiphytic algae, diatoms and cyanobacterial mats (TSSC, 2013a). The ecological community is inhabited by a wide range of infaunal and epifaunal invertebrates, and temporary inhabitants such as prawns, fish and birds (and can often constitute important nursery habitat for fish and prawn species) (TSSC, 2013a). Insects are also abundant and an important food source for other fauna, with some species being important pollinators (TSSC, 2013a). The dominant marine residents are benthic invertebrates, including molluscs and crabs that rely on the sediments, vascular plants, and algae, as providers of food and habitat across the intertidal landscape (TSSC, 2013a).

The key threats affecting the ecological community include clearing and fragmentation, infilling, altered hydrology/tidal restriction, invasive species, climate change, mangrove encroachment,

damage from recreational activities, pollution (including oil spills), eutrophication, acid sulphate soils, grazing, insect control, salt and other mining activities, and inappropriate fire regimes (TSSC, 2013a).

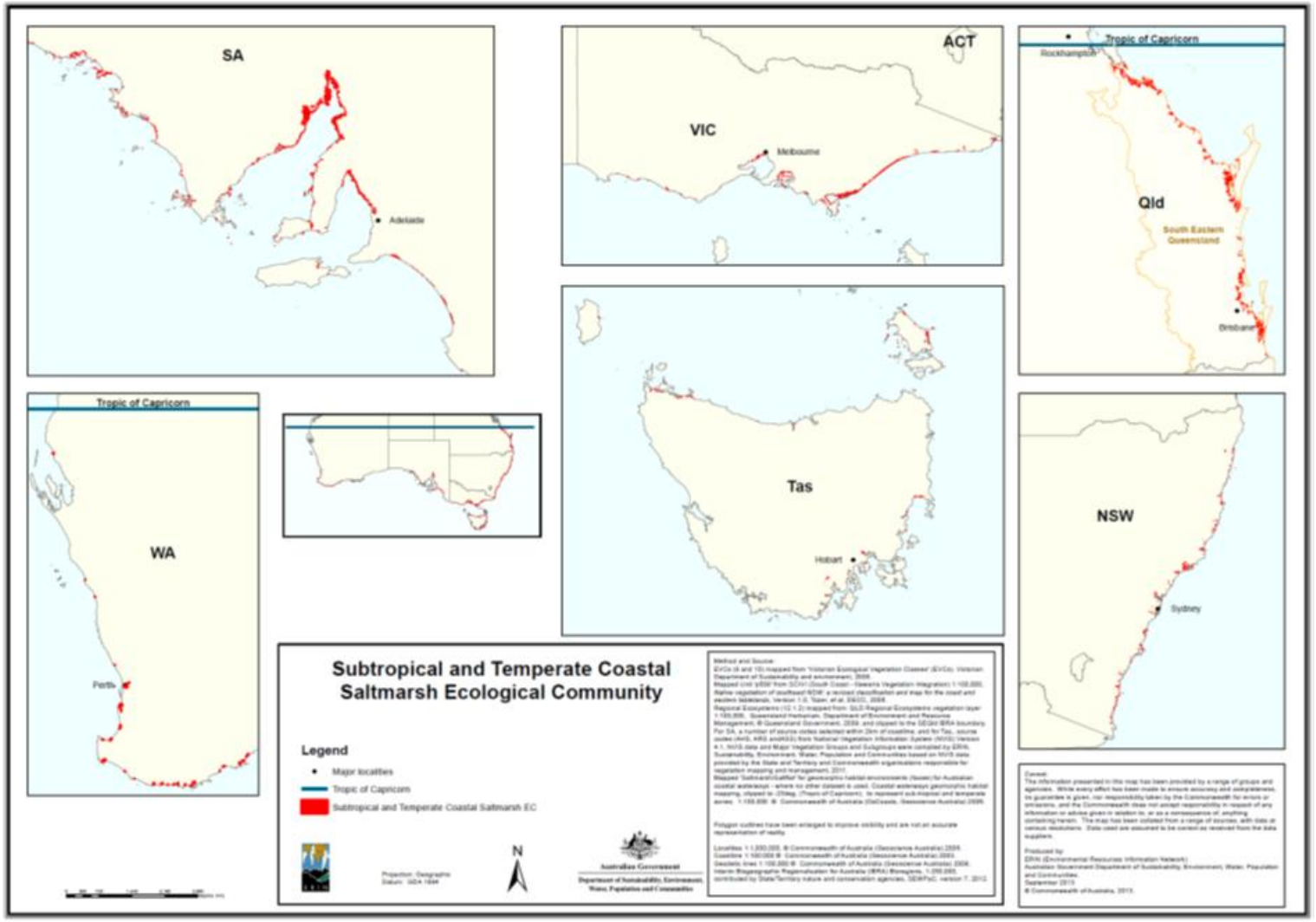


Figure 3-8: Distribution of the TEC Subtropical and Temperate Coastal Saltmarsh (Source: TSSC, 2013a)

3.4 Wetlands

3.4.1 TEC: Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community

The Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community is listed as an endangered TEC under the EPBC Act. The ecological community occurs in sub-tropical, sub-humid and temperate climate zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales (Table 3-5, Figure 3-9, Figure 3-10, and Figure 3-11). The TEC is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands, and estuarine fringes where soils are occasionally saturated, water-logged, or inundated (DEE, 2018b).

The Coastal Swamp Oak Forest is often found in association with other vegetation types such as coastal saltmarsh, mangroves, freshwater wetlands, littoral rainforests or swamp sclerophyll forests. The vegetation of the Coastal Swamp Oak Forest provides diverse habitat values and is a source of food for a wide range of fauna, particularly the crevices and hollows within older trees. The ecological community supports a range of fauna and flora located coastal catchments at elevations <20 m above sea level. Many fauna species within the ecological community are listed as threatened under State and/or Commonwealth legislations (DEE, 2018b).

Table 3-5: Presence of Coastal Swamp Oak within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community			✓			✓	✓		

[1] Presence of TEC determined from EPBC Protected Matters search reports.

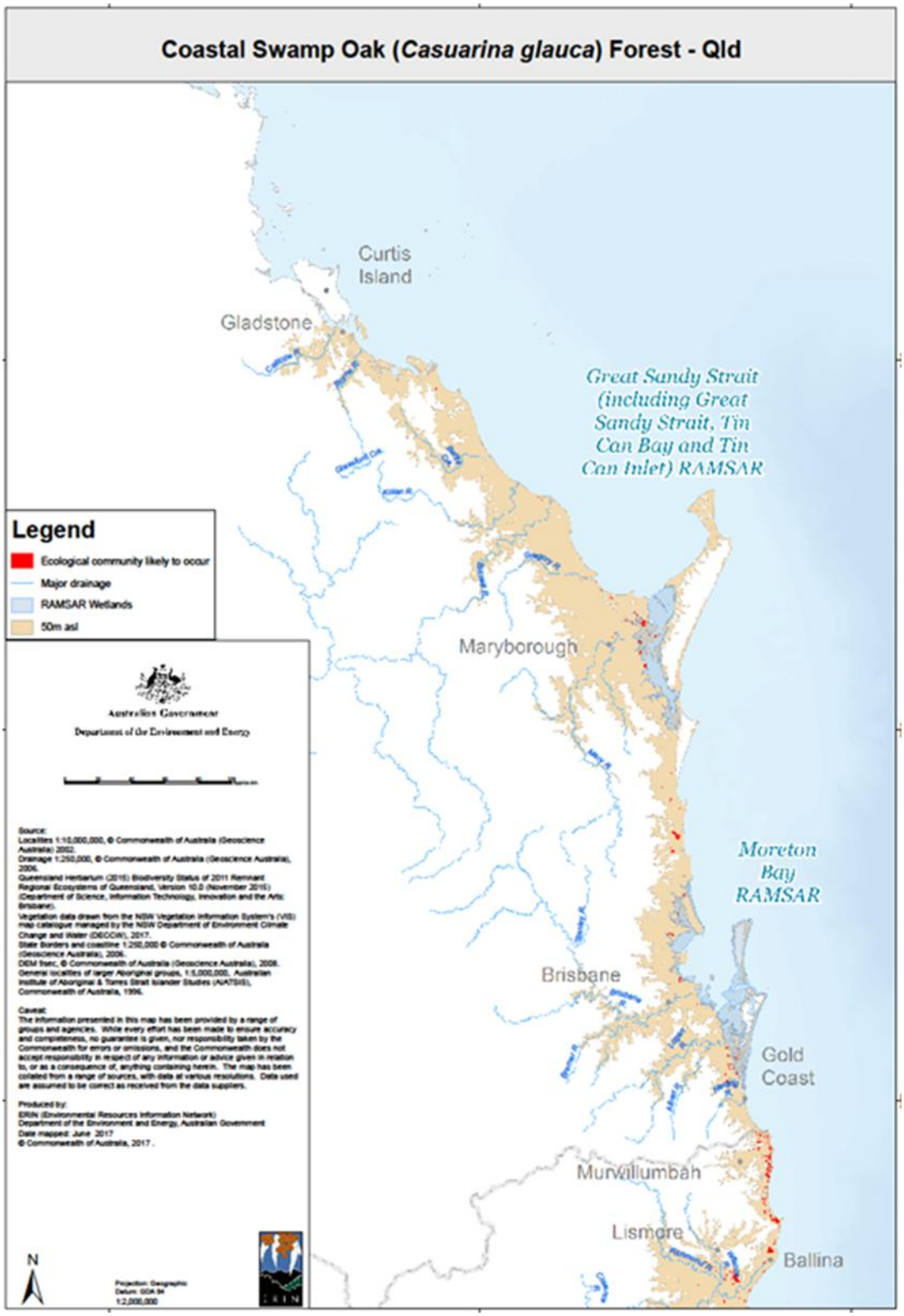


Figure 3-9: Estimated Distribution of the Coastal Swamp Oak (Casuarina glauca) Forest – QLD (Source: DEE, 2018b)

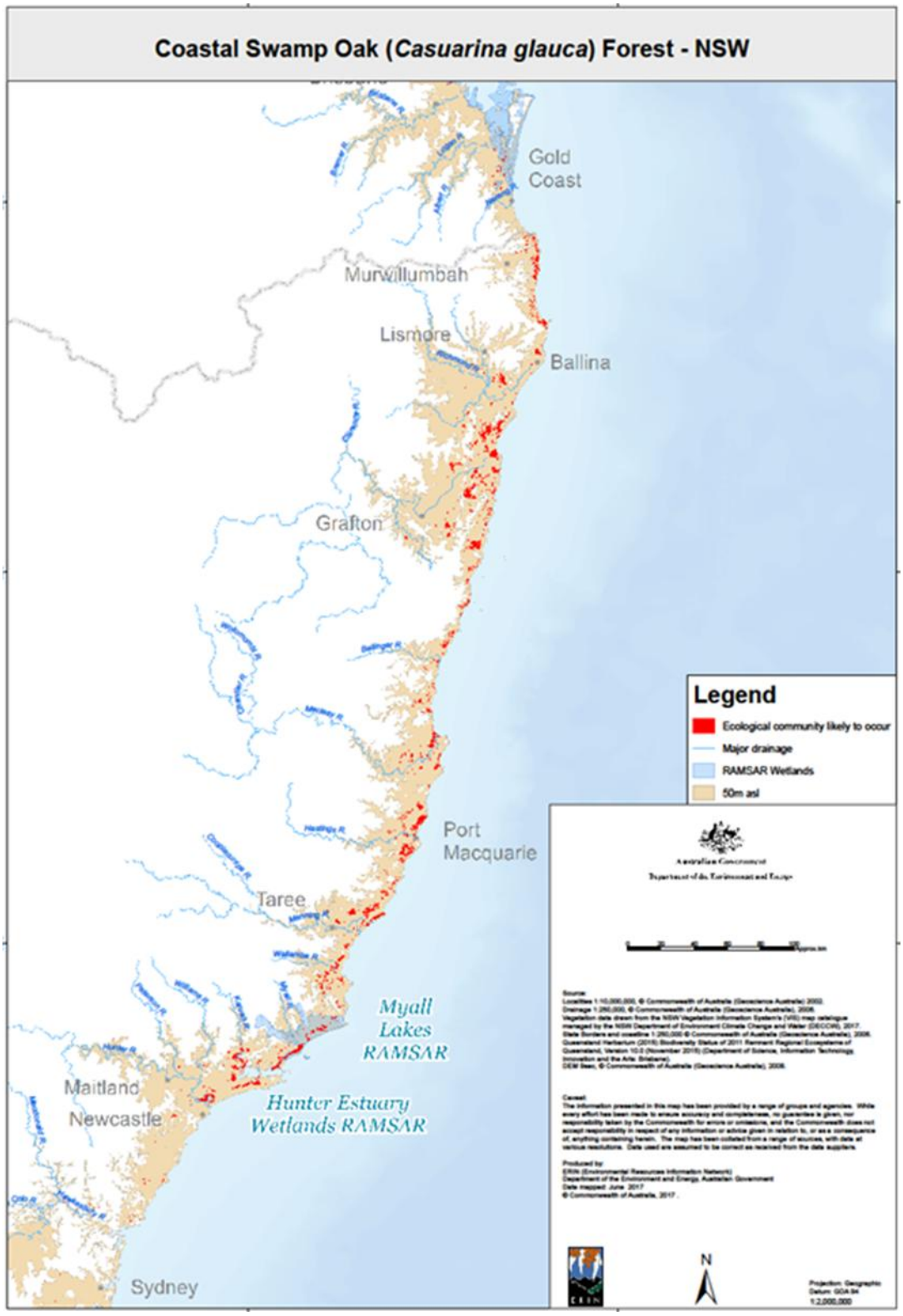


Figure 3-10:Estimated Distribution of the Coastal Swamp Oak (Casuarina glauca) forest – NSW (1) (Source: DEE, 2018b)

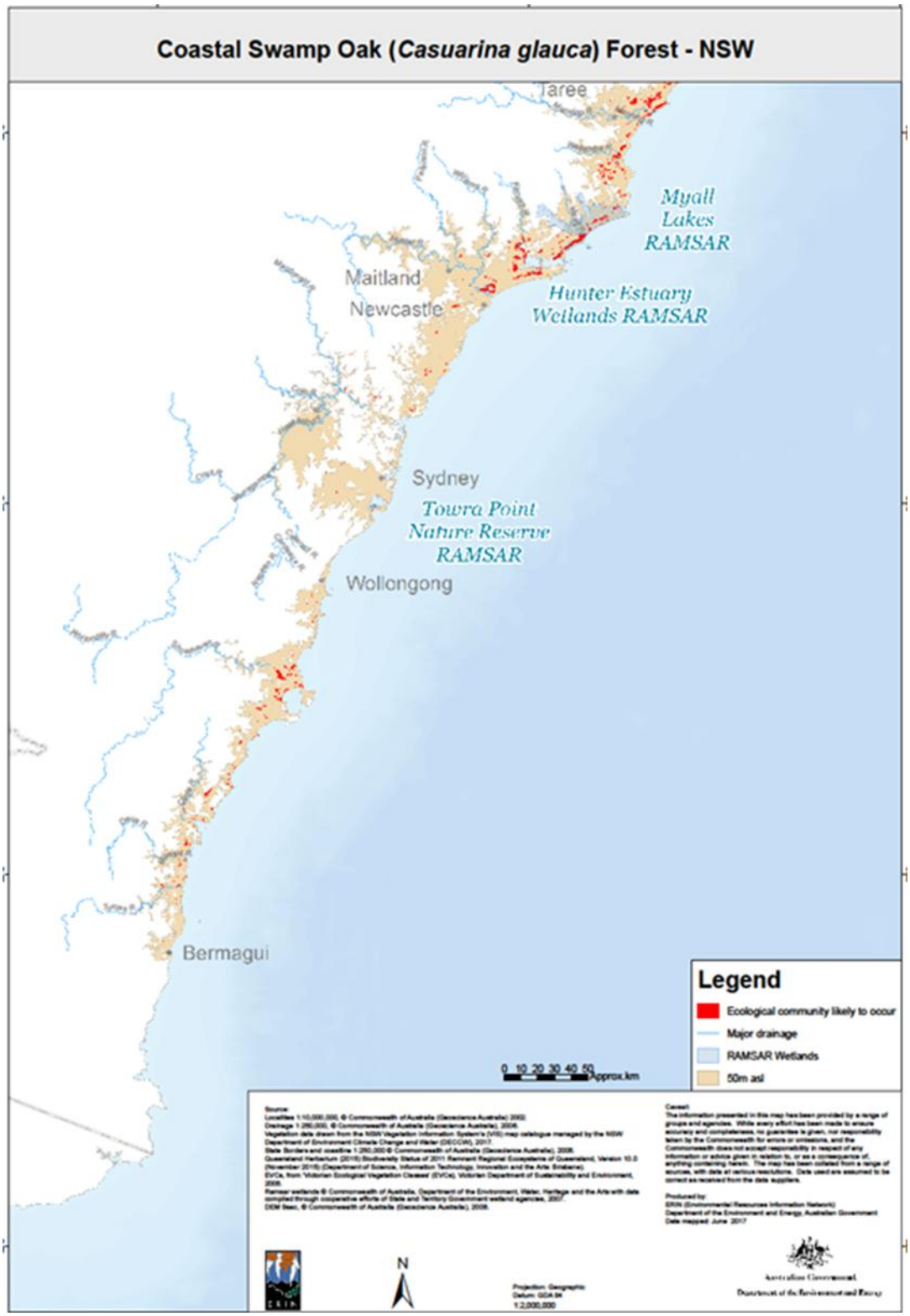


Figure 3-11: Estimated Distribution of the Coastal Swamp Oak (Casuarina glauca) forest – NSW (2) (Source: DEE, 2018b)

3.4.2 TEC: Karst Springs and Associated Alkaline Fens of the Naracoorte Coastal Plain Bioregion

The Karst springs and associated alkaline fens of the Naracoorte Coastal Plain Bioregion is listed as an endangered TEC under the EPBC Act. The ecological community includes plants, animals, and other organisms associated with a groundwater dependant ecosystem that occurs in association with the Tertiary limestone Gambier Karst Province of the Otway Basin on coastal, low-lying areas. The primary defining features of the TEC are the underlying limestone geology, predominantly karst fed (alkaline) springs, soaks, pools, or streams, and fringing fens (herblands, peatlands, sedgelands and/or shrubland vegetation) (DAWE, 2020a).

The Karst Springs and alkaline fens are located in the Gambier Karst Province of the Otway Basin in south east South Australia and south west Victoria (Figure 3-12). Known occurrences of the ecological community are scattered across the near-coastal areas from near Beachport in South Australia to west of Portland Victoria (DAWE, 2020) (Table 3-6).

The TEC occurs near the boundary between two major Australia biogeographic regions: the temperate southern and eastern Australian Bassian region and the semi-arid inland Eyrean region. The Karst springs and alkaline fens provide shelter, breeding, nesting habitats and other resources for a range of aquatic, terrestrial and volant vertebrates and invertebrates (DAWE, 2020).

The Boandik and Gunditjmara people have a special connection and affinity with many of the places and species associated with the Karst springs and alkaline fens. The Karst springs and alkaline fens are home to important Totemic species as well as resources that have been sustained Indigenous people for thousands of years (DAWE, 2020a).

The key threats affecting the ecological community include: hydrological changes, vegetation clearance, habitat loss and fragmentation, invasive and introduced species and diseases, climate change, grazing, change in fire regimes and unregulated recreational disturbance.

Table 3-6: Presence of Karst Springs and Associated Alkaline Fens within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Karst springs and associated alkaline fens of the Naracoorte coastal plain bioregion	✓								

[1] Presence of TEC determined from EPBC Protected Matters search reports.

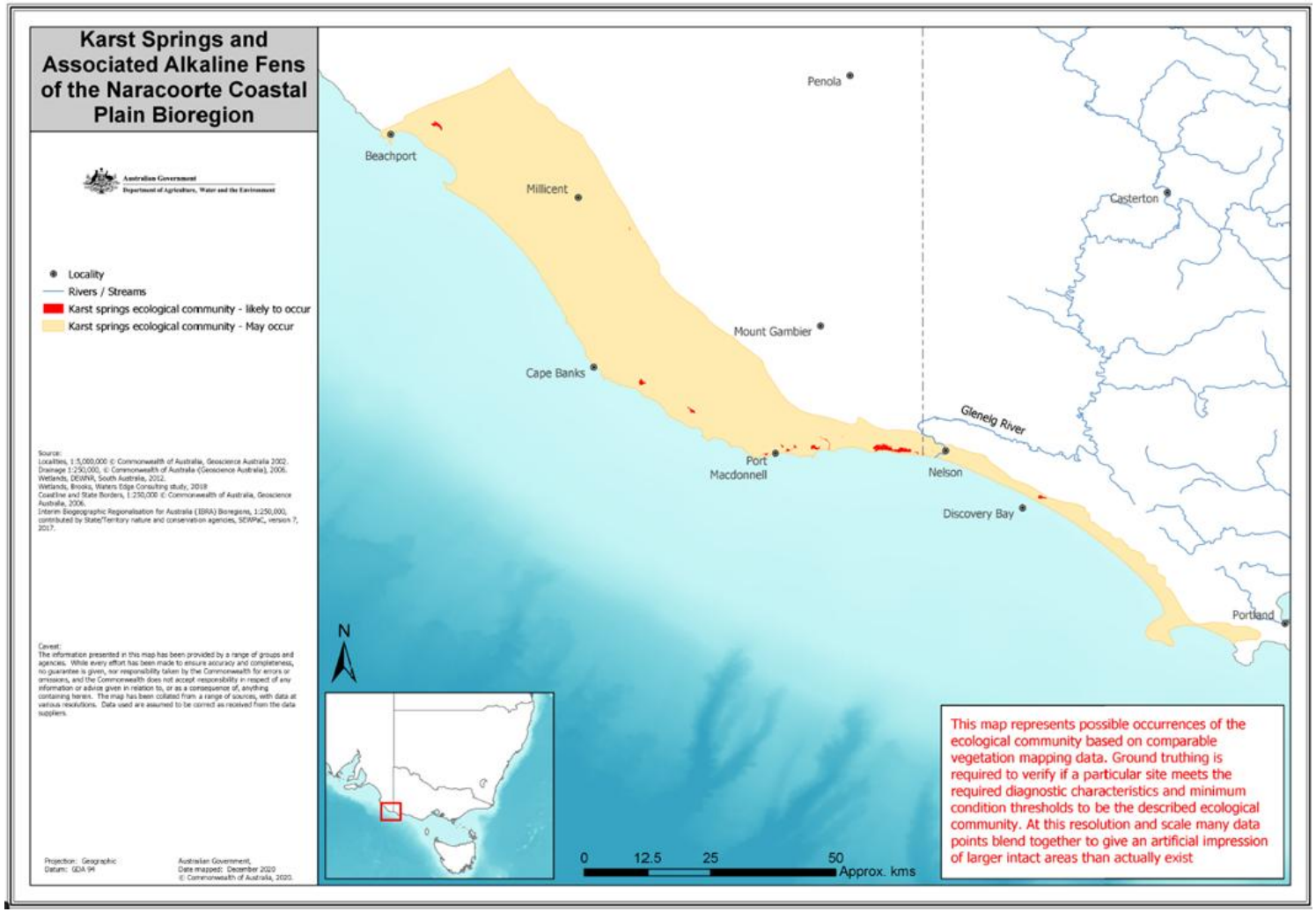


Figure 3-12: Distribution of the TEC Karst Springs and Associated Alkaline Fens of the Naracoorte Coastal Plain Bioregion (Source: DAWE, 2020a)

3.5 Coastal Vine Thickets

3.5.1 TEC: Littoral Rainforest and Coastal Vine Thickets of Eastern Australia

The 'Littoral Rainforest and Coastal Vine Thickets of Eastern Australia' is listed as a critically endangered TEC under the EPBC Act. The ecological community is a complex of rainforest and coastal vine thickets on the east coast of Australia influenced by its proximity to the sea; and provides habitat for over 70 threatened plants and animals and also provides an important buffer to coastal erosion and wind damage (TSSC, 2015a; DEWHA 2009a).

The ecological community occurs within two kilometres of the eastern coastline of Australia, including offshore islands, from Princess Charlotte Bay, Cape York Peninsula to the Gippsland Lakes in Victoria (TSSC, 2015a) (Table 3-7, Figure 3-13). It occurs as a series of naturally disjunct and localised stands, on a range of landforms which have been influenced by coastal processes including dunes and flats, headlands and sea-cliffs (DEWHA, 2009a).

Table 3-7: Presence of Coastal Vine Thickets within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Littoral Rainforest and Coastal Vine Thickets of Eastern Australia[1]			✓			✓	✓		

[1] Presence of TEC determined from EPBC Protected Matters search reports.

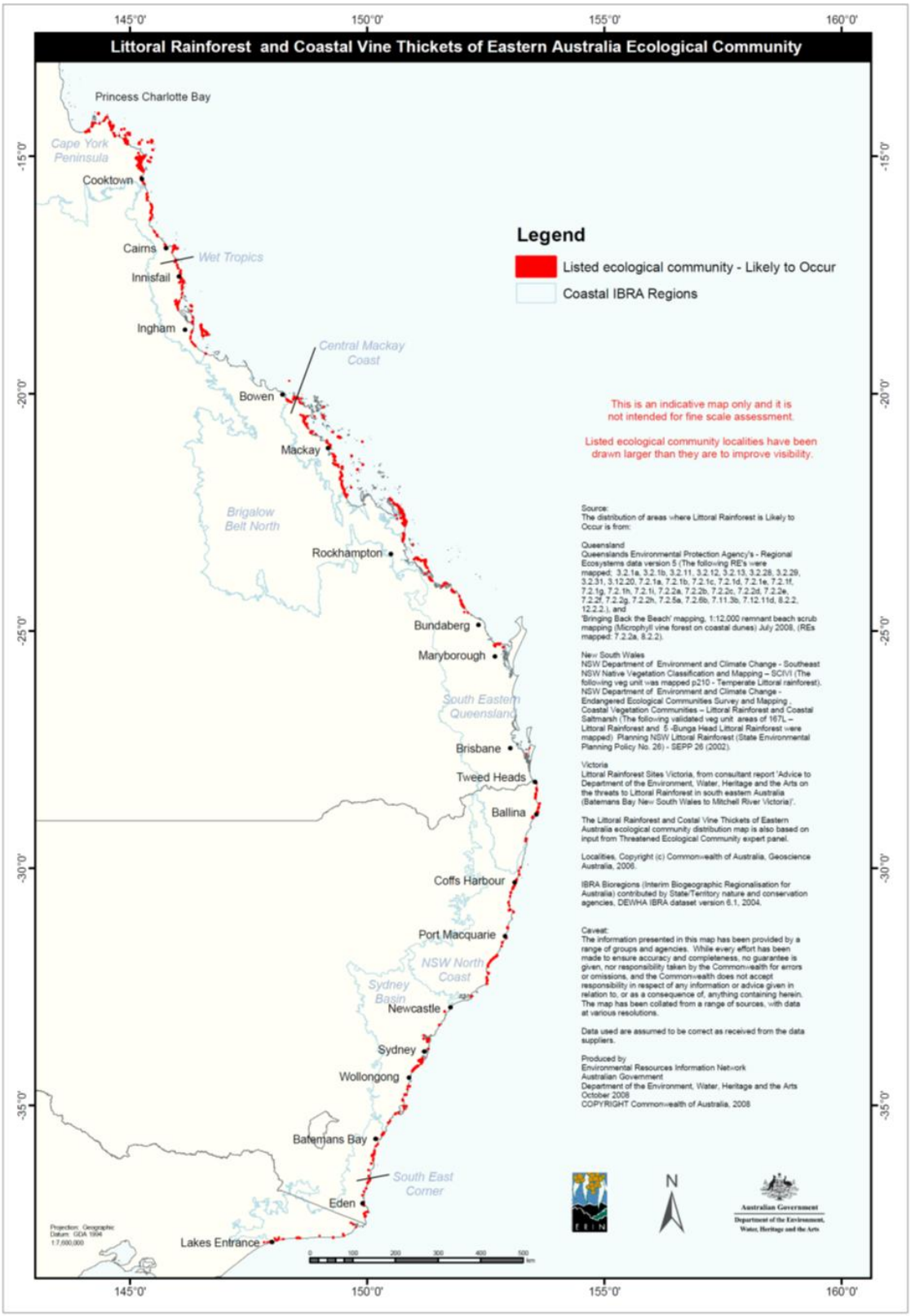


Figure 3-13: Distribution of the TEC Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (Source: DEWHA, 2009a)

3.6 Woodland and Grasslands

3.6.1.1 TEC: Lowland Grassy Woodland in the South East Corner Bioregion

The Lowland Grassy Woodland in the South East Corner Bioregion was listed as critically endangered in 2007 (Figure 3-14). This and is located within the Environmental Sectors (Table 3-8). This TEC once covered fertile rolling hills and coastal river valleys of south-eastern NSW, with strongholds in the Bega, Cobargo and Moruya areas. It occurs on rain shadow landscapes below 500 m elevation, mainly on fertile granite and basalt-derived soils, and now persists only in small remnants on private land, roadsides, and reserves, having been extensively cleared for agriculture and development. The community is typically a grassy woodland or open forest with high species diversity in its ground layer of grasses and forbs, which vary with fire, grazing, and seasonal conditions. It provides critical habitat for a wide range of fauna, including kangaroos, wallabies, possums, gliders, bats, reptiles, and woodland birds, some of which are threatened, such as the scarlet robin, diamond firetail, barking owl, and koala. Despite its fragmentation, the ecological community supports important biodiversity values and plays a vital role in regional connectivity between remnant habitats (DSEWPaC, 2013g).

Table 3-8: Presence of Lowland Grassy Woodland in the South East Corner Bioregion within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Lowland Grassy Woodland in the South East Corner Bioregion [1]			✓			✓			

[1] Presence of TEC determined from EPBC Protected Matters search reports.

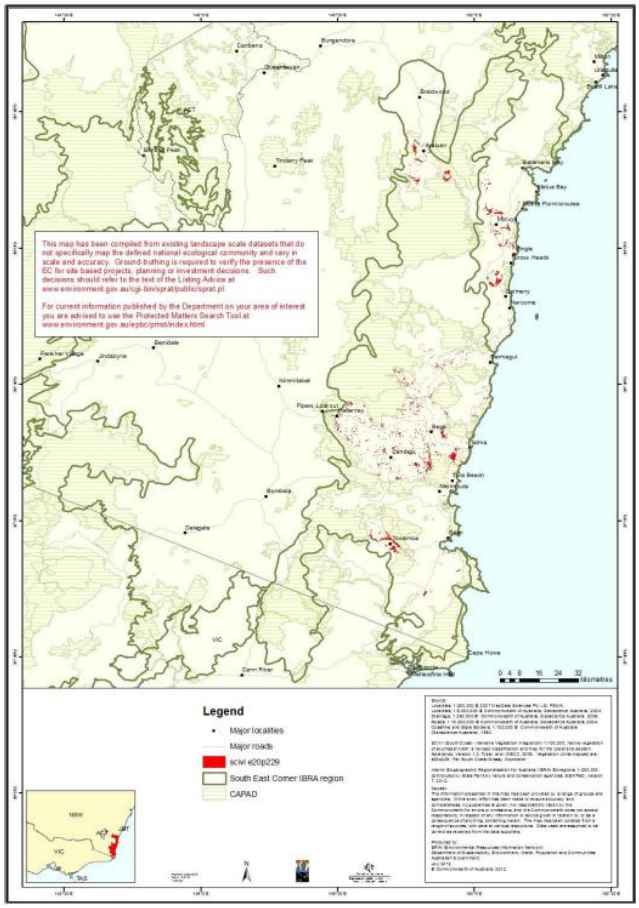


Figure 3-14: Distribution map for the Lowland Grassy Woodland in the South East (Source: DSEWPaC, 2013g).

3.6.1.2 TEC: Natural Damp Grassland of the Victorian Coastal Plains

The Natural Damp Grassland of the Victorian Coastal Plains (Figure 3-15), listed as critically endangered, and is located within the Environmental Sectors (Table 3-9). This TEC is a grassland to open grassy woodland ecosystem restricted to the South East Coastal Plain bioregion of Victoria, mainly within the Gippsland Plain with some remnants on the Otway Plain. It occurs on poorly drained, heavy silty–loamy soils often derived from floodplain or swamp deposits, which are seasonally damp or waterlogged. The community is dominated by tussock grasses, such as *Themeda triandra* (kangaroo grass) on drier sites and *Poa labillardierei* on wetter sites, with a diverse ground layer of graminoids and forbs that varies with season and soil moisture. Scattered trees may occur, typically damp-site eucalypts such as manna gum and swamp gum, alongside non-eucalypt species like drooping she-oak, blackwood, and black wattle, with silver banksia historically prominent. The ecological community provides important habitat for native fauna, including the endangered southern brown bandicoot and vulnerable growling grass frog, and supports biodiversity connectivity with adjacent grassy woodlands and wetlands, despite now being highly fragmented and limited in extent (DoE, 2015f).

Table 3-9: Natural Damp Grassland of the Victorian Coastal Plains within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Natural Damp Grassland of the Victorian Coastal plains[1]		✓	✓						

[1] Presence of TEC determined from EPBC Protected Matters search reports.

Figure 3-15: Distribution of Natural Damp Grassland of the Victorian Coastal Plains (This map has been compiled from datasets with a range of scales and quality. Species or ecological community distributions included in this map are only indicative and not meant for local assessment (Source: DoE, 2015f)

3.6.1.3 TEC: River-Flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales And Eastern Victoria

The River-Flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales And Eastern Victoria (Figure 3-16), listed as critically endangered, and is located within the Environmental Sectors (Table 3-10). This TEC occurs on alluvial soils across floodplains, riverbanks, riparian zones, and depressions from Sale in Victoria to north of Newcastle in New South Wales. It typically forms tall open forests to woodlands, sometimes reaching over 40 m in height, with a canopy dominated by multiple eucalypt species and a diverse understorey of small trees, shrubs, vines, grasses, forbs, sedges, and ferns. The community varies in density and structure depending on local rainfall, soil type, and flooding regimes, and often occurs in mosaics with other floodplain forests, wetlands, and lowland woodlands. It provides critical habitat for a wide variety of fauna, including birds, mammals, reptiles, amphibians, and invertebrates, which contribute to pollination, seed dispersal, predator-prey dynamics, and soil processes. Despite its ecological richness and importance, much of this community has been disturbed or cleared, leaving fragmented remnants of high conservation value (DAWE, 2020b).

Table 3-10: River-Flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales And Eastern Victoria within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: River-Flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales And Eastern Victoria[1]			✓			✓			

[1] Presence of TEC determined from EPBC Protected Matters search reports.

Figure 3-16: Distribution of River-Flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales And Eastern Victoria (This map has been compiled from datasets with a range of scales and quality. Species or ecological community distributions included in this map are only indicative and not meant for local assessment (Source: DAWE, 2020b)

3.6.1.4 TEC: Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (Eucalyptus ovata / E. brookeriana)

The Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (*Eucalyptus ovata / E. brookeriana*) (Figure 3-17), listed as critically endangered, and is located within the Environmental Sectors (Table 3-11). This TEC is dominated by black gum (Eucalyptus ovata) or Brookers gum (*E. brookeriana*), a nationally significant ecological community, occur on low-lying damp and poorly draining sites across Tasmania, including river flats, valley bottoms, and moist rocky soils. These forests and woodlands play a vital role in maintaining water quality and quantity, preventing erosion and salinity, supporting healthy soils, and providing habitat for diverse native plants and animals. Structurally ranging from open woodland to forest, they feature understoreys of shrubs, sedges, or grasses, with composition influenced by soil fertility, hydrology, and disturbance history. The community is critical for many species, notably the critically endangered swift parrot, which relies on black gum blossoms as a key nectar source during poor blue gum flowering years and nests in tree hollows within these habitats. In addition to biodiversity values, these forests and woodlands deliver significant ecosystem services, including agricultural support, stock shelter, and

recreation, while their resilience underpins long-term adaptation to climate change and environmental disruption (DEE, 2019).

Table 3-11: Presence of Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (Eucalyptus ovata / E. brookeriana) within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (*Eucalyptus ovata / E. brookeriana*)[1]	✓	✓		✓	✓				

[1] Presence of TEC determined from EPBC Protected Matters search reports.

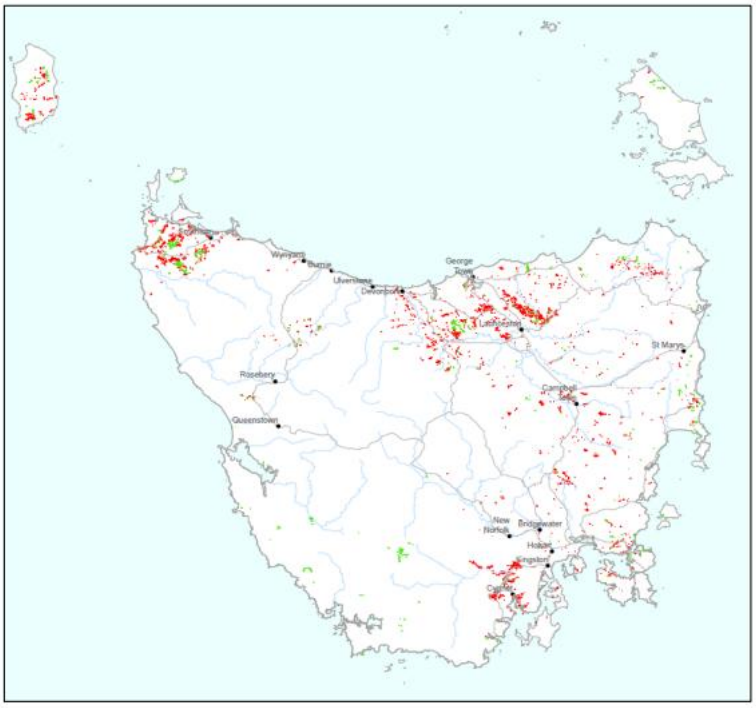


Figure 3-17: Patches of the Black gum – Brookers gum forest/woodland ecological community that are included in conservation tenure (green polygons) or not reserved (red polygons)(Source: DEE, 2019)

3.6.1.5 TEC: Tasmanian White Gum (Eucalyptus viminalis) Wet Forest

The Tasmanian White Gum (*Eucalyptus viminalis*) Wet Forest (Figure 3-18), listed as critically endangered, and is located within the Environmental Sectors (Table 3-12). This TEC features a tall, wet sclerophyll eucalypt forest found mainly in northern and central Tasmania, particularly within the Northern Slopes and Ben Lomond bioregions. It typically occurs on fertile, well-drained soils derived from basalt, alluvium, and other nutrient-rich substrates, in areas with high rainfall and infrequent fire. The canopy is dominated by white gum, often exceeding 60 m in height on fertile

sites, with dense understoreys of broad-leaved shrubs, ferns, graminoids, or, in long unburnt areas, rainforest species. Natural regeneration is disturbance-driven, usually following wildfire, resulting in predominantly even-aged stands. Old-growth examples are now very rare, with most remaining areas consisting of mature regrowth forests (DAWE, 2021b).

This ecological community provides diverse, multi-storied habitat that supports a wide range of fauna, including threatened species such as the Tasmanian wedge-tailed eagle, grey goshawk, giant freshwater crayfish, and the endangered forty-spotted pardalote, which has a strong ecological link with *E. viminalis*. These forests play important roles in nutrient cycling, seed dispersal, and soil turnover, while also holding cultural significance for Indigenous Tasmanians and contemporary value as iconic landscapes. The towering "White Knights" of the Evercreech Regional Reserve, some over 90 m tall, highlight the ecological and cultural importance of this community (DAWE, 2021b).

Table 3-12: Presence of Tasmanian White Gum (Eucalyptus viminalis) Wet Forest within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
TEC: Tasmanian White Gum (*Eucalyptus viminalis*) Wet Forest[1]	✓	✓		✓	✓				

[1] Presence of TEC determined from EPBC Protected Matters search reports.

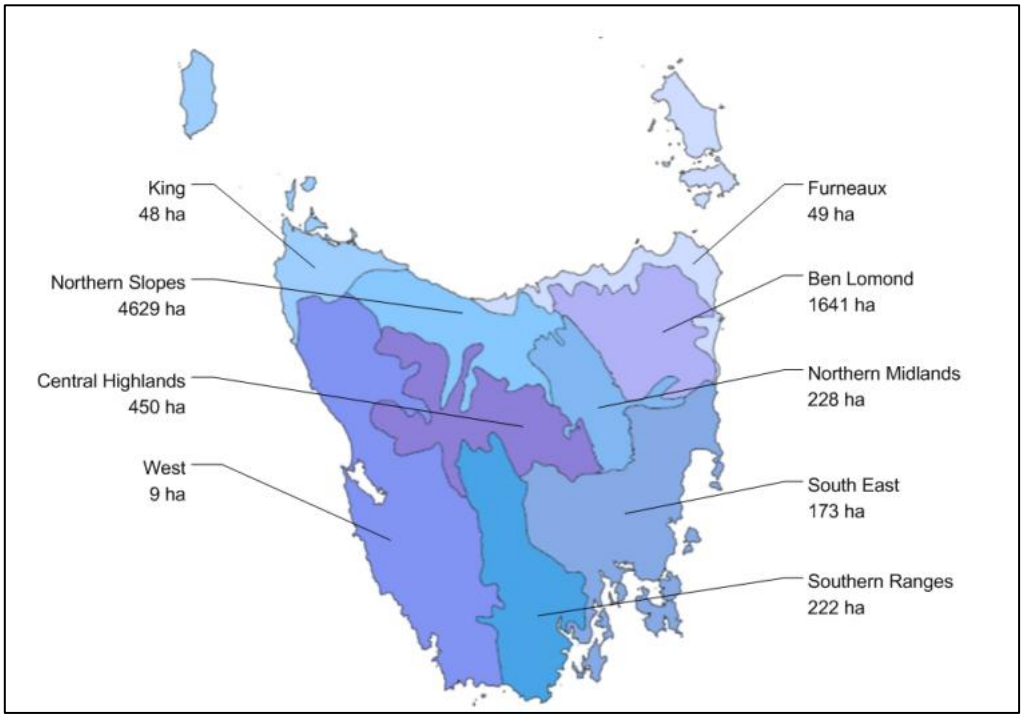


Figure 3-18: Bioregional Distribution of the remaining Tasmanian White Gum (Eucalyptus viminalis) Wet Forest (Source: DAWE, 2021b)

3.7 Soft Sediment

Unvegetated soft sediments are a widespread habitat in both intertidal and subtidal areas, particularly in areas beyond the photic zone. Within the photic zone, this habitat appears more common through southern Australia, than along the Australian east coast (Figure 3-19). The 'Sediment Dominated Habitat' class includes all areas dominated by particles of gravel size or smaller (i.e., including sands and silts) (Figure 3-19) (Mount and Bricher, 2008; OzCoasts 2015b). The biodiversity and productivity of soft sediment habitat varies depending upon depth, light, temperature and the type of sediment present.

The substrate across Bass Strait comprises a variety of sediment types, with sediment particle size associated with tidal currents and wave energy. Near-shore sediments consist of coarse sands with isolated areas of gravels, shells and pebbles; and become progressively finer offshore (Esso, 2009). The inshore seabed of Bass Strait consists of symmetrical, wave-generated sandy ripples, becoming shelly in troughs as the depth increases. Finer, muddy sands occur further offshore in the mid-shelf regions (Esso, 2009).

In the Gippsland Basin, seabed material is predominantly calcium carbonate comprised of calcarenite marls and marine shales (Esso, 2009). The Gippsland Basin is composed of a series of massive sediment flats, interspersed with small patches of reef, bedrock and consolidated sediment, submarine canyons, escarpments and a knoll that juts out from the base of the continental slope (Cooper Energy, 2017). The fine to course sandy plains and areas of shell are only occasionally broken by low ribbons of reef; however, these reefs do not support the large brown seaweeds characteristic of many Victorian reefs but instead are inhabited by resilient red seaweeds and encrusting animals that can survive the sandy environment (Esso, 2009).

A survey undertaken along the Patricia-Baleen pipeline identified four general habitat associations on the seabed (Cooper Energy, 2017):

1. Medium sand and shell grit; extensive areas with pronounced sand waves. Epibiotic was generally sparse to commonly occurring sea pens, occasional sponges and stalked colonial ascidians.
2. Shell accumulations: areas of seabed comprised of old large shells, predominantly bivalves and scallops.
3. Sponge garden; small and distinct area of large sponges and bryozoans at approximately 50 m water depth. Sponges included fans, spheres, massives, cups and fingers. Bryozoans included lace-like corals, concertina fans, perforated rigid sheets and fern-like branches. This suggests that although the seabed is predominantly sand and grit it is stable enough to allow these associations to grow. Sponge gardens attracted schools of jackass morwong, butterfly perch and individual gurnard and leatherjackets.
4. Introduced New Zealand screw shell aggregations; NZ screw shell (*Maoricolpus roseus*) was commonly found at water depths greater than 40 m, sometimes forming dense beds covering 100% of the seabed.

A survey of the Sole pipeline route showed a featureless seabed comprised of clays, silts, sands and gravel, and some consolidated bedded sediments (Cooper Energy, 2018). Extensive demersal fishing in the area may have resulted in modified seabed biota due to trawling and netting activities (CEE, 2003).

In the Otway Basin, seabed surveys were conducted in 2004 to assist the development of the Casino Project (Santos, 2004). The survey identified varying habitats at different depths:

- Shallow environments (2 to 8 m): dominated by sand, patchy sandy reef, and contiguous kelp reef consisting of large areas of hard substrate dominated by large brown algae (bubble weed, *Phyllospora comosa* and bull kelp, *Durvillaea potatorum*).
- Mid-depth environment (8-20 m) is the most extensive and is relatively uniform throughout the region and is dominated by sand.
- Deep environment (20 to 70 m): seabed in this deep environment is characterised by sand or gravelly / rubble and hard platform substrates (Ramboll, 2020).
- Sediment sampling and environmental surveys were conducted to investigate the benthic and epibenthic ecology associated with existing CHN infrastructure in the deep environment (20 – 70m) (Ramboll, 2020). General observations of the survey were that there was very little conspicuous fauna found in the sediment grab samples, which is likely to reflect the relatively course nature of the sediment collected, characteristic of the wider region (Ramboll, 2020).

Scientific surveys have shown that some shallow Victorian sandy environments have the highest levels of animal diversity in the sea ever recorded (Parks Victoria, 2016). For example, in the area around the Ninety Mile Beach Marine National Park in Gippsland more than 600 different marine animal species, many of them very small, have been found within an area of 10 m^2 (Parks Victoria, 2016). Larger animals found in these soft sediment environments in Victoria have included smooth stingray (*Dasyatis brevicaudata*), pipi (*Plebidonax deltoids*), dumpling squid (*Euprymna tasmanica*), common stargazer (*Kathetostoma leave*) and heart urchin (*Echinocardium cordatum*) (Parks Victoria, 2016).

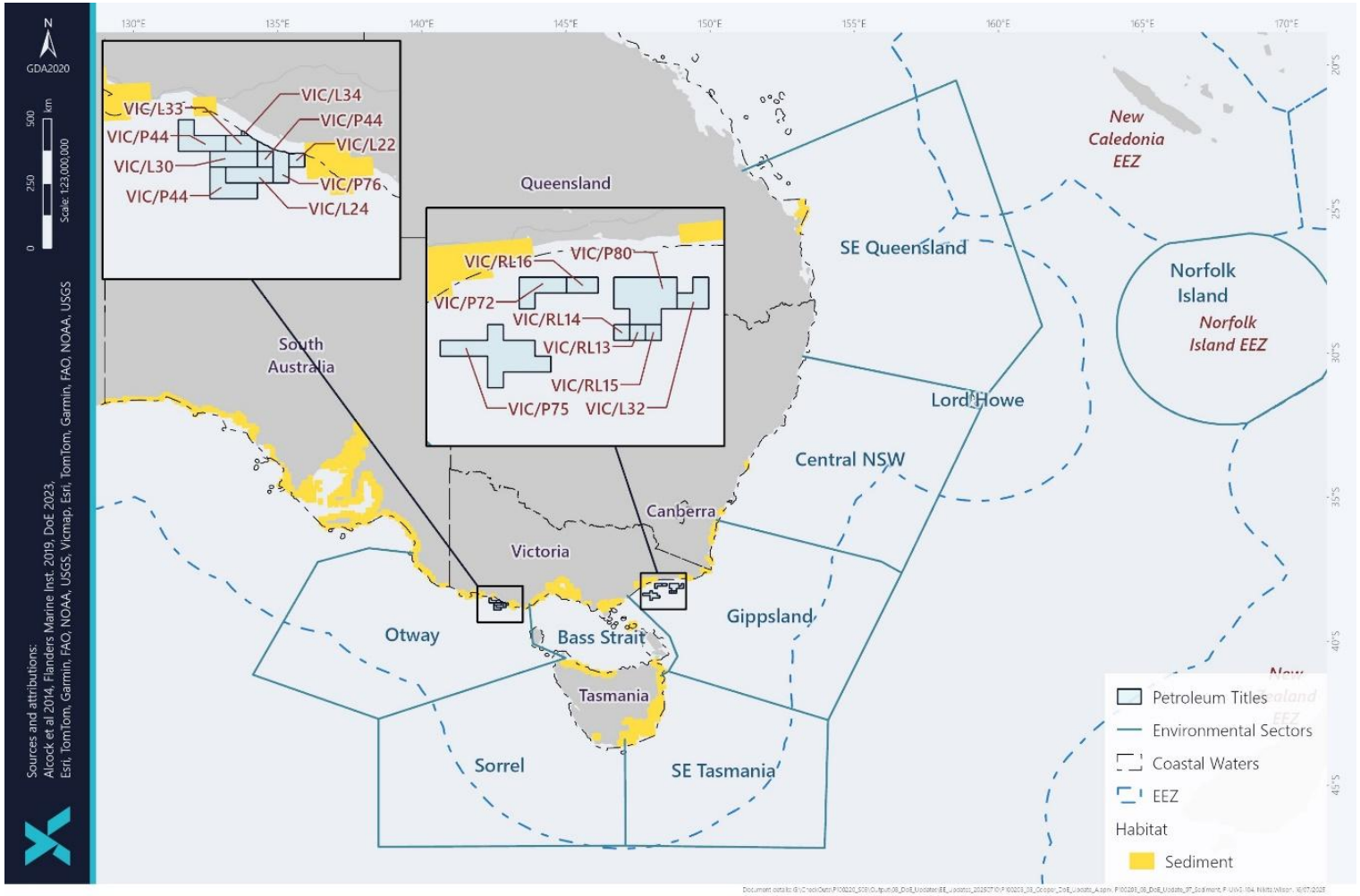


Figure 3-19: Distribution of Sediment Dominated Habitat within the Photic Zone.
Note: Map shows the 'Sediment and Sand Dominated' habitat from the NISB Habitat Classification Scheme.

3.8 Seagrass

Seagrasses are marine flowering plants, with about 30 species found in Australian waters (Huisman, 2000). There is a distinction between tropical and temperate seagrasses, and the approximate latitude for the change occurs at Moreton Bay (southern Queensland, -27° 43' 2.99" S) (Kirkham, 1997). The variation in seagrass species around Australia is shown in Figure 3-20. While seagrass meadows are present throughout southern and eastern Australia (Table 3-13, Figure 3-21), the proportion of seagrass habitat within the south-eastern sector is not high compared to the rest of Australia (in particular with parts of South Australia and Western Australia) (Kirkham, 1997). The mapped 'Seagrass Dominated' habitat class includes areas with greater than 5% coverage of seagrass (Figure 3-21) (Mount and Bricher, 2008; OzCoasts 2015b).

Seagrass generally grows in soft sediments within intertidal and shallow subtidal waters where there is sufficient light and are common in sheltered coastal areas such as bays, lees of islands and fringing coastal reefs (McClatchie et al., 2006; McLeay et al., 2003). Known seagrass meadows within this stretch of coast include Jervis Bay and Botany Bay (New South Wales), Norfolk Bay and Pittwater (south-eastern Tasmania), Corner Inlet, Port Phillip Bay and Western Port Bay (Victoria), and Moreton Bay (Queensland). Seagrass meadows are important in stabilising seabed sediments, and providing nursery grounds for fish and crustaceans, and a protective habitat for the juvenile fish and invertebrates species (Huisman, 2000; Kirkman, 1997).

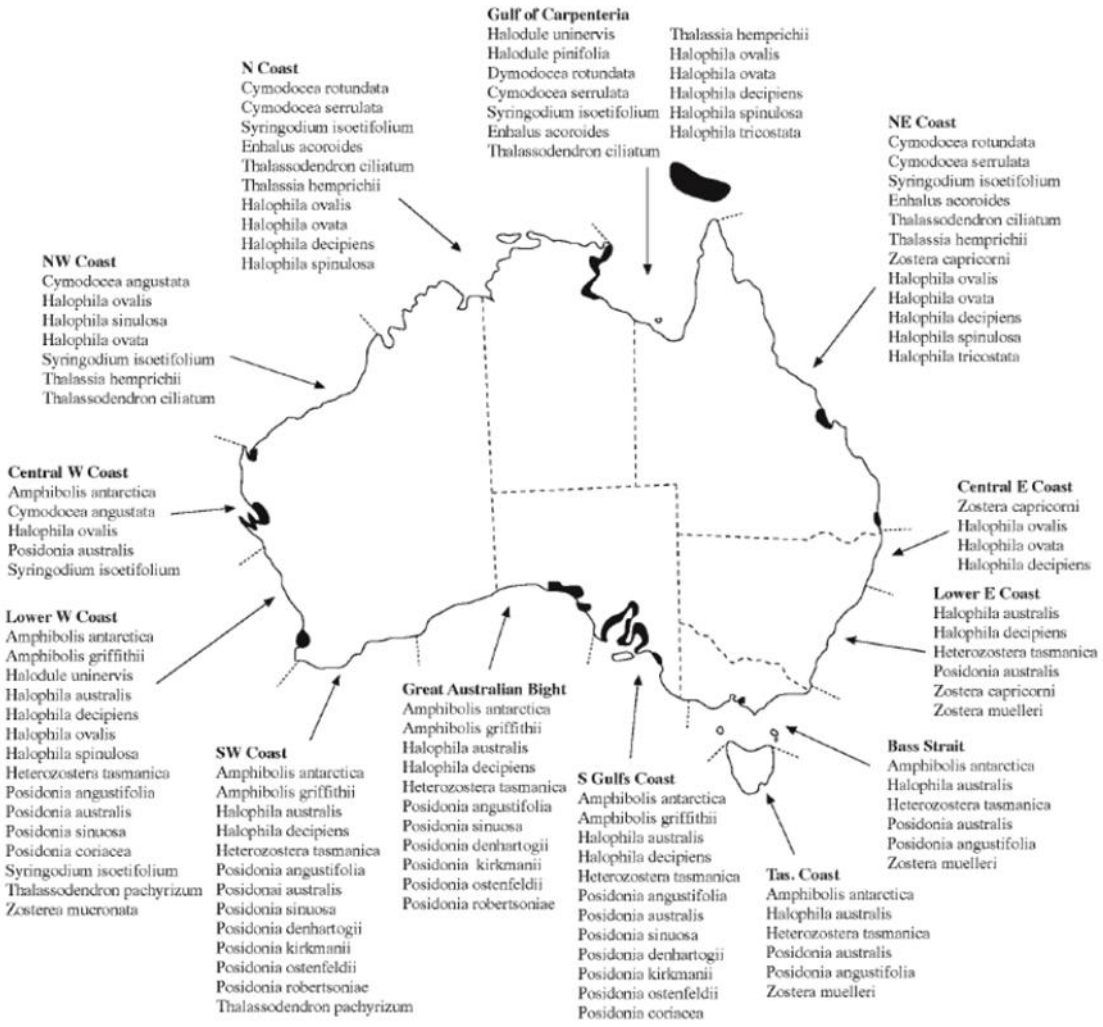


Figure 3-20: Distribution of Seagrass Species along the Australian Coast (Source: Kirkham, 1997)

Table 3-13: Presence of Seagrass within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Seagrass (Dominant Habitat)[1]	✓	✓	✓	✓	✓	✓	✓	✓	
TEC: *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion[2]						✓			

[1] Seagrass as a dominant intertidal/subtidal habitat determined from national mapping available from OzCoasts (2015b), and local flora reports for Lord Howe Island (NSW DPI, no date).
[2] Presence of TEC determined from EPBC Protected Matters search reports.

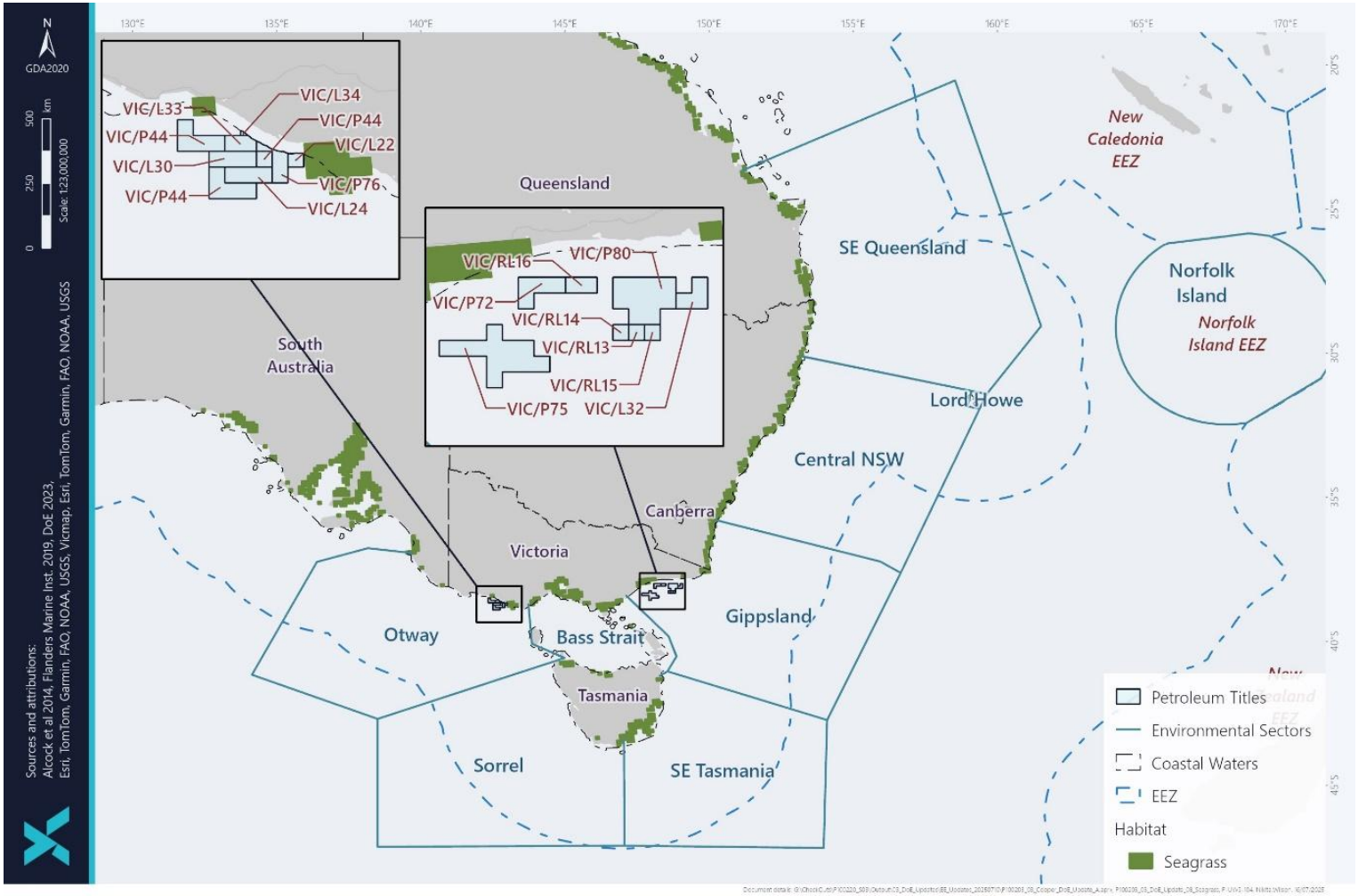


Figure 3-21: Distribution of Seagrass Dominated Habitat within the Photic Zone.
Note: Map shows the 'seagrass dominated' habitat from the NISB Habitat Classification Scheme

3.8.1 TEC: Posidonia Australis Seagrass Meadows of the Manning-Hawkesbury Ecoregion

The '*Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion' is listed as an endangered TEC under the EPBC Act. The ecological community is the assemblage of plants, animals and micro-organisms associated with seagrass meadows (dominated by *Posidonia australis*) that occurs within the warm temperate Manning Shelf and Hawkesbury Shelf bioregions (TSSC, 2018). The ecological community occurs mostly within the sheltered environments of permanently open estuaries along the New South Wales coast; and is known to occur at Wallis Lake, Port Stephens, Lake Macquarie, Brisbane Water, Hawkesbury River, Pittwater, Port Jackson (Sydney Harbour), Botany Bay, Port Hacking, and Broughton Island (Table 3-13, Figure 3-22) (TSSC, 2018).

The ecological community provides important ecosystem functions (TSSC, 2018), including:

- Provide habitat for a diverse range of plants and animals including nursery habitat for many important fish and invertebrate species (including commercially harvested species).
- Support estuarine food webs by providing a surface for the establishment of epiphytes, epifauna and infauna which provide an important food and detrital resource for larger invertebrates, fish and other foraging fauna.
- Stabilise sediments and prevent erosion of nearshore areas by mitigating currents and reducing wave energy.
- Protect water quality and sequester carbon.

The key threats affecting the ecological community have been identified as: coastal development, invasive species, dredging, boat mooring (and other boat related activities), catchment disturbance and pollution, fishing and climate change (TSSC, 2018).

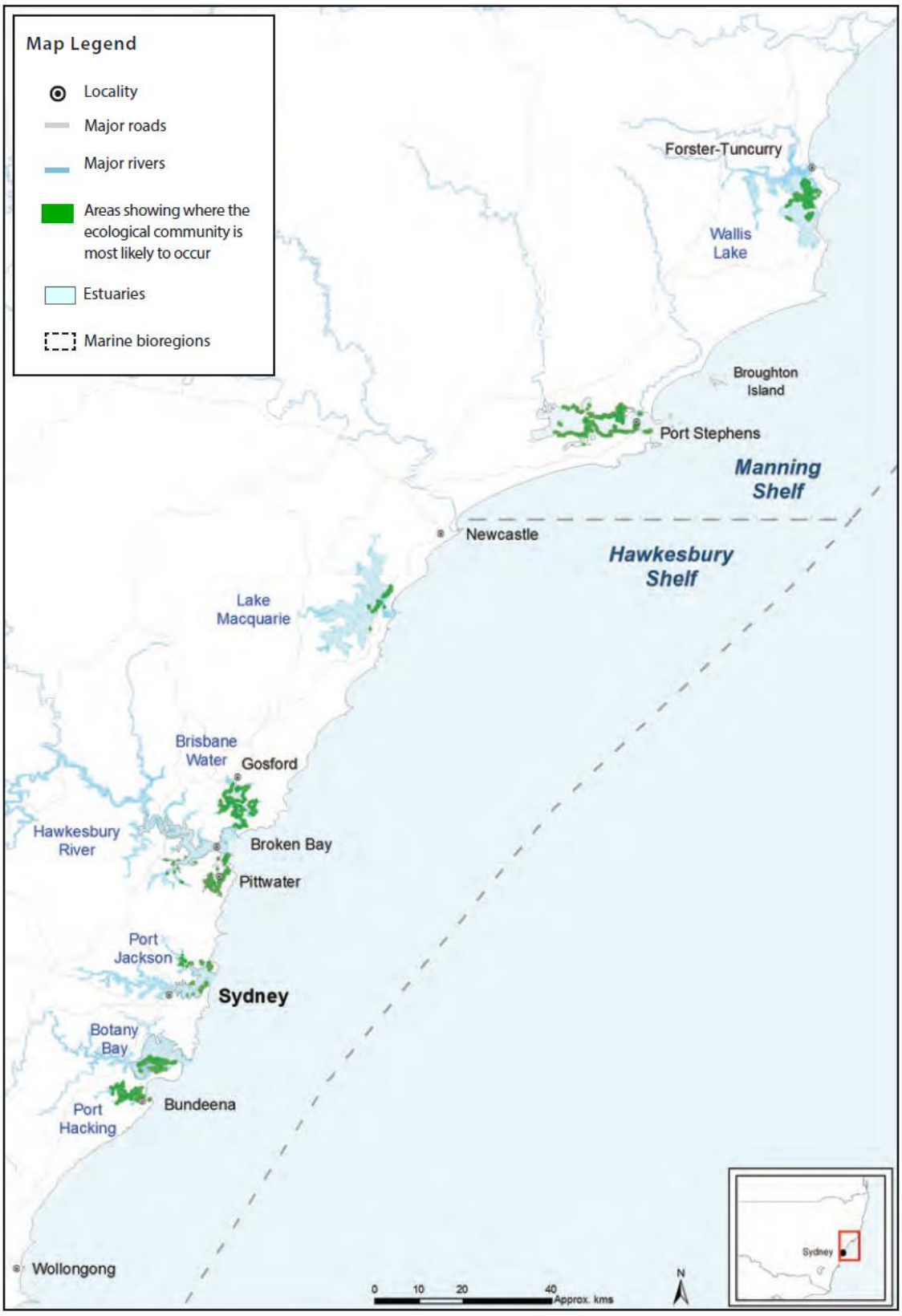


Figure 3-22: Distribution of the TEC Posidonia australis Seagrass Meadows of the Manning-Hawkesbury Ecoregion (Source: TSSC, 2018)

3.9 Algae

3.9.1 Microalgae

Benthic microalgae are ubiquitous in aquatic areas where sunlight reaches the sediment surface. Benthic microalgae are often much more highly concentrated in the surficial sediment layer in comparison to the concentration of planktonic microalgae (i.e. phytoplankton) in water (Ansell et al., 1999). Benthic microalgae can assist with the exchange of nutrients across the sediment-water interface; and in sediment stabilisation due to the secretion of extracellular polymetric substances (Ansell et al., 1999). Benthic microalgae can also provide a food source to grazers such as gastropod and amphipods (Ansell et al., 1999).

3.9.2 Macroalgae

Macroalgae communities are generally found on intertidal and shallow subtidal rocky substrates and can occur throughout the Australian coast (Table 3-14). Macroalgal systems are an important source of food and shelter for many ocean species; including in their unattached drift or wrack forms (McClatchie et al., 2006). Macroalgae are divided into three groups: Phaeophyceae (brown algae), Rhodophyta (red algae), and Chlorophyta (green algae). Brown algae are typically the most visually dominant and form canopy layers (McClatchie et al., 2006). The principal physical factors affecting the presence and growth of macroalgae include temperature, nutrients, water motion, light, salinity, substratum, sedimentation and pollution (Sanderson, 1997). Macroalgae assemblages vary, but *Ecklonia radiata* and *Sargassum sp.* can be found in waters up to 45 m depth (Pocklington, 2011). Known areas of macroalgae communities within this stretch of coast include Port Philip Bay (Victoria; Figure 3-23), D'Entrecastuaux Channel and George III Reef (Tasmania), and Jervis and Botany Bays (New South Wales).

Table 3-14: Presence of Macroalgae within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Macroalgae (Dominant Habitat)[1]	✓	✓	✓	✓	✓	✓	✓	✓	
TEC: Giant Kelp Marine Forests of South East Australia[2]	✓	✓	✓	✓	✓				

[1] Macroalgae as a dominant intertidal/subtidal habitat determined from national mapping available from OzCoasts (2015b), and management plans for Lord Howe Island (Commonwealth of Australia, 2002).
[2] Presence of TEC determined from EPBC Protected Matters search reports.

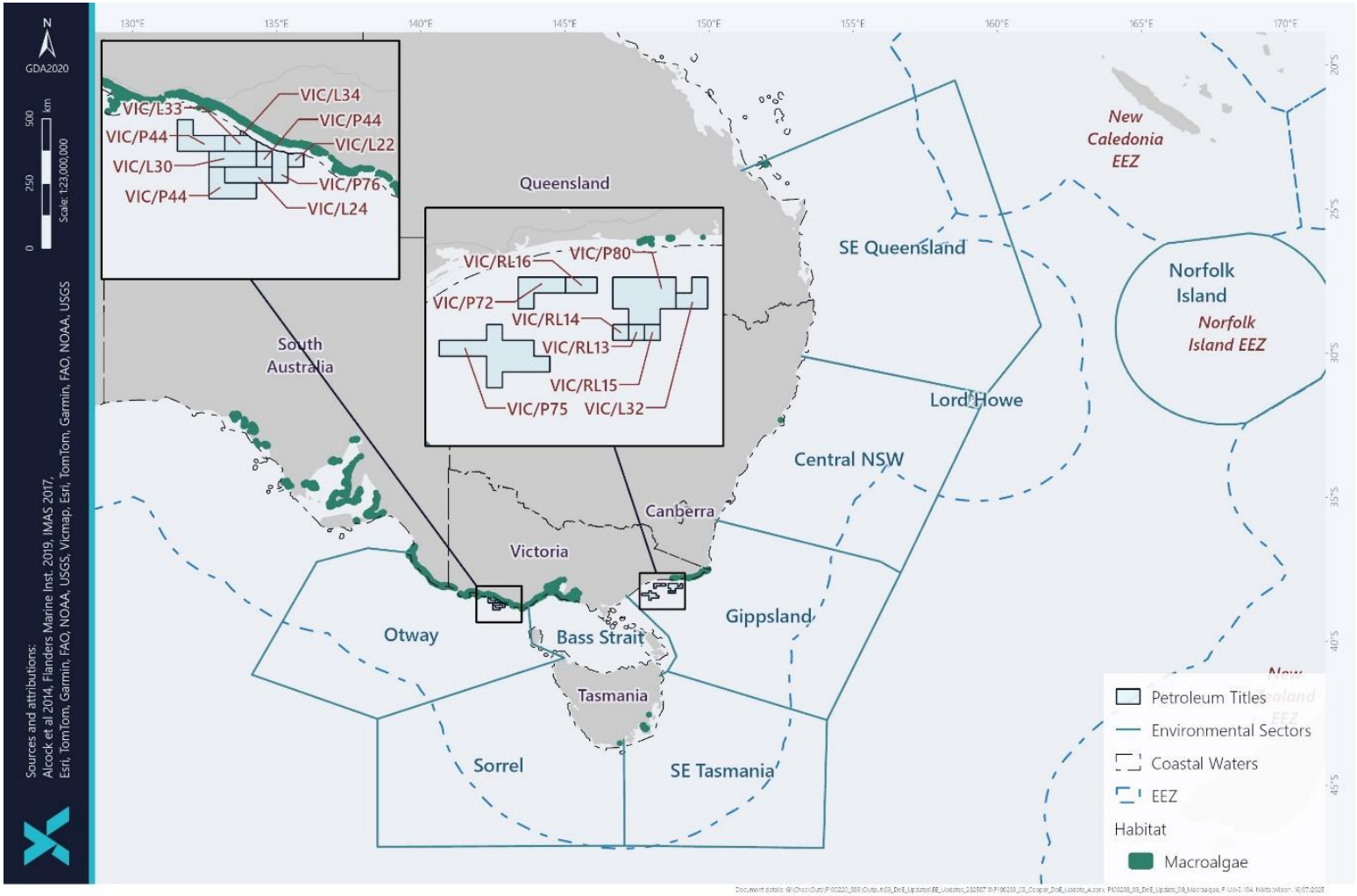


Figure 3-23: Distribution of Macroalgae Dominated Nearshore Habitat within the Photic Zone.
Note: Map shows the 'macroalgae dominated' habitat from the NISB Habitat Classification Scheme.

3.9.3 TEC: Giant Kelp Marine Forests of South East Australia

The 'Giant Kelp Marine Forests of South East Australia' is listed as an endangered TEC under the EPBC Act and is known to occur within southern Australia (Table 3-14). The ecological community is characterised by a closed to semi-closed surface or subsurface canopy of *Macrocystis pyrifera*, and extends between the ocean floor and ocean surface, exhibiting a 'forest-like' structure with a diverse range of organisms occupying its benthic, pelagic and upper-canopy layers (TSSC, 2012a). Giant kelp is a large brown alga that grows on rocky reefs from the seafloor 8 m below sea level and deeper. Its fronds grow vertically toward the water surface, in cold temperate waters off southeast Australia. *M. pyrifera* is the only species of kelp to provide this three-dimensional structure from the sea floor to the sea surface (TSSC, 2012a). This ecological community occurs on rocky substrate along the east and south coastlines of Tasmania; some patches may also occur in the coastal waters of western and northern Tasmania, south eastern South Australia, and Victoria (Figure 3-24) (TSSC, 2012a).

The high primary and secondary productivity of the giant kelp forests create and provide a number of ecosystem services to the local environment including settlement habitat for juvenile life stages of commercially important fisheries, improvements in local water quality conditions and coastal protection via buffering strong wave conditions from reaching the shore (TSSC, 2012a).

The key threats affecting the ecological community include increasing sea surface temperatures, changes in nutrient availability in warmer waters, changes in weather patterns and large-scale oceanographic conditions, and associated range expansion of invasive species (TSSC, 2012a). Other threats include impacts on water quality from land-based activities and aquaculture and potential loss from catastrophic storm events (TSSC, 2012a).

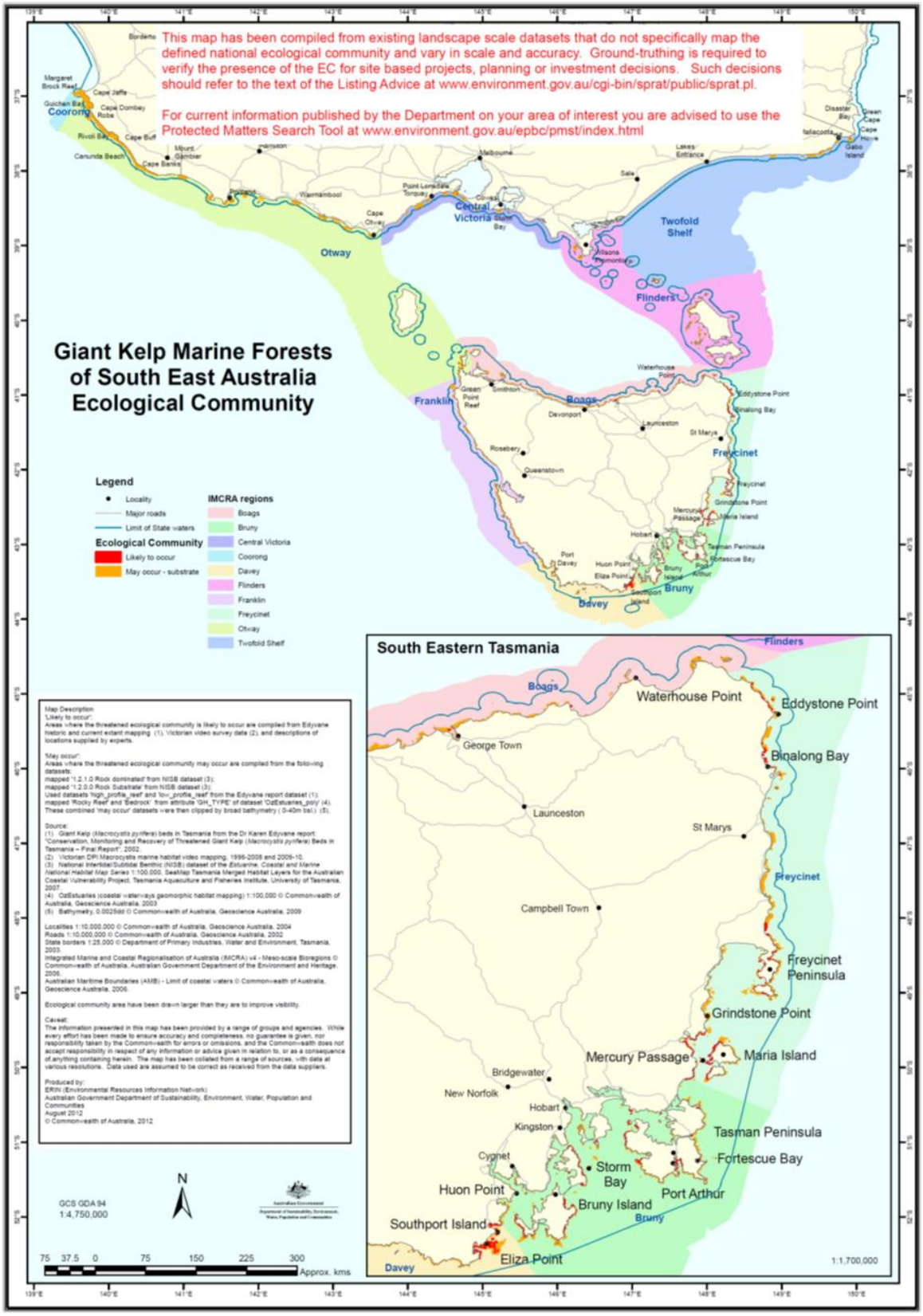


Figure 3-24: Distribution of the TEC Giant Kelp Marine Forests of South East Australia (Source: TSSC, 2012a)

3.10 Coral

Corals are generally divided into two broad groups: the zooxanthellate ('reef-building', 'hermatypic' or 'hard') corals, which contain symbiotic microalgae (zooxanthellae) that enhance growth and allow the coral to secrete large amounts of calcium carbonate; and the azooxanthellate ('ahermatypic' or 'soft') corals, which are generally smaller and often solitary (Tzioumis and Keable, 2007). Hard corals are generally found in shallower (<50 m) waters while the soft corals are found at most depths, particularly those below 50 m (Tzioumis and Keable, 2007).

Corals may only occur as the dominant habitat type in Queensland (Table 3-15, Figure 3-25), however their presence has been recorded throughout the Temperate East Marine Region (Figure 3-26), and further south into the South-east Marine Region (e.g. Kent Group Marine Protected Area near Flinders Island; Freycinet Commonwealth Marine Park, eastern Tasmania; Wilsons Promontory National Park and Cape Otway, Victoria). The southern limit of reef development is seen at Lord Howe Island; however, many hard-coral species are present in non-reef environments in coastal areas such as Moreton Bay (Queensland) and the Solitary Islands (New South Wales) (Tzioumis and Keable, 2007). Soft corals are typically present in deeper waters throughout the continental shelf, slope and offslope regions, to well below the limit of light penetration.

There are three factors that appear to drive the spawning of warm water corals – a gradual rise in sea temperature (this triggers the gametes to mature), the lunar cycle, and the diurnal light cycle. As such, the timing of coral spawning events varies around Australia. Large spawning events for Great Barrier Reef corals typically occur four to five days after the full moon in October or November (and occasionally into December). Reproduction methods for cold water corals are not as well understood, but it is likely that some are still broadcast spawners (like their tropical counterparts), while others brood and release formed larvae (Roberts et al., 2009).

Table 3-15: Presence of Coral within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Coral (Dominant Habitat)[1]							✓	✓	
Coral (Presence)[2]	✓	✓	✓	✓	✓	✓	✓	✓	✓

[1] Coral as a dominant intertidal/subtidal habitat determined from national mapping available from OzCoasts (2015b), and management plans for Lord Howe Island (Commonwealth of Australia, 2002).
[2] Coral where a record exists for any coral presence.

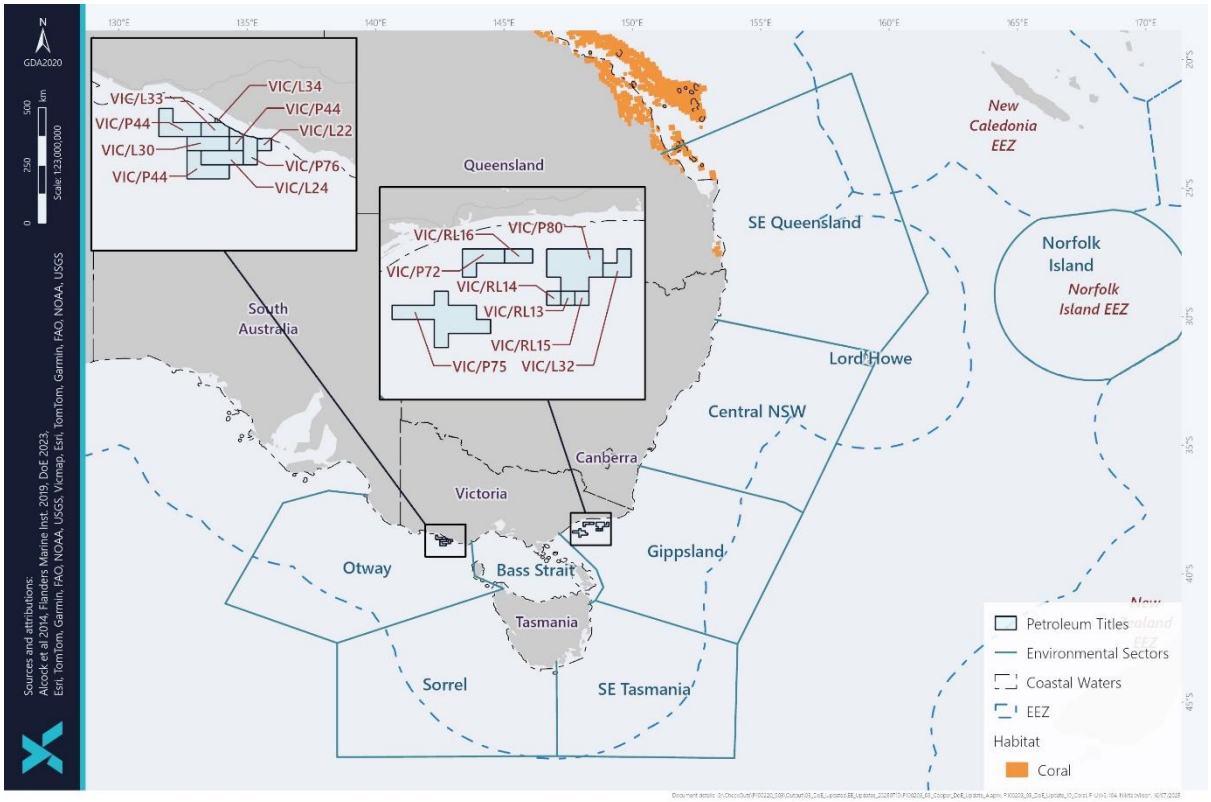


Figure 3-25: Distribution of Coral Dominated Habitat within the Photic Zone.
Note: Map shows the 'Coral Dominated' habitat from the NISB Habitat Classification Scheme.

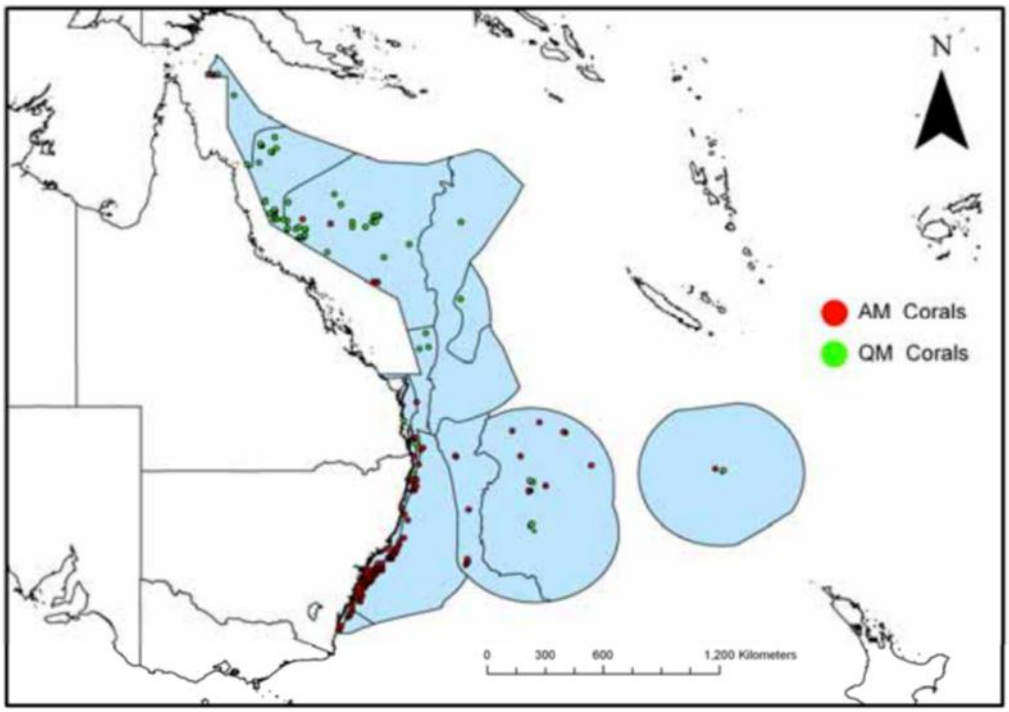


Figure 3-26: Hard Coral Records for the Temperate East Marine Region based on Queensland (QM) and Australian (AM) Museum datasets (Source: Tzioumis and Keable, 2007)

3.11 Plankton

Plankton species, including both phytoplankton and zooplankton, are a key component in oceanic food chains.

Phytoplankton are autotrophic planktonic organisms living within the photic zone; and are the start of the food chain in the ocean (McClatchie et al., 2006). Phytoplankton communities are largely comprised of protists, including green algae, diatoms, and dinoflagellates (McClatchie et al., 2006). There are three size classes of phytoplankton: microplankton (20-200 µm), nanoplankton (2-20 µm) and picoplankton (0.2-2 µm). Diatoms and dinoflagellates are the most abundant of the micro and nanoplankton size classes and are generally responsible for the majority of oceanic primary production (McClatchie et al., 2006).

Phytoplankton are dependent on oceanographic processes (e.g. currents and vertical mixing), that supply nutrients needed for photosynthesis. Thus, phytoplankton biomass is typically variable (spatially and temporally), but greatest in areas of upwelling, or in shallow waters where nutrient levels are high. Notable areas of upwelling within the Environmental Sectors include the Bonney Coast upwelling (Otway) and the upwelling East of Eden (Gippsland). Gill et al., (2011) describes the Bonney Coast Upwelling (refer Section 4.6) as generally starting in the eastern part of the Great Australian Bight and spreading eastwards to the Otway Basin. At the height of the Bonney upwelling, during February and March, its area of influence often exceeds 12,000 km^2, while its sea surface temperature often exceeds 1°C, and the chlorophyll-a concentrations are often >1.5x adjacent areas (Huang and Wang, 2019). Seasonal variation in phytoplankton (via chlorophyll-a concentrations) has been demonstrated in Australian waters from the analysis for MODIS-Aqua sensor imagery (Figure 3-27).

Data collected by the Integrated Marine Observing System (IMOS) (Davies et al. 2022) includes biomass and diversity of phytoplankton in the different oceanic regions that surround Australia. This data indicates highest seasonal abundance of phytoplankton within the cooler waters of the Southern Ocean, followed by south-east and eastern zones whereas diversity of phytoplankton is greatest in the warmer Coral Sea. In addition, data indicated that the highest abundance of copepods is found in the Southern Ocean and south-east regions, with diversity highest in the Temperate east and Coral Sea, depending on time of year. The make-up of plankton, their distribution and abundance are also highly variable within the region.

Zooplankton is the faunal component of plankton, comprised of small protozoa, crustaceans (e.g. krill) and the eggs and larvae from larger animals. Zooplankton includes species that drift with the currents and also those that are motile. More than 170 species of zooplankton have been recorded in eastern and central Bass Strait, but it has been found that seven dominant species make up 80% of individuals (Esso, 2009). Copepods make up approximately half of the species encountered (Watson and Chaloupka, 1982).

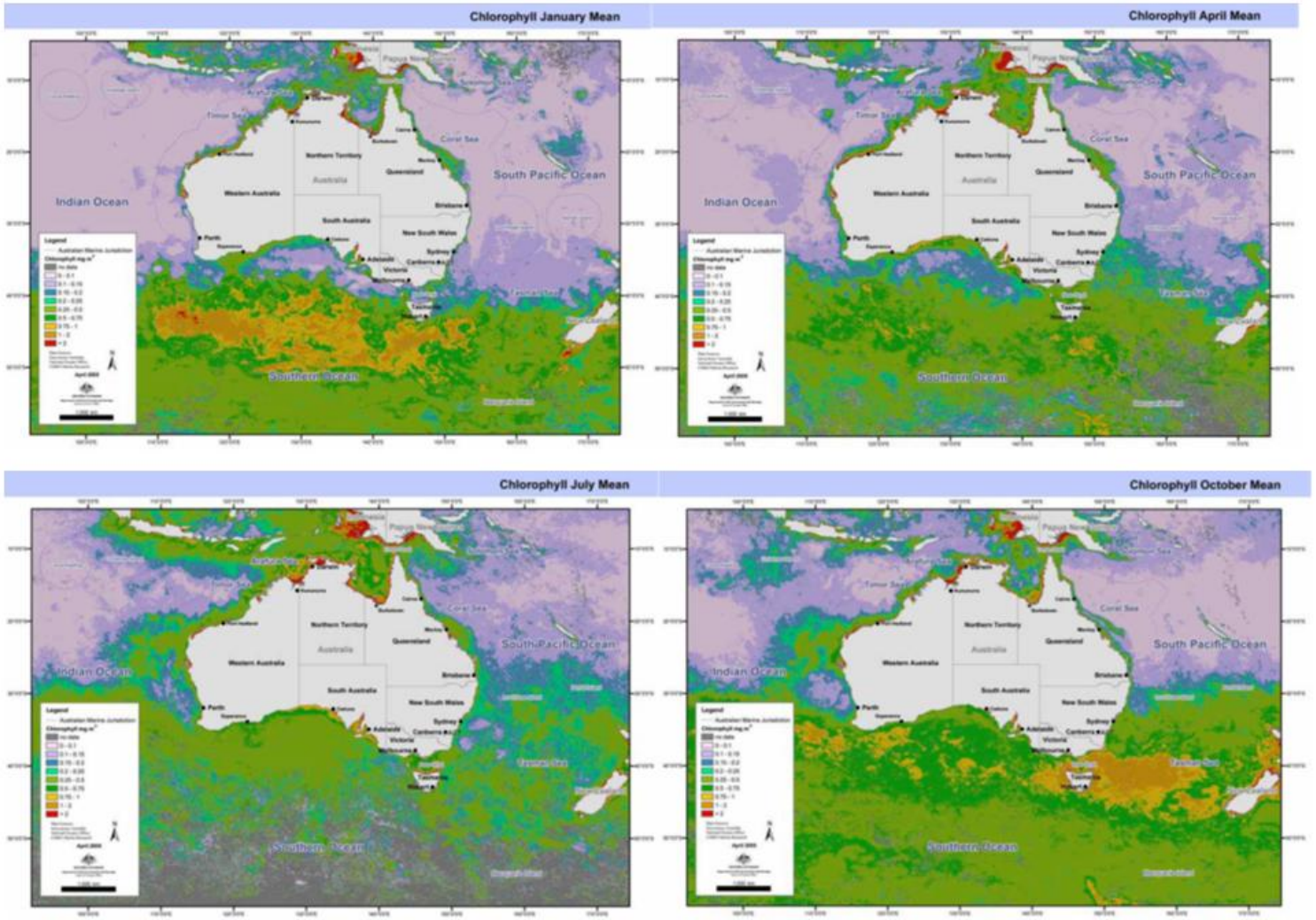


Figure 3-27: Monthly Composites of MODIS Ocean Colour Data showing Seasonal Phytoplankton Growth

3.12 Seabirds and Shorebirds

There are 164 seabird and shorebird species (or species habitat) that may occur within the Environmental Sectors; this includes 130 species classified as threatened and migratory (Table 3-16), dated August 2025. A list of the relevant conservation advice and/or recovery plans is also provided in Table 3-16, with relevant management actions in Table 3-17. The type of presence varies between species and location, and includes important behaviours (e.g. foraging, roosting, breeding) and multiple type of presence for some species (Table 3-16).

There is also a listed critical habitat for the shy albatross (*Thalassarche cauta*) present on islands off the coast of Tasmania (Table 3-16), this is further described in Section 3.12.1.

An additional 33 bird species identified in the PMST Reports are listed terrestrial (brown treecreeper (south-eastern), regent honeyeater, southern whiteface, King Island brown thornbill, King Island scrubtit, gang-gang cockatoo, south-eastern red-tailed black-cockatoo, south-eastern glossy black-cockatoo, diamond firetail, pilotbird, green rosella (King Island), plains-wanderer, south-eastern hooded robin, malleefowl, painted honeyeater, grey falcon, eastern bristlebird, Tasmanian azure kingfisher, Lord Howe woodhen, rufous scrub-bird, black-eared cuckoo, Norfolk Island green parrot, Coxen's Fig-Parrot, squatter pigeon (southern), black currawong (King Island), Lord Howe Island currawong, star finch (eastern), Norfolk Island boobook, golden whistler (Norfolk Island), forty-spotted pardalote, Norfolk Island robin, black-breasted button-quail and the masked owl (Tasmanian)). These species were identified within the PMST search due to the PMST search tool applying a nominal buffer in the search. However, these species inhabit terrestrial environments outside of the Environmental Sectors and have not been considered further.

Many different species of seabirds and shorebirds utilise the Bass Strait and Otway regions and may potentially fly over the Environmental Sectors using the East Asian-Australasian Flyway (EAAF). Globally, the EAAF is one of the most significant migratory bird routes, spanning over 13,000km from Arctic Russia and Alaska, through East and Southeast Asia, to Australia and New Zealand. The flyway spans 22 countries, including key nations such as China, Japan, South Korea, Indonesia, the Philippines, Papua New Guinea, and New Zealand, and supports the annual movements of over 50 million migratory waterbirds (DEE, 2017y; Hansen et al., 2016). The Bass Strait represents a small segment of this expansive flyway, typically used by birds migrating between Tasmania and mainland Australia. Despite its minor geographic role in the broader flyway, the region is ecologically important, providing critical stopover and feeding habitats for several migratory species (DEE, 2017y). There are currently 900 sites recognised as internationally important to migratory waterbirds along the flyway.

3.12.1 Albatross

There are 16 listed species of albatross that may occur within the Environmental Sectors, and all except one (Sooty Albatross) has been identified as using the area for foraging (Table 3-16). Albatross species exhibit a broad range of diets and foraging behaviours; this combined with their ability to cover vast oceanic distances, means all waters within Australian jurisdiction can be considered foraging habitat for this species (DCCEEW, 2022a). The most critical foraging habitat is considered to be in waters south of 25°S where most species spend the majority of their foraging time (DCCEEW, 2022a).

Albatross species typically forage during the day and are less active at night as their ability to see and capture prey from the air is reduced, meaning they are less likely to be impacted by artificial light (Phalan et al., 2007). Albatross's typically feed offshore, mainly along the edge of the continental

shelf and over open waters, where they catch fish and cephalopods (e.g. squid, cuttlefish) by diving into the water (DSEWPaC, 2012a). A BIA for foraging, has been identified for the following albatross species: antipodean, wandering, Buller's, shy, campbell, black-browed, Indian yellow-nosed and white-capped (Figure 3-28 and Figure 3-29).

The **Shy Albatross** is the only albatross endemic to Australia. The Shy Albatross breeds annually over an 8-month period between September and April on 3 islands located off the coast of Tasmania; Albatross Island located in the western Bass Strait, Mewstone and Pedra Branca located in the southern Bass Strait (ACAP, 2023). These islands are listed as Critical Habitat for the shy albatross. Individuals can be found at the colonies year-round exhibiting high site fidelity (TSSC, 2020). Adult individuals predominantly occur in waters adjacent to Tasmanian and southern Australia, while juveniles range extends across the Indian Ocean to southern Africa and potentially the south-western Atlantic Ocean (TSSC, 2020). This species feeds by surface seizing, however they have been observed to dive for prey and can swim down to 7 m (ACAP, 2023).

3.12.2 Petrels

There are 14 species of petrel that may occur within the Environmental Sectors, with most either foraging and/or breeding within the area (Table 3-16). Similar to albatrosses, the petrels have a diverse foraging range, and all waters within Australian jurisdiction can be considered foraging habitat for this species (DCCEEW, 2022a). Petrel species occurring in Australia's jurisdiction predominantly breed on remote, offshore islands in the higher latitudes. Petrels are extremely site faithful. Typical diet for petrels includes cephalopods (e.g. squid) and fish, and prey is predominately caught by surface-seizing (DSEWPaC, 2011). Petrels are mostly surface capturing, pelagic predators that feed on live and dying prey. Their ability to dive varies across species and involves either surface plunge dives or shallow dives to catch prey (generally aggregate in larger numbers where there is a rich food source. They prefer to feed during the day or at night (often by moonlight) (DCCEEW, 2022a).

BIAs, for foraging and breeding, have been identified for the following species: white-bellied storm-petrel, white-faced storm petrel, common diving-petrel, and the Gould's, soft-plumaged, black-winged, providence and kermadec petrels (Figure 3-30, Figure 3-31, and Figure 3-32)). BIAs for foraging have also been established for the northern and southern giant petrel and the great-winged petrel (Figure 3-30 and Figure 3-31).

Petrels are considered to mainly be nocturnal at their breeding places making them susceptible to light emissions when they commute from their onshore colonies to the sea (Chevillion et al., 2022). One of the most critical phases in the life of petrels occurs during fledging (Rodríguez et al., 2017). Fledging is the juvenile's first flight from colony to sea which typically occurs within the first two hours after sunset during the fledging period (Gineste, 2016 cited in Chevillion et al., 2022). Survival rates during the first few weeks as a fledging are the lowest as there is no parental care and young petrels will need to learn how to fly, search and capture food, and maintain plumage alone (Menkhorst, 2010). This biologically sensitive period can be impacted by light and can cause fledgling grounding or fallout events, sometimes leading to mortality (Atchoi et al., 2024).

The **white-bellied storm petrel, black-winged, kermadec** and providence petrel all breed within the Lord Howe and/or Norfolk Island groups. Breeding season is typically October through to May, with the exception of the Providence petrel that breeds during winter. Nesting is usually in burrows, or in sheltered rocky crevices (DECC, 2007; DEE 2017a; DEE 2017b; DEE 2017c; Hutton and Priddel, 2002).

Gould's petrel is Australia's rarest endemic seabird. Breeding for Gould's petrel is restricted to Cabbage Tree Island, located offshore from Port Stephens, New South Wales (NSW DEC, 2006).

Gould's Petrels begin to arrive on Cabbage Tree Island to breed from mid to late September; egg laying takes place over a six-week period commencing in early November (NSW DEC, 2006).

In Australian waters, the **soft-plumaged petrel** breeds at two sites: Maatsuyker Island (off Tasmania) (Figure 3-31) and Macquarie Island (TSSC, 2015c). The main factor causing the species to be listed as vulnerable is its small breeding population size – only seven breeding pairs are known to have occurred on Maatsuyker Island (TSSC, 2015c).

Both the **common diving-petrel** and the **white-faced storm petrel** are not listed as threatened species under the EPBC Act, and have large populations within Australia, accounting for 5% and 25% respectively of the global population (DoE, 2015a). The common diving-petrel breeds on islands off south-east Australia and Tasmania; there are 30 sites with significant breeding colonies (defined as more than 1,000 breeding pairs) known in Tasmania, and 12 sites in Victoria (including Seal Island, Wilson's Promontory and Deen Maar (DoE, 2015a). There are 15 sites with significant breeding colonies in Tasmania, and three sites with Victoria, for the White-faced Storm Petrel (DoE, 2015a).

The **Wilson's storm petrel** is one of the most abundant seabirds and has an extremely large range, however it is most often seen over the continental shelf (DoE, 2025). This species breeds in Antarctic waters and undergoes a trans-equatorial migration, where most individuals spend the non-breeding season in the north Atlantic and north Indian Oceans (Commonwealth of Australia, 2020). During migrations individuals will typically stay far out at sea.

3.12.3 Shearwaters

The shearwaters represent the most abundant seabird in Australia. There are six species of shearwater that may occur within the Environmental Sectors, and all but one (Streaked Shearwater) have been identified as using the area for foraging and breeding (Table 3-16). BIAs, for foraging and breeding, have been identified for the following other five species: Little, Flesh-footed, Sooty, Wedge-tailed, and Short-tailed shearwaters (Figure 3-33 and Figure 3-34).

Shearwaters are medium-size long-winged seabirds that are most common in temperate and cold waters. They spend most of their time foraging in the ocean and return to coastal cliffs and offshore islands only to breed. Shearwaters feed on fish, squid, cephalopod molluscs (squid, cuttlefish, nautilus and argonauts), crustaceans (barnacles and shrimp) and other soft-bodied pelagic prey (CoA, 2020). Food is usually taken by pursuit-plunging, surface plunging or surface-seizing . Some shearwaters, such as the sooty and flesh-footed, are trans-equatorial migrants and are widely distributed across the Pacific Ocean (CoA, 2020).

Shearwaters are typically pelagic species, except during breeding seasons where they are found on remote islands or coastal headlands. Shearwaters are considered to mainly be nocturnal at their breeding places making them highly sensitive to light when they commute from their colonies to the sea (Chevillion et al., 2022). The fledgling phase for shearwaters is also considered a critical phase (Rodriquez et al., 2017). The fledging season may vary between species; however it is known to occur over a short period of time and the first flight typically occurs within the first two hours after sunset (Gineste, 2016 cited in Chevillion et al., 2022). For example, it is widely accepted that the fledging period of the short-tailed shearwater occurs between the third week of April and the first week of May each year (Skira, 1991; Rodríguez et al., 2014; Price, 2022). Known breeding locations include:

- Lord Howe Island group (flesh-footed shearwater, wedge-tailed shearwater, little shearwater).

- Queensland oceanic islands (e.g. Capricorn Group, Mudjimba Island) (wedge-tailed shearwater)New South Wales oceanic islands (e.g. Solitary Island, Cabbage Tree Island, Muttonbird Island, Bird Island) (sooty shearwater, wedge-tailed shearwater).
- Tasmanian oceanic islands (e.g. Babel Island) (sooty shearwater, short-tailed shearwater).

Breeding season in eastern and south-eastern Australia for shearwaters is typically over summer; late-August/early-September to May (DEE 2017d, 2017e, 2017f, 2017g). However, the little shearwater breeds during winter and spring (DEE 2017h). Shearwater nests are usually in burrows or rock crevices. The timing of the incubation phase for shearwaters occurs between 21-24 November (±8 days) (Beaver, 2022). The arrival through to the incubation phase for wedge-tailed shearwaters use areas close to the colony using habitat south of Montague Island into the western edge of Bass Strait (Beaver, 2022). During the chick-rearing phase, occurring from 10-13 January (± 10 days), shearwaters are known to use areas further south past Bass Strait into south-east of Tasmania (Beaver, 2022).

Shearwaters are known to forage for a variety of pelagic prey, including krill, cephalopods, fish and crustaceans. Food is usually taken by pursuit-plunging, surface plunging or surface-seizing; however other methods (e.g. hydroplaning, deep plunging) may be used. South eastern Australia is characterised by contrasting oceanic conditions which can influence the foraging decisions of breeding short-tailed shearwaters. During the chick-rearing period, many shearwater species use a dual foraging strategy, generally involving short trips close to the breeding grounds and longer trips extending to highly productive areas, such as the Southern Ocean (Berlincourt and Arnould, 2015).

The short-tailed shearwater is one of few native birds that is commercially harvested (Tasmania Parks & Wildlife Service, 2014). Short-tailed shearwaters, or “Muttonbird” are harvested annually in Tasmania under the regulation of the Tasmanian government (CoA, 2020). Harvesting muttonbirds is a traditional activity that Tasmanian Aboriginal peoples have participated in for thousands of years. There are 3 separately managed harvests that occur in Tasmania:

- Indigenous commercial harvest - occurs on 3 islands in the Bass Strait (Trefoil Island, Great Dog (or Big Dog) Island and Babel Island). This harvest is licensed by the Tasmanian Government but entirely self-managed with no set quotas, just a restricted season duration.
- Indigenous cultural harvest – undertaken under permit on a couple of small sites including South Arm and Cape Queen Elizabeth on Bruny Island. The Tasmanian Government monitors the South Arm colony, the number of harvesters is restricted, and daily bag limits apply. There is also a small unreported cultural harvest on indigenous-owned islands.
- Recreational harvest – undertaken under licence between 38 and 44 of Tasmania’s known 209 colonies and is open to anyone eligible for purchasing a recreational licence. Harvest areas include the Bass Strait Island of King Island, Hunter Island Group and the Furneaux Island Group. The season generally runs for 16 days with a daily bag limit of 25 birds (15 on the west coast) (CoA, 2020).

3.12.4 Terns

There are 11 species of tern that may occur within the Environmental Sectors, and all have been identified as using the area for breeding (Table 3-16). A BIA, for foraging and breeding, has been identified for the following three tern species: greater crested tern, sooty tern and white-fronted tern (Figure 3-34).

Many of the tern species are widespread and occupy beach, wetland, grassland and beach habitats. Terns rarely swim; they hunt for prey in flight, dipping to the water surface or plunge-diving for prey

(Flegg, 2002) usually within sight of land, for fish, squid, jellyfish and sometimes crustaceans (DEWHA, 2007).

Terns breed in colonies on small offshore islands, including those of the Furneaux Group in eastern Bass Strait, and the Lord Howe island group. Nests are in the open in sand or coral scrapes or among low vegetation (DoE, 2025). The greater crested tern is not listed as threatened species under the EPBC Act; however, it is listed as migratory. During the breeding season this species can be found on islands and coastlines of tropical and subtropical areas, including Australia, where it breeds in dense colonies or in small groups. Outside of the breeding season it can be found at sea throughout this range (CoA, 2020).

Tern species may be susceptible to impacts from artificial light pollution including foraging and nesting interference as well as disorientation during migration (CoA, 2020). Bright lights may disorient adult terns, during colony establishment or when returning to nests at night. This can lead to nest abandonment, exposing eggs and chicks to the elements or predators (CoA, 2020).

3.12.5 Parrots

Parrots are very social birds that are characterized by their strong, hooked bills, zygodactyl feet (two toes facing forward and two backward) and vibrant plumage. In, Australia parrots have adapted to diverse ecosystems, thriving in environments which range from arid landscapes to lush rainforests. There are 4 species of parrots that may occur within the Environmental Sectors (Table 3-16):

- orange-bellied parrot
- blue-winged parrot
- swift parrot
- Coxen's fig-parrot.

The breeding range of the swift parrot is largely restricted to the east and south-east coast of Tasmania and closely mirrors the distribution of blue gum tree (TSSC, 2016d). Individuals will begin to make the migration over to mainland Australia in autumn where they will spend in the non-breeding season. Primary habitat is dry forests and woodlands of the box-ironbark region on the inland slopes of the Great Dividing Range in Victoria. Swift parrots are primarily active during the day (unless roosting). The species can also be found in NSW where they occupy forests and woodlands throughout the coastal and western slopes regions (TSSC, 2016d).

The orange-bellied parrot is endemic to south-eastern Australia (DELWP, 2016) and participates in yearly migrations over the Bass Strait from breeding grounds in Tasmania to the mainland Australia, each winter between late February to early April (Australian Museum, 2022).

The breeding range of the orange-bellied parrot is restricted to the south-west of Tasmania, within 10 km of the Melaleuca Lagoon. Breeding habitat is characterised by a mosaic of Eucalypt forest, rainforest and fire dependent moorland and sedgeland plains, in the Tasmanian Wilderness World Heritage Area (DELWP, 2016). This species is endemic to south-eastern Australia and migrates from breeding grounds in Melaleuca to mainland Australia in April each year (DELWP, 2016). The migration route follows the west coast of Tasmania, with some individuals known to stop on King Island during the northward migration in autumn. Over winter individuals can be found along the coast of South Australia and Victoria where they are found in locations associated with coastal saltmarshes and adjacent pastures, close to free-standing water bodies (DELWP, 2016). The migration back to breeding grounds begins in late September and appears to be more rapid with no stopovers on King Island (NRE Tas, 2023). Migrating orange-bellied parrot individuals have been

assumed to mostly travel at night (Australian Museum, 2022), however there is limited evidence of nocturnal migratory behaviour for this species.

Because the wild population of this species is small and difficult to detect, published data on the distribution of the orange-bellied parrot is limited to known breeding and non-breeding locations. However, it is likely that other breeding locations and migratory routes may become important as the population increases (DELWP, 2016). The 2023-24 breeding season showed a record number of 81 orange bellied parrots return to breeding grounds and production of 59 fledglings, the third highest fledgling production since 2004 (NRE Tas, 2024b). It is estimated that a total of 139 individuals would have migrated north from the breeding grounds at the end of the 2022/23 breeding season of which 81 returned for the 2023/24 breeding season resulting in a 58% return rate (DPC, 2023).

3.12.6 Sandpipers

There are fifteen species of sandpiper that may occur in the Environmental Sectors (Table 3-16):

- sharp-tailed
- broad-billed
- wood
- marsh
- Terek sandpiper
- ruddy turnstone
- sanderling
- great knot
- red knot
- little curlew
- eastern curlew
- whimbrel
- phalaropus lobatus
- ruff
- common greenshank.

Sandpipers breed in Europe and Asia and migrate to Australia during the southern summer. They are small wader species found in coastal and inland wetlands, particularly in muddy estuaries, feeding on small marine invertebrates. Up to 3,000 sharp-tailed sandpiper and up to 1,800 curlew sandpipers are known to congregate to feed at the Gippsland Lakes. Curlew sandpipers breed in Siberia and migrate to Australia, arriving around September each year (DoE, 2015c). The species forages mainly on invertebrates, including worms, molluscs, crustaceans, and insects. Curlew sandpipers usually forage in water, near the shore or on bare wet mud at the edge of wetlands. The species is threatened by the sustained loss of intertidal mudflat habitat at key migration staging sites in the Yellow Sea (DoE, 2015c).

3.12.7 Plovers

There are six species of plover that may occur in the Environmental Sectors (Table 3-16):

- double-banded
- lesser sand
- red-capped
- oriental
- pacific golder
- grey plover.

Plovers are medium sized wading birds that have wide-ranging coastal habitats comprising estuaries, bays, mangroves, damp grasslands, sandy beaches, sand dunes, mudflats, and lagoons (Flegg, 2002), with roosting also taking place on sand bars and spits. Plovers feed on a range of molluscs, worms, crustaceans, and insects. Plovers (with the exception of the red-capped plovers) breed in Asia and the Artic region and are more likely to be present in Australia during summer, depending on the species. The Red-capped Plover is Australia's smallest beach-nesting shorebird. While migratory shorebirds are here only for the spring and summer months, Red-capped Plovers spend their entire lives on Australian shores.

3.12.8 Other

A variety of the seabird and shorebird species aggregate in areas of the Environmental Sectors to roost (Table 3-16), including:

- two species of snipe (Swinhoe's, and pin-tailed snipe)
- two species of tattler (grey-tailed and wandering tattler)
- two species of stint (red-necked and long-toed stint)
- numerous individuals: oriental pratincole, black-winged stilt, white-throated needletail, black-tailed godwit, and red-necked avocet.

Snipes are present during the southern hemisphere summer (breeding in Asia and Russia in the northern hemisphere summer). They are medium-sized waders that roost among dense vegetation around the edge of wetlands during the day and feed at dusk, dawn and during the night on seeds, plants, worms, insects, and molluscs (Birdlife Australia, 2025). There are few records of the pin-tailed snipe in Victoria. The species is threatened by the loss and degradation of wetlands, through drainage and diversion of water for agriculture and reservoirs (Birdlife Australia, 2025).

Tattlers are shorebirds found along coastal regions with prefered habitat including rocky coasts, offshore islands, reefs, mudflats and sandy beaches. Tattlers forage in shallow water on hard intertidal substrates such as reefs, rock pools and also amongst rocks and shingle. Their diet includes polychaetes, molluscs, crustaceans, insects and occasionally fish. Tattlers roost on beaches, reef and boulders. Tattlers breed in the Northern Hemisphere between May and August and migrate to Australia arriving from September (occasionally as early as July), and leave Australia between March and June. (Department of the Environment, 2025a) (Department of the Environment, 2025b).

Stints are small migratory shorebirds that breed in the northern hemisphere, generally arriving in Australia between August and October and departing February to April. Stints are distributed along the Australian coastline found in sheltered inlets, estuaries, mudflats, grassy pools and wetlands,

and also inland. They forage on intertidal mudflats or sandflats, or in very shallow water feeding on aquatic invertebrates and small vertebrates during daylight hours. Stints roost on sheltered beaches, banks or islets of sand, mud or shingle. mudflats, sandy shores and wetland margins. (Department of the Environment, 2025c) (Department of the Environment, 2025d).

Oriental Pratincole are a tern-like shorebird with records of presence in all states at scattered sites including at Lord Howe Island. The Oriental Pratincoles breed in the northen hemisphere arriving in Australia in October and November in large numbers, remaining until March or April. In Australia the Oriental Pratincole occur along the coast inhabiting beaches, mudlands and often occur in ilands and also open plains, floodplains and wetlands. They generally roost in bare areas including claypans and areas with low vegetation. The Oriental Pratincoles feeds on inspects both aerially and from the ground (Department of the Environment, 2025e).

Black-winged stilts are migratory wader birds that breed in Asia and winter in Australia arriving between August and November, returning to their breeding areas between March and April. Their preferred habitat outside their breeding season includes coastal habitats, mudflats, marshes and swamps. Their diet includes aquativ insects, molluscs, crustaceans and small fish (BirdLife International, 2016).

White-throated needletail is migratory bird that arrives in Australia from September to November, being widespread along the coasts of eastern and south-eastern Australia and vagrant to outlying islands including Lord Howe island. Most birds leave Australia in March and April flying North.. They are almost exclusively aerial, althought they occur over most habitats and have been recorded in coastal areas over sandy beaches, mudflats and coastal cliffs. In Australia, White-throated Needletails almost always forage aerially, and have been recorded roosting in trees in forests and woodlands (Department of the Environment, 2025f).

Black-tailed godwits are large waders that are found around all coastal regions of Australia during the southern hemisphere summer (breeding in Europe during the northern hemisphere summer), though the largest numbers remain in northern Australia. Godwits are commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand, or shell-grit where they forage on intertidal mudflats or sandflats, in soft mud or shallow water and occasionally in shallow estuaries (Birdlife Australia, 2025). They have been recorded eating annelids, crustaceans, arachnids, fish eggs and spawn and tadpoles of frogs, and occasionally seeds.

The **red-necked avocet** is a wader native to Australia found widespread except in the north and north east. The red-necked avocet is nomadic with movements dependent on rainfall and finding suitable habitat. They have a preference for salt or brackish water and are found in shallow wetland areas. Their diet consists of small invertebrates found in water and mud. The red-necked avocet nests in the southwest from August to November with small colonies documented on Port Philip Bay (Atlas of Living Australia, 2025a).

Many other species also breed within areas of the Environmental Sectors (Table 3-16), including:

- grey noddy, black noddy and common noddy, Tasmanian wedge-tailed eagle, and little penguin
- white-bellied sea eagle, kelp, silver and pacific gulls, and Australian gannet
- satin flycatcher, osprey, red-tailed tropicbird
- black-faced cormorant
- grey ternlet
- masked and brown boobyfairy prion.

The **grey, black and common noddy** can be found off the Queensland coast, and around Lord Howe Island. They are typically pelagic during non-breeding season, but during breeding season can be found on or near islands, rocky islets or rocky cliff areas. Breeding is not synchronised and can occur at varied times throughout the year. Breeding colonies are recorded on around 50 Australian islands, ranging from a few pairs to over 100,000 pairs. This species feed during the day foraging mainly on fish, but may also consume squid, molluscs, aquatic insects, and fruit. They feed by hover-dipping and contact-dipping. The common noddy is considered to forage further from the shore than other similar species (DoE, 2025). A BIA for breeding and foraging, has been identified around Lord Howe Island and offshore Queensland (Figure 3-35).

The **Tasmanian wedge-tailed** eagle is a large bird found only on Tasmania and nearby islands both in coastal and inland areas. They have been recorded in habitats including forests, coastal heathland, small wetlands and riparian vegetation. After leaving their parents juveniles disperse widely, with adults remaining on their territories throughout the year. Tasmanian wedge-tailed eagles rest and breed in native forests, especially those dominated by Eucalyptus species. They breed from late winter to summer, with eggs laid August to September. The Wedge-tailed Eagle is carnivorous, and feeds on both live prey and carrion (Department of the Environment, 2025g).

The **Little Penguin** is the smallest species of penguin in the world and are permanent residents on a number of inshore and offshore islands. The Australian population is large but not thought to exceed one million birds (DoE, 2015a). Bass Strait has the largest proportion (approximately 60%) of the known breeding colonies in Australia; however, breeding populations are also found on the New South Wales coast. Individuals exhibit strong site fidelity, returning to the same breeding colony each year to breed in the winter and spring months (Gillanders et al., 2013). The diet of a Little Penguin includes small school fish, squid and krill. Prey is typically caught with rapid jabs of the beak and swallowed whole. A BIA for breeding and foraging, has been identified for the little penguin (Figure 3-35). Little penguins are also an important component of the Australian and New Zealand fur-seals' diet (Parliament of South Australia, 2011). Little penguins are primarily nocturnal which may make them susceptible to impacts from artificial light (CoA, 2020).

The **white-bellied sea eagle** is a raptor distributed along the coastline and around terrestrial wetlands of coastal Australia and the offshore islands. Coastal occurrences include locations around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves. Breeding occurs in woodland with nests also found in closed scrub or remnant trees. The White-bellied Sea-Eagle generally forages over large expanses of open water. The breeding season is between June and January in Southern Australia with nests built in trees, mangroves, cliffs, rocky outcrops and on the ground. The white-bellied sea eagle diet includes fish, birds, reptiles, mammals and crustaceans, carrion and offal (Department of the Environment, 2025h).

Kelp, silver and pacific gulls are resident to Australia and found along coastal and inland areas, particularly in southern Australia, Tasmania and Bass Strait islands. They inhabit sheltered coastal harbours, bays, inlets, estuaries, beaches and rocky shores, usually foraging within 10 km of the shore. Kelp and Pacific gulls breed September to January, Silver gulls may breed year-round (CoA, 2020).

The **Australasian gannet** generally feeds over the continental shelf or inshore waters. Their diet is comprised mainly of pelagic fish, but also squid and garfish. Prey is caught mainly by plunge-diving, but it is also seen regularly attending trawlers. Foraging generally occurs during the day over the continental shelf or inshore waters. Australian gannets rely on their vision to locate prey and have been shown to visually accommodate when transitioning between underwater and aerial environments during foraging activities (Machovsky-Capuska et al., 2012). Breeding is highly seasonal (October–May), nesting on the ground in small but dense colonies (DoE, 2015a). Important

breeding locations for the Australian Gannet within the Environmental Sectors include Pedra Branca, Eddystone Rocks, Sidmouth Rocks, and Black Pyramid (Tasmania) and Lawrence Rocks (Victoria). A BIA, for foraging and aggregation, has been established (Figure 3-35).

The **satin flycatcher** is native to Australia and are widespread along the south and eastern regions including Tasmania. The satin flycatcher migrates to these areas to breed, arriving between August and November, breeding primarily September to January before migrating northward departing between February and May. The diet of the satin flycatcher is mainly arthropods mostly insects foraging in the canopy and subcanopy of trees. The preferred habitat is within eucalypt forests, often near wetlands or watercourses (2025i).

The **osprey** is a medium sized raptor with widespread distribution across almost all mainland Australian coastlines with a vagrant population in Tasmania. Adults are mostly resident or sedentary around breeding territories. Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands and are mostly found in coastal areas. They visit wetland habitats including reefs, bays, coastal cliffs, beaches, estuaries and mangrove swamps. Osprey nest sites include natural bushes, cliffs, rocks, beaches and saltmarshes, and manmade jetties, offshore drilling rigs and platforms. Eastern Ospreys mainly feed on fish, especially mullet where available Department of the Environment, 2025j).

The **red-tailed tropicbird** is an oceanic seabird widely distributed through the tropical Pacific and Indian Oceans. It is typically a pelagic species but comes onshore during breeding season. The red-tailed tropicbird nests individually or in small breeding colonies and is territorial. Breeding is known to occur on Lord Howe Island; and a BIA around this region has been established (Figure 3-36). The birds forage on fish and squid by diving deeply into the water.

The **black-faced cormorant** is endemic to southern Australia (DoE, 2015a) ; and is primarily found along the rocky coasts of Tasmania and Victoria, favouring rocky coasts. The species feeds in coastal waters on a variety of fish, typically catching prey by pursuit-diving. Black-faced cormorants are mainly active during the day. There are 40 significant breeding sites (defined as more than 10 breeding pairs) known for the species in southern Australia, recognised as BIAs (Figure 3-36). Breeding usually occurs on rocky islands, but also on stacks, slopes and sea cliffs in colonies of up to 2500 individuals (DoE, 2015a).

Within Australia waters, the **grey ternlet** is found on both the Lord Howe and Norfolk Island groups; and may occasionally occur in waters off the eastern coast of Australia. A BIA has been established for this species around Lord Howe Island (Figure 3-32). They typically nest and roost in coastal regions, usually on steep cliff faces; and forage over waters close to shore. In Australia, breeding takes place during spring and summer; eggs have been recorded from early-September to early-January, and nestlings from early-October to mid-March.

The **masked booby** occurs across northern Australia, extending to Brisbane and islands offshore of the east coast of Australia (including Lord Howe Island). The masked booby is a pelagic marine bird using tropical and subtropical waters and feeds by plunge diving on the ocean. The masked booby nests in small colonies, breeds on oceanic islands, atolls and cays, usually far from mainland area; and areas of level open ground are preferred for nest sites. The breeding population on Lord Howe Island is the most southerly breeding colony in the world; on Lord Howe Island, peak laying is in December. A BIA, for breeding, has been identified around Lord Howe Island and offshore from Queensland (Figure 3-36).The **brown booby** is a common, pelagic and migratory species which occurs throughout the world's tropical oceans. The species forages on fish species and cephalopods in the North Marine Region and breeds in adjacent areas. Nesting typically occurs on islands in Australian tropical waters, such as off the coast of Queensland. The breeding season for brown

boobies varies, with egg laying recorded throughout the year at many locations (Marchant & Higgins 1990); however, young birds may disperse and/or migrate when not breeding. Adults typically nest annually and most often do with the same partner. The brown booby are plunge-divers, where they feed on small fish, squid, or shrimp which gather at the water surface.

The **fairy prion (southern)** breeds on Macquarie Island and other subantarctic islands outside of Australia (NRE Tas, 2024). The species has a breeding population of 50 to 250 breeding pairs in Australia and the subantarctic islands. This species will dig burrows among the rocks or low vegetation for nesting. Their foraging activities involve plucking food from the ocean surface, usually feeding off small fish or krill. Some individuals have been recorded to migrate towards New Zealand and Southern Australia (DoE, 2025). Fairy prions generally forage during the day and are only active at night around breeding colonies.

Table 3-16: EPBC Act Listed Seabird and Shorebird Species or Species Habitat that May Occur within the Environmental Sectors

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Albatross															
Diomedea antipodensis	Antipodean Albatross	V	✓(M)	✓	*	[1]	FLO*f	FLO	FLO*f	FLO*f	FLO*f	FLO*f	FLO	FLO	FLO
Diomedea epomophora	Southern Royal Albatross	V	✓ (M)	✓		[1]	FLO	FLO	FLO	FLO	FLO	FLO	FLO	FLO	FLO
Diomedea exulans	Wandering Albatross	V	✓ (M)	✓	*	[1]	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO	FLO
Diomedea antipodensis gibsoni	Gibson's Albatross	V		✓		[1]	FLO	FLO	FLO	FLO	FLO	FLO	FLO	FLO	FLO
Diomedea sanfordi	Northern Royal Albatross	E	✓ (M)	✓		[1]	FLO	FLO	FLO	FLO	FLO	LO			
Phoebetria fusca	Sooty Albatross	V	✓ (M)	✓		[1]	LO	LO	LO	LO	LO	MO	MO		
Thalassarche bulleri	Buller's Albatross	V	✓ (M)	✓	*	[1]	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	LO	MO	MO	MO
Thalassarche bulleri platei	Pacific Albatross	V		✓		[1]	FLO	FLO	FLO	FLO	FLO	LO	MO	MO	MO
Thalassarche carteri	Indian Yellow-nosed Albatross	V	✓ (M)	✓	*	[1]	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	LO	LO
Thalassarche cauta	Shy Albatross	E	✓ (M)	✓	*	[1]	FLO*b, f	BKO*f	FLO*f	BKO*b, f	FLO*f	FLO*f	MO	MO	
Thalassarche chrysostoma	Grey-headed Albatross	E	✓ (M)	✓		[2],[1], [3]	MO	MO	MO	FLO	FLO				

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Thalassarche eremita	Chatham Albatross	E	✓ (M)	✓		[1]		FMO	FMO		FMO	FMO			MO
Thalassarche impavida	Campbell Albatross	V	✓ (M)	✓	*	[1]	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	MO*f	MO*f	MO	MO
Thalassarche melanophris	Black-browed Albatross	V	✓(M)	✓	*	[1]	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO*f	FLO	FLO
Thalassarche salvini	Salvin's Albatross	V	✓ (M)	✓		[1]	FLO	FLO	FLO	FLO	FLO	FLO	FLO	FLO	FLO
Thalassarche steadi	White-capped Albatross	V	✓ (M)	✓	*	[1]	FKO	FKO	FLO*f	FKO	FKO	FLO*f	LO	MO	MO
Petrel															
Fregetta grallaria grallaria	White-bellied Storm-Petrel	V			*	[3]	LO	LO	LO	LO	LO	BKO	LO	BKO*b, f	LO
Halobaena caerulea	Blue Petrel	V		✓		[5]	MO	MO	MO	MO	MO	MO			
Macronectes giganteus	Southern Giant Petrel	E	✓ (M)	✓	*	[1]	FLO	FLO	FLO*f	FLO	FLO	MO*f	MO*f	MO	MO
Macronectes halli	Northern Giant Petrel	V	✓ (M)	✓	*	[1]	FLO	FLO	FLO*f	FLO	FLO	FLO*f	MO*f	FLO	FLO
Pelagodroma marina	White-faced Storm Petrel			✓	*		BKO	BKO*b, f	BKO*b, f		BKO*b, f	BKO			
Pelecanoides urinatrix	Common Diving-Petrel			✓	*		BKO*b, f	BKO*b, f		BKO*b, f	BKO*b, f				

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Pterodroma cervicalis	White-necked Petrel			✓				MO	MO		MO	BLO	BLO	MO	BKO
Pterodroma heraldica	Herald Petrel	CE				[6], [7]						LO	LO	MO	MO
Pterodroma leucoptera leucoptera	Gould's Petrel	E			*	[8]	MO	MO	BKO	MO	MO	BKO*b, f	MO	MO	MO
Pterodroma macroptera	Great winged Petrel			✓	*		FKO		MO*f			*f	*f	*f	
Pterodroma mollis	Soft-plumaged Petrel	V		✓	*	[9]	FLO	MO		BKO*b, f	MO*f				
Pterodroma nigripennis	Black-winged Petrel			✓	*							BKO	BKO	BKO*b, f	BKO
Pterodroma solandri	Providence Petrel			✓	*							BKO		BKO*b, f	BKO
Pterodromoa neglecta neglecta	Kermadec Petrel (western)	V			*				FMO			FMO	FMO	BKO	BKO
Plover															
Charadrius bicinctus	Double-banded Plover		✓ (W)	✓			RKO	RKO	RKO	KO	RKO	RKO	RKO		
Charadrius leschenaultii	Greater Sand Plover	V	✓ (W)	✓		[11]	KO	KO	KO	LO	MO	KO	KO	KO	
Charadrius mongolus	Lesser Sand Plover	E	✓ (W)	✓		[11], [12]	RKO	RKO		KO	KO	RKO	RKO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Charadrius ruficapillus	Red-capped Plover			✓			RKO	RKO	RKO	KO	RKO	RKO	RKO		
Charadrius veredus	Oriental Plover		✓ (W)	✓				KO			KO	RKO	RKO		
Pluvialis fulva	Pacific Golden Plover		✓ (W)	✓			RKO	RKO		KO	RKO	RKO	RKO		
Pluvialis squatarola	Grey Plover		✓ (W)	✓		[37]	RKO	RKO		KO	KO	RKO	RKO		
Thinornis cucullatus	Hooded Plover			✓			KO	KO	KO	KO	KO	KO			
Thinornis cucullatus cucullatus	Hooded Plover (eastern)	V		✓		[14]	KO	KO	KO	KO	KO	KO			
Sandpiper															
Actitis hypoleucos	Common Sandpiper		✓ (W)	✓			KO	KO	KO	MO	KO	KO	KO	KO	KO
Arenaria interpres	Ruddy Turnstone	V	✓ (W)	✓		[41]	RKO	RKO	RKO	KO	RKO	RKO	RKO		
Calidris acuminata	Sharp-tailed Sandpiper	V	✓ (W)	✓		[38]	RKO	RKO	RKO	KO	RKO	RKO	RKO	KO	KO
Calidris alba	Sanderling		✓ (W)	✓			RKO	RKO	RKO	KO	RKO	RKO	RKO		
Calidris canutus	Red knot	V	✓ (W)	✓		[20]	KO	KO	KO	KO	KO	KO	KO	KO	MO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Calidris ferruginea	Curlew Sandpiper	CE	✓ (W)	✓		[15]	KO	KO	KO	KO	KO	KO	KO	KO	
Calidris melanotos	Pectoral Sandpiper		✓ (W)	✓			KO	KO	KO	MO	KO	KO	KO	KO	KO
Calidris pugnax	Ruff		✓ (W)	✓			RKO	RKO		KO	KO	RKO	RKO		
Calidris tenuirostris	Great Knot	V	✓ (W)	✓		[21]	RKO	RKO	RKO	KO	KO	RKO	RKO		
Limicola falcinellus	Broad-billed Sandpiper		✓ (W)	✓				RKO				RKO	RKO		
Numenius minutus	Little Curlew		✓ (W)	✓			RLO	RKO	RLO		RLO	RLO	RKO		
Numenius phaeopus	Whimbrel		✓ (W)	✓			RKO	RKO	RKO	KO	KO	RKO	RKO		
Phalaropus lobatus	Red-necked Phalarope		✓ (W)	✓				RKO							
Tringa glareola	Wood Sandpiper		✓ (W)	✓			RKO	RKO				FKO	RKO		
Tringa nebularia	Common Greenshank	E	✓ (W)	✓		[44]	KO	KO	KO	KO	KO	KO	KO	MO	
Tringa stagnatilis	Marsh Sandpipier		✓ (W)	✓			RKO	RKO				RKO	RKO		
Xenus cinereus	Terek Sandpiper	V	✓ (W)	✓		[39]	RKO	RKO		KO	KO	RKO	RKO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Shearwater															
Calonectris leucomelas	Streaked Shearwater		✓ (M)	✓								KO	KO		
Puffinus assimilis	Little Shearwater			✓	*							BKO		BKO*b, f	BKO
Ardenna carneipes	Flesh-footed Shearwater		✓ (M)	✓	*		KO	FLO	FLO*f	FLO	FLO	BKO*f	KO*f	BKO*b, f	KO
Ardenna grisea	Sooty Shearwater	V	✓ (M)	✓	*	[40]	MO	MO	BKO*b, f	BKO*b, f	BKO*b, f	BKO*b, f	LO	MO	MO
Ardenna pacifica	Wedge-tailed Shearwater		✓ (M)	✓	*		*b,f	*b,f	BKO*b, f			BKO*b, f	BKO*b, f	BKO*b, f	BKO
Ardenna tenuirostris	Short-tailed Shearwater		✓ (M)	✓	*		BKO*f	BKO*b, f	BKO*b, f	BKO*b, f	BKO*b, f	BKO*b, f			
Tern															
Sternula albifrons	Little Tern	V	✓ (M)	✓		[86]	BKO	BKO	BKO	BKO	BKO	BKO	BKO		
Thalasseus bergii	Greater Crested Tern		✓ (W)	✓	*		BKO	BKO	BKO*b, f	BKO		BKO	BKO*b, f		
Hydroprogne caspia	Caspian Tern		✓ (M)	✓			BKO	BKO	BKO	BKO	BKO		BKO		
Sterna dougallii	Roseate Tern		✓ (M)	✓									BKO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Onychoprion fuscatus	Sooty Tern			✓	*		BKO	BKO	BKO						
Onychoprion anaethetus	Bridled Tern		✓ (M	✓			BKO						BKO		BKO
Sternula nereis	Fairy Tern			✓		[15], [16]	BKO	BKO	BKO						
Sterna striata	White-fronted Tern			✓	*		FLO	BKOb,f	FLO	FLO	FLO	FLO	FLO	FLO	FLO
Sterna sumatrana	Black-naped Tern		✓ (M)	✓									BKO		
Sternula nereis nereis	Australian Fairy Tern	V				[13]	KO	KO	KO	KO	KO	KO	MO		
Thalasseus bengalensis	Lesser Crested Tern			✓									BKO		
Other															
Acanthiza pusilla magnirostris	King Island Brown Thornbill, Brown Thornbill (King Island)	E				[45]	KO	KO							
Acanthornis magna greeniana	King Island Scrubtit, Scrubtit (King Island)	CE				[47]	KO	KO							
Anous albivitta	Grey Noddy			✓								KO		BKO	BKO
Anous minutus	Black Noddy			✓	*								BKO*b, f	*b,f	BKO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Anous stolidus	Common Noddy		✓ (M)	✓	*		LO	LO	MO			BKO	BKO*b, f	BKO*b, f	BKO
Anseranas semipalmata	Magpie Goose			✓			MO						MO		
Anthochaera phrygia	Regent Honeyeater	CE				[39] [40]	MO	BKO	KO			KO	KO		
Aphelocephala leucopsis	Southern Whiteface	V				[51]	LO	KO	MO			MO			
Apus pacificus	Fork-tailed Swift		✓ (M)	✓			LO	LO	LO	LO	LO	LO	LO		
Ardea ibis (former Bubulcus ibis)	Cattle Egret			✓			MO	BLO	MO	MO	MO	BLO	BLO		
Atrichornis rufescens	Rufous Scrub-bird	E										MO			
Aquila audax fleayi	Tasmanian Wedge-tailed Eagle	E				[14]	BLO	BLO		BLO	BLO				
Botaurus poiciloptilus	Australasian Bittern	E				[68]	KO	KO	KO	KO	KO	KO	KO		
Calidris canutus	Red knot	V	✓ (W)	✓		[20]	KO	KO	KO	KO	KO	KO	KO	KO	MO
Calidris ruficollis	Red-necked Stint		✓ (W)	✓			RKO	RKO	RKO	KO	RKO	RKO	RKO		
Calidris subminuta	Long-toed Stint		✓ (W)	✓				RKO				RKO	RKO		
Callocephalon fimbriatum	Gang-gang Cockatoo	E				[52]	KO	KO	KO			KO			

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Calyptorhynchus banksii graptogyne	South-eastern Red-tailed Black-Cockatoo	E				[53]	FKO								
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V				[54]		MO	KO			KO	KO		
Ceyx azureus diemenensis	Tasmanian Azure Kingfisher	E				[84]	KO	BKO		BKO	KO				
Chalcites osculans	Black-eared Cuckoo			✓			KO	KO							
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	V				[55]	MO	KO	KO			KO	KO		
Stercorarius antarcticus	Brown Skua			✓			MO	MO	MO	MO	MO	MO	MO		
Cuculus optatus	Oriental Cuckoo		✓ (T)	✓					KO			KO	KO		
Cyanoramphus cookii	Norfolk Island Green Parrot	E				[83]									BKO
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	CE				[81], [82]						MO	KO		
Dasyomis brachypterus	Eastern Bristlebird	E				[22]			KO			KO			
Epthianura crocea macgregori	Capricorn Yellow Chat	CE				[23]							KO		
Erythrotriorchis radiatus	Red Goshawk	V				[26], [25]						MO	KO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Eudyptula minor	Little Penguin			✓	*		BKO	BKO*b, f	BKO*b, f	BKO*b, f	BKO*b, f	BKO*b, f			
Falco hypoleucos	Grey Falcon	E				[45]	LO	LO	LO			LO	LO		
Fregata ariel	Lesser Frigatebird		✓ (M)	✓					MO			KO	KO	LO	KO
Fregata minor	Great Frigatebird		✓ (M)	✓					MO			KO	KO	KO	KO
Gallinago hardwickii	Latham's Snipe	V	✓ (W)	✓		[42]	KO	KO	KO	KO	KO	KO	KO		
Gallinago megala	Swinhoe's Snipe		✓ (W)	✓			RLO	KO	RLO		RLO	RLO	RKO		
Gallinago stenura	Pin-tailed Snipe		✓ (W)	✓			RLO	RKO	RLO		RLO	RLO	RLO		
Geophaps scripta scripta	Squatter Pigeon (southern)	V				[80]							KO		
Glareola maldivarum	Oriental Pratincole		✓ (W)	✓									RKO		
Grantiella picta	Painted Honeyeater	V				[57] [58]	MO	KO	KO			KO	KO		
Haliaeetus leucogaster	White-bellied Sea Eagle			✓			BKO	BKO	BKO	BKO	BKO	BKO	BKO		
Hypotaenidia sylvestris	Lord Howe Woodhen	E				[78], [79]						BLO		BLO	

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Leipoa ocellata	Malleefowl	V				[59]	LO								
Tringa brevipes	Grey-tailed Tattler		✓ (W)	✓			RKO	RKO	FKO	KO	KO	RKO	RKO		
Tringa incana	Wandering Tattler		✓ (W)	✓				RKO				RKO	RKO		
Himantopus himantopus	Black-winged Stilt			✓			RKO	RKO	RKO	KO	KO	RKO	RKO		
Hirundapus caudacutus	White-throated Needletail	V	✓ (T)	✓		[77]	RKO	RKO	KO	RKO	KO	KO	KO		
Larus dominicanus	Kelp Gull			✓				BKO				BKO			
Chroicocephalus novaehollandiae	Silver Gull			✓			BKO	BKO	BKO	BKO	BKO	BKO	BKO		
Larus pacificus	Pacific Gull			✓			BKO	BKO		BKO	BKO				
Lathamus discolor	Swift Parrot	CE		✓		[27], [28]	KO	KO	KO	BKO	BKO	KO	KO		
Limnodromus semipalmatus	Asian Dowitcher	V	✓ (W)	✓								KO	KO		
Limosa lapponica	Bar-tailed Godwit		✓ (W)	✓			KO	KO	KO	LO	KO	KO	KO	KO	KO
Limosa lapponica baueri	Western Alaskan Bar-tailed Godwit (baueri)	E				[29]	KO	KO	KO	LO	KO	KO	KO	KO	KO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Limosa limosa	Black-tailed Godwit	E	✓ (W)	✓		[43]	RKO	RKO		KO	KO	RKO	RKO		
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E				[60]	MO	KO	LO			KO	MO		
Merops ornatus	Rainbow Bee-eater			✓			MO	MO	MO			MO	MO		
Monarcha melanopsis	Black-faced Monarch			✓			MO	KO	KO			KO	KO		
Strepera fuliginosa colei	Black Currawong (King Island)	V				[76]	BLO	BLO							
Strepera graculina crissalis	Lord Howe Island Currawong	V										KO	KO		
Symposiachrus trivirgatus	Spectacled Monarch			✓					KO			KO	KO		
Morus capensis	Cape Gannet			✓			BKO	BKO							
Morus serrator	Australasian Gannet			✓	*		BKO*a, f	BKO*a, f		BKO*a, f					BKO
Motacilla cinerea	Grey Wagtail		✓ (T)	✓			KO								
Motacilla flava	Yellow Wagtail		✓ (T)	✓			KO	KO	MO	KO		KO	KO		
Myiagra cyanoleuca	Satin Flycatcher			✓			BKO	BKO	KO	KO	BKO	BKO	BKO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Neochmia ruficauda ruficauda	Star Finch (eastern)	E				[75]							LO		
Neophema chrysogaster	Orange-bellied Parrot	CE		✓		[31]	MrKO	MrKO	KO	BKO		MO			
Neophema chrysostoma	Blue-winged Parrot	V		✓		[74]	KO	KO	KO	KO	KO	LO	MO		
Ninox novaeseelandiae undulata	Norfolk Island Boobook	E				[73]									BKO
Numenius madagascariensis	Eastern Curlew	CE	✓ (W)	✓		[33]	KO	KO	KO	LO	KO	KO	KO	KO	KO
Pachycephala pectoralis xanthoprocta	Golden Whistler (Norfolk Island)	V													KO
Pachyptila turtur	Fairy Prion			✓			KO	KO	KO	KO	KO	KO	KO	KO	
Pachyptila turtur subantartica	Fairy Prion (southern)	V				[34]	KO	KO	KO	KO	KO	KO	KO	KO	
Pandion haliaetus	Osprey		✓ (W)	✓			KO	KO	KO			BKO	BKO		
Pardalotus quadragintus	Forty-spotted Pardalote	E				[72]		KO		FKO	FKO				
Pedionomus torquatus	Plains-wanderer	CE				[61], [62]		LO							
Petroica multicolor	Norfolk Island Robin	V													BLO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Phaethon rubricauda	Red-tailed Tropicbird		✓ (M)	✓	*				KO			BKO	BKO	BKO*b, f	BKO
Phaethon lepturus	White-tailed Tropicbird		✓ (M	✓					MO			KO	KO	KO	KO
Phalacrocorax fuscescens	Black-faced Cormorant			✓	*		BKO	BKO*b, f		BKO*b, f	BKO*b, f				
Platycercus caledonicus brownii	Green Rosella (King Island)	V				[63]	KO	KO							
Pycnoptilus floccosus	Pilotbird	V				[64]		KO	KO			KO			
Procelsterna cerulea	Grey Ternlet, Grey noddy, Blue noddy			✓	*									*b,f	BKO
Recurvirostra novaehollandiae	Red-necked Avocet			✓			RKO	RKO			KO	RKO	RKO		
Rhipidura rufifrons	Rufous Fantail		✓ (T)	✓			KO	KO	KO			KO	KO		
Rostratula australis	Australian Painted Snipe	E		✓		[35], [36]	KO	KO	KO			KO	KO		
Stiltia isabella	Australian Pratincole			✓				KO							
Stagonopleura guttata	Diamond Firetail	V				[65]	KO	KO	KO			KO	LO		
Sula dactylatra	Masked Booby		✓ (M)	✓	*							BKO		BKO*b, f	BKO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Sula leucogaster	Brown Booby		✓ (M)	✓									BKO		
Turnix melanogaster	Black-breasted Button-quail	V				[69], [70]						MO	KO		
Tyto novaehollandiae castanops (Tasmanian population)	Masked Owl (Tasmanian)	V				[66], [67]	KO	BKO		BKO	BKO				
Listed Critical Habitat															
Thalassarche cauta (Shy Albatross) - Albatross Island, The Mewstone, Pedra Branca								✓		✓	✓				

Threatened Species:

V Vulnerable
E Endangered
CE Critically Endangered

Migratory Species:

M Marine
W Wetland
T Terrestrial

Biologically Important Area:

* BIA Present
a Aggregation
b Breeding
f Foraging

Type of Presence:

MO Species of species habitat may occur within area
LO Species or species habitat likely to occur within area
KO Species or species habitat known to occur within area
MrLO Migration route likely to occur within area
MrKO Migration route known to occur within area
FMO Foraging, feeding or related behaviour may occur within area
FLO Foraging, feeding or related behaviour likely to occur within area
FKO Foraging, feeding or related behaviour known to occur within area
BLO Breeding likely to occur within area
BKO Breeding known to occur within area

Plan Reference:

[1] National Recovery Plan for Threatened Albatrosses and Giant Petrels, 2011-2016 (DCCEEW, 2022a)
[2] Approved Conservation Advice for *Thalassarche chrysostoma* (grey-headed Albatross) (DEWHA, 2009c)
[3] Commonwealth Listing Advice on *Thalassarche chrysostoma* (grey-headed Albatross (TSSC, 2015q)
[4] Lord Howe Island Biodiversity Management Plan (DECC, 2007)
[5] Conservation Advice for *Halobaena caerulea* (Blue Petrel) (TSSC, 2015d)
[6] Approved Conservation Advice for *Pterodroma heraldica* (Herald Petrel) (TSSC, 2015e)
[7] Commonwealth Listing Advice on *Petrodroma heraldica* (Herald Petrel) (TSSC, 2002)

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	RMO Roosting may occur within area RLO Roosting likely to occur within area RKO Roosting known to occur within area						[8] Gould's Petrel (*Pterodroma leucoptera leucoptera*) Recovery Plan (NSW DEC, 2006) [9] Approved Conservation Advice for *Pterodroma mollis* (Soft-plumaged Petrel) (TSSC, 2015c) [10] Norfolk Island Region Threatened Species Recovery Plan (DCCEEW, 2025a) [11] Conservation Advice for *Charadrius leschenaultia* (Greater Sand Plover) (TSSC, 2016a) [12] Approved Conservation Advice for *Charadrius mongolus* (Lesser Sand Plover) (DCCEEW, 2023m) [13] Wildlife Conservation Plan for Migratory Shorebirds (DoE, 2015e) [14] Approved Conservation Advice for *Thinornis rubricollis rubricollis* (Hooded Plover, Eastern) (TSSC, 2014a) [15] Conservation Advice for *Calidris ferruginea* (Curlew Sandpiper) (DCCEEW, 2023j) [16] Approved Conservation Advice *for Sternula nereis nereis* (Fairy Tern) (DSEWPaC, 2011) [16] Commonwealth Listing Advice on *Sternula nereis nereis* (Fairy Tern) (TSSC, 2011a) [17] Threatened Tasmanian Eagles Recover Plan, 2006-2010 (AGDEW, 2006) [18] Conservation Advice for *Botaurus poiciloptilus* (Australasian Bittern) (TSSC, 2019) [19] Commonwealth Listing Advice on *Botaurus poiciloptilus* (Australasian Bittern) (TSSC, 2011b)									

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[20] Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024a) [21] Conservation Advice for *Calidris tenuirostris* (Great Knot) (DCCEEW, 2024b) [22] National Recovery Plan for Eastern Bristlebird (*Dasyornis brachypterus*) (CoA, 2022) [23] Yellow chat (Capricorn subspecies) *Epthianura crocea macgregori* recovery plan (Houston and Melzer, 2008) [24] Commonwealth Listing Advice on Epthianura crocea macgregor (yellow chat (Dawson)) (DCCEEW, 2021a) [25] Conservation Advice for *Erythrotriorchis radiates* (red Goshawk) (DCCEEW, 2023l) [26] National Recovery Plan for the red goshawk *Erythrotriorchis radiatus* (DERM, 2012) [27] Conservation Advice for *Lathamus discolour* (Swift Parrot) (TSSC, 2016d) [28] National Recovery Plan for the Swift Parrot (*Lathamus discolor*) (DCCEEW, 2024o) [29] Conservation Advice for *Limosa lapponica baueri* (Alaskan bar-tailed godwit) (DCCEEW, 2024c)) [30] Conservation Advice for *Limosa lapponica menzbieri* (Yakutian bar-tailed Godwit) (DCCEEW, 2024d) [31] National Recovery Plan for the Orange-bellied Parrot (*Neophema chrysogaster*) (DELWP, 2016) [32] Commonwealth Listing Advice on *Neophema chrysogaster* (TSSC, 2006)								

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[33] Approved Conservation Advice for *Numenius madagascariensis* (Far Eastern Curlew) (DCCEEW, 2023i) [34] Conservation Advice for *Pachyptila turtur subantartica* (Fairy Prion Southern) (TSSC, 2015gi) [35] Approved Conservation Advice for *Rostratula australis* (Australian Painted Snipe) (DSEWPaC, 2013c) [36] Commonwealth Listing Advice on *Rostratula australis* (Australian Painted Snipe) (TSSC, 2013b) [36] National Recovery Plan for the Australian Painted Snipe (*Rostratula australis*) (DCCEEW, 2022c) [37] Approved Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW, 2024e) [38] Approved Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024f) [39] Approved Conservation Advice for *Xenus cinereus* (Terek sandpiper) (DCCEEW, 2024g) [40] Conservation Advice for *Ardenna grisea* (sooty shearwater) (DCCEEW, 2023a) [41] Conservation Advice for *Arenaria interpres* (Ruddy Turnstone) (DCCEEW, 2024h) [42] Conservation Advice for *Callinago hardwickii* (Latham's Snipe) (DCCEEW, 2024i) [43] Conservation Advice for *Limosa limosa* (Black-tailed Godwit) (DCCEEW, 2024j) [44] Conservation Advice for *Tringa nebularia* (Common Greenshank) (DCCEEW, 2024k)								

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[45] Conservation Advice for *Acanthiza pusilla magnirostris* (King Island brown thornbill) (DCCEEW, 2023c) [46] King Island Biodiversity Management Plan (DPIPWE, 2012) [47] Conservation Advice for *Acanthornis magna greeniana* (King Island scrubtit) (DCCEEW, 2023d) [48] Commonwealth Listing Advice on *Acanthornis magna greeniana* (Scrubtit (King Island)) (DCCEEW, 2021b) [49] National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*) (DoE, 2016) [50] Conservation Advice *Anthochaera phrygia* regent honeyeater (DoE, 2015e) [51] Conservation Advice for Aphelocephala leucopsis (southern whiteface) (DCCEEW, 2023e) [52] Conservation Advice for *Callocephalon fimbriatum* (Gang-gang Cockatoo) (DAWE, 2022) [53] National Recovery Plan for the South-Eastern Red-tailed Black-Cockatoo *Calyptorhynchus banksii graptogyne* (CoA, 2007) [54] Conservation Advice for *Calyptorhynchus lathami lathami* (South-eastern Glossy Black Cockatoo) (DCCEEW, 2022b) [55] Conservation Advice for *Climacteris picumnus victoriae* (brown treecreeper (south-eastern)) (DCCEEW, 2022d) [56] Conservation Advice *Falco hypoleucos* Grey Falcon (TSSC, 2020a) [57] Conservation Advice *Grantiella picta* painted honeyeater (DoE, 2015f) [58] National Recovery Plan for the Painted Honeyeater (*Grantiella picta*) (DAWE, 2021a)								

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[59] National Recovery Plan for Malleefowl (DCCEEW, 2024) [60] Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin (south-eastern)) (DCCEEW, 2023g) [61] Conservation Advice *Pedionomus torquatus* plains-wanderer (TSSC, 2015n) [62] National Recovery Plan for the Plains-wanderer (*Pedionomus torquatus*) (CoA, 2016). [63] Conservation Advice *Platycercus caledonicus brownii* green rosella (King Island) (TSSC, 2015o) [64] Conservation Advice for *Pycnoptilus floccos*us (Pilotbird) (DAWE, 2022a) [65] Conservation Advice for *Stagonopleura guttata* (diamond firetail) (DCCEEW, 2023h) [66] Conservation Advice for *Tyto novaehollandiae castanops* (Tasmanian Masked Owl) (DEWHA, 2010) [67] Commonwealth Listing Advice on *Tyto novaehollandiae castanops* (Masked Owl) (Tasmanian) (TSSC, 2010b) [68] National Recovery Plan for the Australasian Bittern (*Botaurus poiciloptilus*) (DCCEEW, 2023k) [69] Conservation Advice *Turnix melanogaster* black-breasted button-quail. (TSSC, 2015m) [70] National Recovery Plan for black-breasted button-quail (*Turnix melanogaster*) (DCCEEW, 2022) [71] Conservation Advice *Pardalotus quadraginatus* forty-spotted pardalote (TSSC, 2016)								

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[72] National Recovery Plan for the forty-spotted pardalote *Pardalotus quadraginatus* (DCCEEW, 2024i) [73] Conservation Advice *Ninox novaeseelandiae undulata* (Norfolk Island boobook owl) (TSSC, 2016f) [74] Conservation Advice for *Neophema chrysostoma* (blue-winged parrot) (DCCEEW, 2023n) [75] Approved Conservation Advice for *Neochmia ruficauda ruficauda* (Star Finch (eastern)) (DEWHA, 2008a) [76] Conservation Advice *Strepera fuliginosa colei* black currawong (King Island) (TSSC, 2015n) [77] Conservation Advice *Hirundapus caudacutus* White-throated Needletail (TSSC, 2019) [78] Conservation Advice *Hypotaenidia sylvestris* Lord Howe woodhen (TSSC, 2017) [79] Approved Recovery Plan for the Lord Howe Woodhen (NSW NPWS, 2002) [80] Conservation Advice *Geophaps scripta scripta* squatter pigeon (southern) (TSSC, 2015p) [81] Conservation Advice *for Cyclopsitta diophthalma coxeni* (Coxen's fig-parrot) (DCCEEW, 2023p) [82] Coxen's Fig-Parrot *Cyclopsitta diophthalma coxeni* Recovery Plan 2001-2005 (Coxen's Fig-Parrot Recovery Team, 2001) [83] Conservation Advice Cyanoramphus cookii Norfolk Island green parrot (TSSC, 2016f) [84] Approved Conservation Advice for *Ceyx azureus diemenensis* (Tasmanian Azure Kingfisher) (DEWHA, 2010a)								

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[85] Conservation Advice *Atrichornis rufescens rufous* scrub-bird (DoE, 2014a) [86] Conservation Advice for *Sternula albifrons* (little tern) (DCCEW, 2025b) [87] Commonwealth Listing Advice on *Macronectes halli* (TSSC, 2001a) [88] Commonwealth Listing Advice on *Macronectes giganteus* (TSSC, 2001b).									

Table 3-17: Seabird and Shorebird Threatened Species Management Advice Relevant to Petroleum Activities within Applicable Amplitude Energy Operating Areas

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
• Antipodean Albatross • Southern Royal Albatross • Wandering Albatross • Gibson's Albatross • Northern Royal Albatross • Sooty Albatross • Buller's Albatross • Pacific Albatross • Shy Albatross • Grey-headed Albatross • Chatham Albatross • Campbell Albatross • Black-browed Albatross • Salvin's Albatross • White-capped Albatross • Southern Giant Petrel • Northern Giant Petrel	National Recovery Plan for Threatened Albatrosses and Giant Petrels (DCCEEW, 2022a)	• Marine pollution • Interactions with offshore installations and ships, including artificial lights	• Marine pollution: Minimise the effects of marine debris, plastics and pollution. – Undertake, as feasible, monitoring of breeding colonies for marine debris, plastics and marine pollution impacts including, as a priority: – Incidence of oiled birds at nest – Effect of plastics and marine pollution – Develop baseline measures of levels of heavy metals and persistent organic pollutants. – Risk-based response strategies are implemented where appropriate, for marine pollution incidents that have the potential to affect breeding populations. • Note: Shy Albatross is the only species that breeds within the Environmental Sectors
Grey-headed Albatross	Approved Conservation Advice for *Thalassarche chrysostoma* (grey-headed Albatross) (DEWHA, 2009c)	Marine pollution, including marine debris	• None identified • See above (for National Recovery Plan for Threatened Albatrosses and Giant Petrels) • Note: Grey-headed Albatross breeding locations are outside of the Environmental Sectors
White-bellied Storm	Lord Howe Island Biodiversity Management Plan (DECC, 2007)	Marine pollution, including marine debris	• None identified • See above (for National Recovery Plan for Threatened Albatrosses and Giant Petrels)

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
			• Note: Grey-headed Albatross breeding locations are outside of the Environmental Sectors
Blue Petrel	Approved Conservation Advice for *Halobaena caerulea* (Blue Petrel) (TSSC, 2015d)	Habitat loss, disturbance and modification	None identified
Herald Petrel	Approved Conservation Advice for *Pterodroma heraldica* (Herald Petrel) (TSSC, 2015e)	None identified	None identified
Gould's Petrel	Gould's Petrel (*Pterodroma leucoptera leucoptera*) Recovery Plan (NSW DEC, 2006)	• Oil spills • Note: oil spills in the vicinity Cabbage Tree Island are not considered a threat because the Gould's Petrel does not feed in coastal waters however, oceanic oil spills may pose some risk (NSW DEC, 2006)	None identified
Soft-plumaged Petrel	Approved Conservation Advice for *Pterodroma mollis* (Soft-plumaged Petrel) (TSSC, 2015c)	None identified	None identified
Sooty Shearwater	Conservation Advice for *Ardenna grisea* (sooty shearwater) (DCCEEW, 2023a)	None identified	None identified
Kermadec Petrel (western)	• Norfolk Island Region Threatened Species Recovery Plan (DCCEEW, 2025a)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
	• Lord Howe Island Biodiversity Management Plan (DECC, 2007)	None identified	None identified
Greater Sand Plover	• Approved Conservation Advice for Charadrius leschenaultia (Greater Sand Plover) (TSSC, 2016a)	Habitat loss and degradation from pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented
Lesser Sand Plover	Approved Conservation Advice for *Charadrius mongolus* (Lesser Sand Plover) (DCCEEW,2023m)	Habitat loss and degradation from pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented
Hooded Plover (eastern)	Approved Conservation Advice for *Thinornis rubricollis* (Hooded Plover, Easter) (TSSC, 2014a)	• Oil spills • Entanglements and ingestion of marine debris	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. • Marine debris: Evaluate risk of marine debris (including risk of entanglement and/or ingestion) and, if required, appropriate mitigation measures are implemented.
Grey Plover	Approved Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW, 2024e)	Habitat loss	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies and site managers.
Curlew Sandpiper	Approved Conservation Advice for *Calidris ferruginea* (Curlew Sandpiper) (DCCEEW, 2023j)	• Habitat loss and degradation • Acute and chronic pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented.

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
			• Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
Australian Fairy Tern	Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (DSEWPaC, 2011a)	Oil spills, particularly in Victoria, where the close proximity of oil facilities poses a risk of oil spills that may affect the species' breeding habitat	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented.
Tasmanian Wedge-tailed Eagle	Threatened Tasmanian Eagles Recover Plan, 2006-2010 (AGDEW, 2006)	Oiling, entanglement, Pollution	None identified
Australasian Bittern	Approved Conservation Advice for *Botaurus poiciloptilus* (Australasian Bittern) (TSSC, 2019)	Reduced water quality as a result of increasing salinity, siltation and pollution	None identified
	National Recovery Plan for the *Australasian Bittern* (Botaurus poiciloptilus) (DCCEEW, 2023k)	Reduced water quality	None identified
Red Knot	Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024a)	• Habitat loss and degradation from environmental Pollution • Acute Pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. • Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
Great Knot	Approved Conservation Advice for *Calidris tenuirostriss* (Great Knot) (DCCEEW, 2024b)	• Habitat loss and degradation from environmental Pollution • Acute Pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. • Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
Sharp-tailed Sandpiper	Approved Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024f)	Habitat loss, degradation and fragmentation	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
Terek Sandpiper	Approved Conservation Advice for *Xenus cinereus* (Terek sandpiper) (DCCEEW, 2024g)	Habitat loss, degradation and fragmentation	Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
Eastern Bristlebird	National Recovery Plan for Eastern Bristlebird (*Dasyornis brachypterus*) (CoA, 2022))	None identified	None identified
Capricorn Yellow Chat	Approved Conservation Advice for *Epthianura crocea macgregori* (Yellow Chat) (DCCEEW, 2021a)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
Red Goshawk	Conservation Advice for *Erythrotriorchis radiates* (Red Goshawk) (DCCEEW, 2023l)	None identified	None identified
Swift Parrot	Approved Conservation Advice for *Lathamus discolour* (Swift Parrot) (TSSC, 2016d)	None identified	None identified
	National Recovery Plan for the Swift Parrot (*Lathamus discolor*) (DCCEEW, 2024o)	None identified	None identified
Western Alaskan Bar-tailed Godwit (baueri)	Approved Conservation Advice for *Limosa lapponica baueri* (Alaskan Bar-tailed Godwit (DCCEEW, 2024c)	• Habitat loss and degradation from pollution • Acute Pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. • Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies and site managers.
Northern Siberian Bar-tailed Godwit	Approved Conservation Advice for *Limosa lapponica menzbieri* (Yakutian bar-tailed Godwit) (DCCEEW, 2024d)	• Habitat loss and degradation from pollution • Acute Pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. • Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
			foraging opportunities as identified by species experts, local studies and site managers.
Orange-bellied Parrot	National Recovery Plan for the Orange-bellied Parrot (*Neophema chrysogaster*) (DELWP, 2016)	• None identified	• None identified
Eastern Curlew	Approved Conservation Advice for *Numenius madagascariensis* (Far Eastern Curlew) (DCCEEW, 2023i)	• Habitat loss and degradation • Chronic and acute pollution	• Marine pollution: Evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. • Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
Fairy Prion (southern)	Approved Conservation Advice for *Pachyptila turtur subantartica* (Fairy Prion Southern) (TSSC, 2015g)	None identified	None identified
Australian Painted Snipe	Approved Conservation Advice for *Rostratula australis* (Australian Painted Snipe) (DSEWPaC, 2013c)	None identified	None identified
	National Recovery Plan for the Australian Painted Snip (*Rostratula australis*)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
	(DCCEEW, 2022c)		
Ruddy Turnstone	Conservation Advice for *Arenaria interpres* (ruddy turnstone) (DCCEEW, 2024h)	• Habitat loss, degradation and fragmentation • Acute pollution	• Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers.
Latham's Snipe	Conservation Advice for *Gallinago hardwickii* (Latham's snipe) (DCCEEW, 2024i)	None identified	None identified
Black-tailed Godwit	Conservation Advice for *Limosa limosa* (black-tailed godwit). (DCCEEW, 2024j)	• Habitat loss, degradation and fragmentation • Acute pollution	• Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers. • None identified
Common Greenshank	Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024k)	• Habitat loss, degradation and fragmentation • Acute pollution	• Ensure that future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major foraging opportunities as identified by species experts, local studies, and site managers. • None identified
King Island Brown Thornbill	Conservation Advice for *Acanthiza pusilla magnirostris* (King Island brown thornbill) (DCCEEW, 2023c)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
	King Island Biodiversity Management Plan (DPIPWE, 2012)	None identified	None identified
King Island Scrubtit	Conservation Advice for *Acanthornis magna greeniana* (King Island scrubtit) (DCCEEW, 2023d)	None identified	None identified
	King Island Biodiversity Management Plan (DPIPWE, 2012)	None identified	None identified
Regent Honeyeater	National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*) (DoE, 2016)	None identified	None identified
	Conservation Advice *Anthochaera phrygia (*regent honeyeater) (DoE, 2015e)	None identified	None identified
Southern Whiteface	Conservation Advice for *Aphelocephala leucopsis* (southern whiteface) (DCCEEW, 2023e)	None identified	None identified
Gang-gang Cockatoo	Conservation Advice for *Callocephalon fimbriatum* (Gang-gang Cockatoo) (DAWE, 2022)	None identified	None identified
South-eastern Red-tailed Black-Cockatoo	National Recovery Plan for the South-Eastern Red-tailed Black-Cockatoo (*Calyptorhynchus banksii graptogyne*) (CoA, 2007)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
Brown Treecreeper	Conservation Advice for *Climacteris picumnus victoriae* (brown treecreeper (south-eastern)) (DCCEEW, 2022d)	None identified	None identified
Grey Falcon	Conservation Advice *Falco hypoleucos* (Grey Falcon) (TSSC, 2020a)	None identified	None identified
Painted Honeyeater	Conservation Advice *Grantiella picta* (painted honeyeater) (DoE, 2015f)	None identified	None identified
	National Recovery Plan for the Painted Honeyeater (*Grantiella picta*) (DAWE, 2021)	None identified	None identified
Malleefowl	National Recovery Plan for Malleefowl (DCCEEW, 2024)	None identified	None identified
South-eastern Hooded Robin	Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin (south-eastern)) (DCCEEW, 2023g)	None identified	None identified
Plains-wanderer	Conservation Advice *Pedionomus torquatus* (plains-wanderer) (TSSC, 2015n)	None identified	None identified
	National Recovery Plan for the Plains-wanderer (*Pedionomus torquatus*) (Commonwealth of Australia, 2016)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Bass Strait	Gippsland
Green Rosella (King Island)	Conservation Advice *Platycercus caledonicus brownii (*green rosella (King Island)) (TSSC, 2015o)	None identified	None identified
Pilotbird	Conservation Advice for *Pycnoptilus floccosus* (Pilotbird) (DAWE, 2022a)	None identified	None identified
Diamond Firetail	Conservation Advice for *Stagonopleura guttata* (diamond firetail) (DCCEEW, 2023h)	None identified	None identified
Masked Owl (Tasmania)	Conservation Advice for *Tyto novaehollandiae castanops* (Tasmanian Masked Owl) (TSSC, 2010b)	None identified	None identified

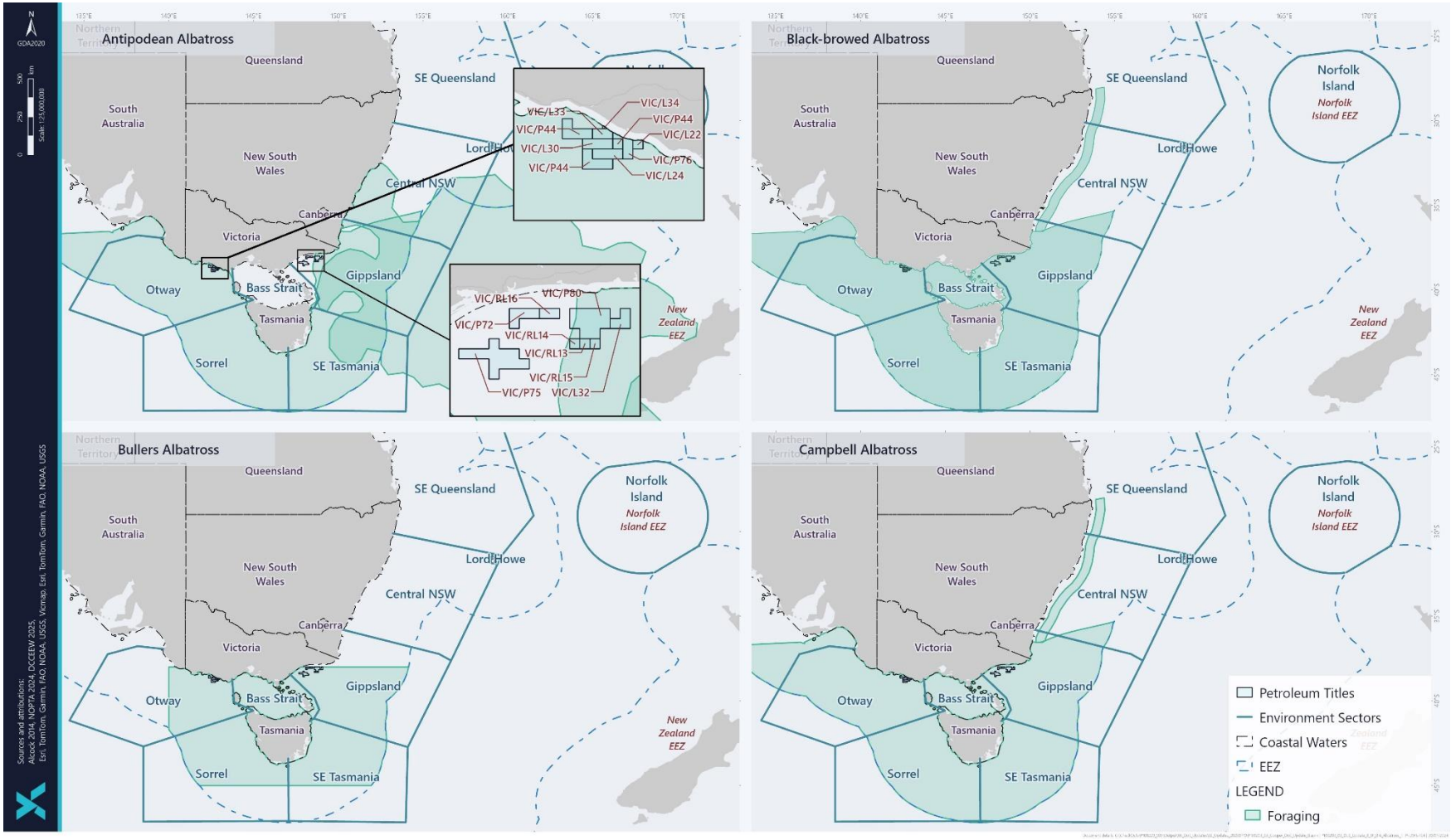


Figure 3-28: BIAs for the Antipodean Albatross, Black-browed Albatross, Buller's Albatross, and Campbell Albatross

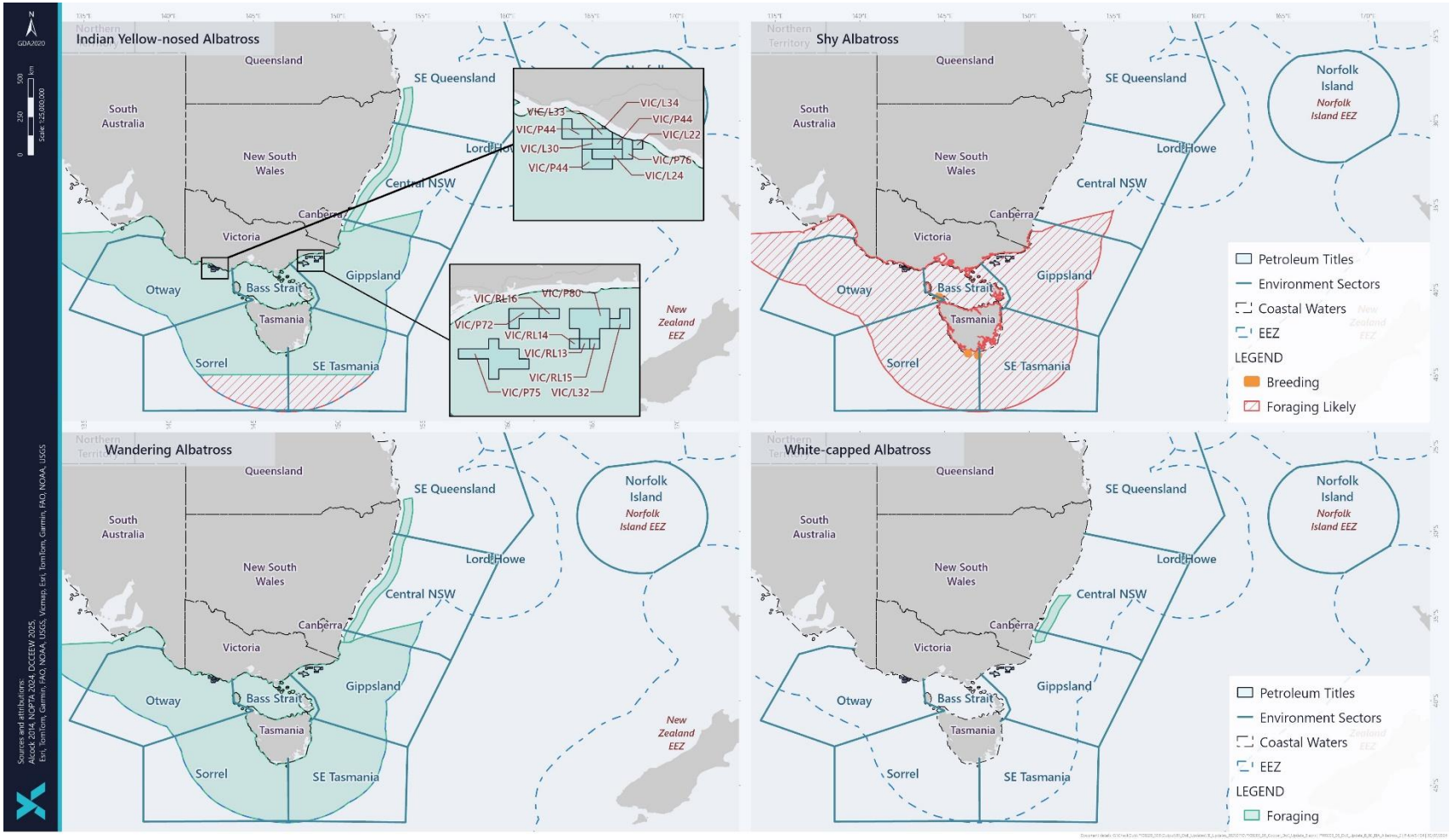


Figure 3-29: BIAs for the Indian Yellow-nosed Albatross, Wandering Albatross, Shy Albatross, and White-capped Albatross

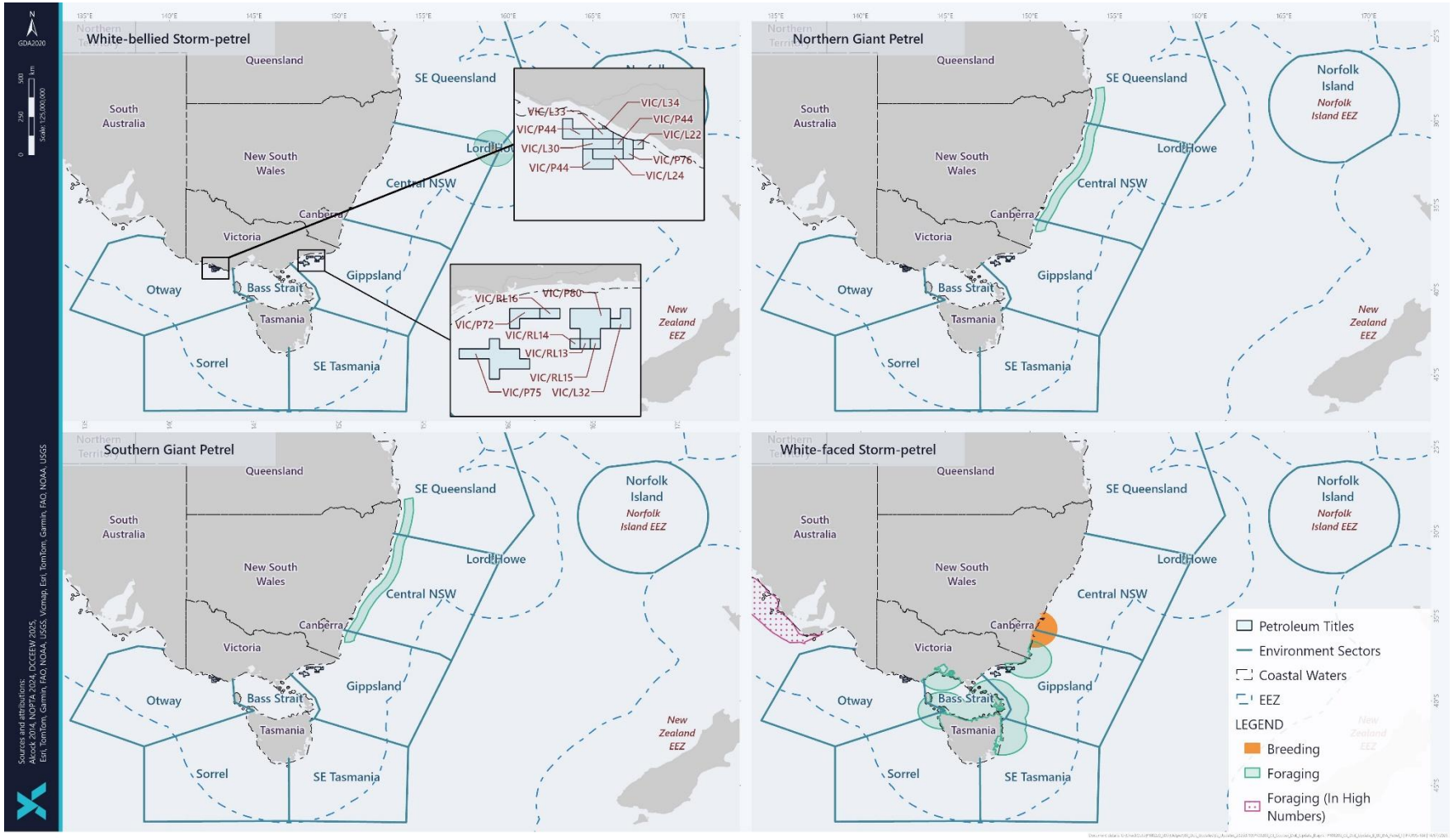


Figure 3-30: BIAs for the White-bellied Storm Petrel, Northern Giant Petrel, Southern Giant Petrel, and White-faced Petrel

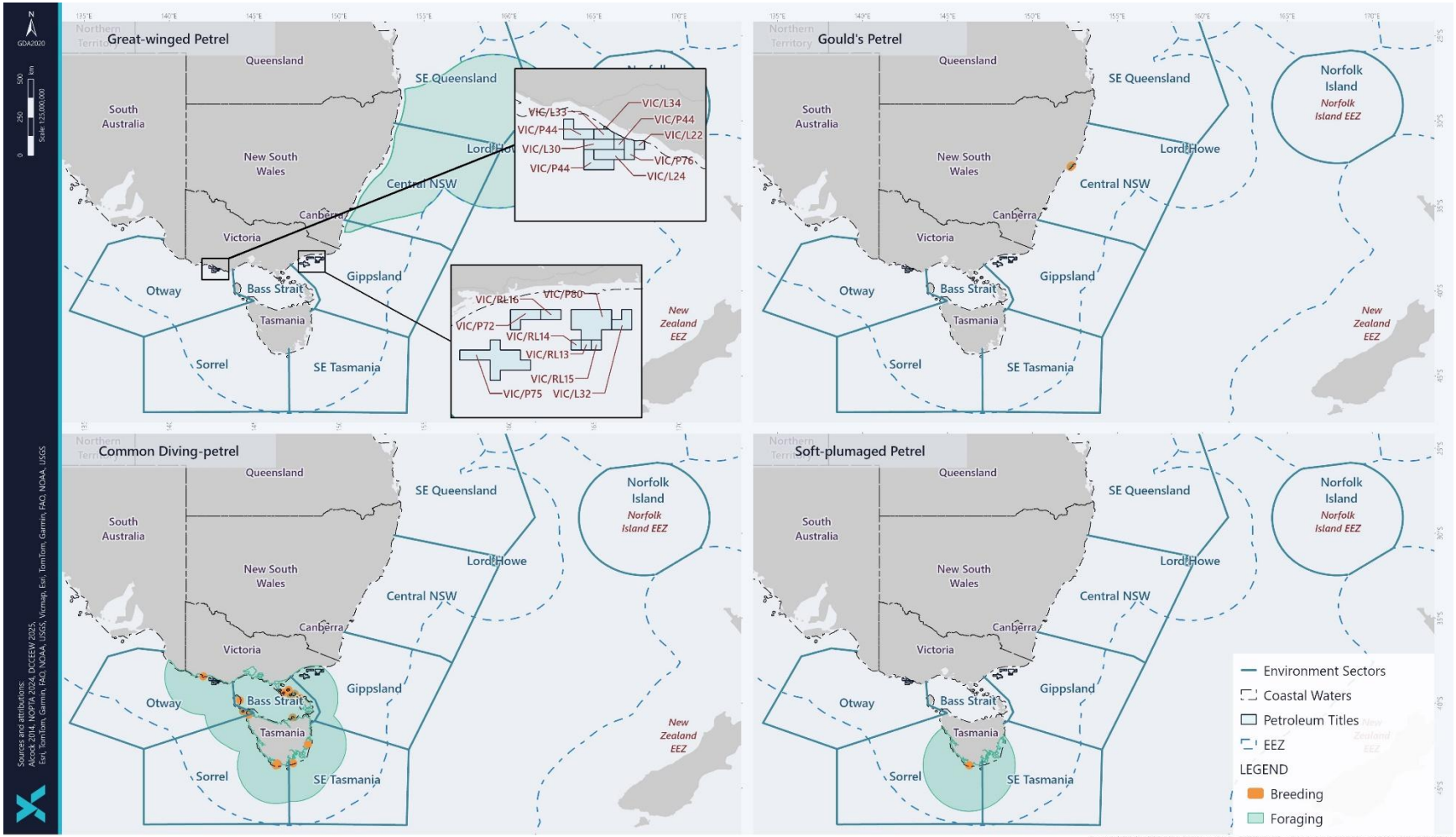


Figure 3-31: BIAs for the Great-winged Petrel, Gould's Petrel, Common Diving Petrel, and Soft-plumage Petrel

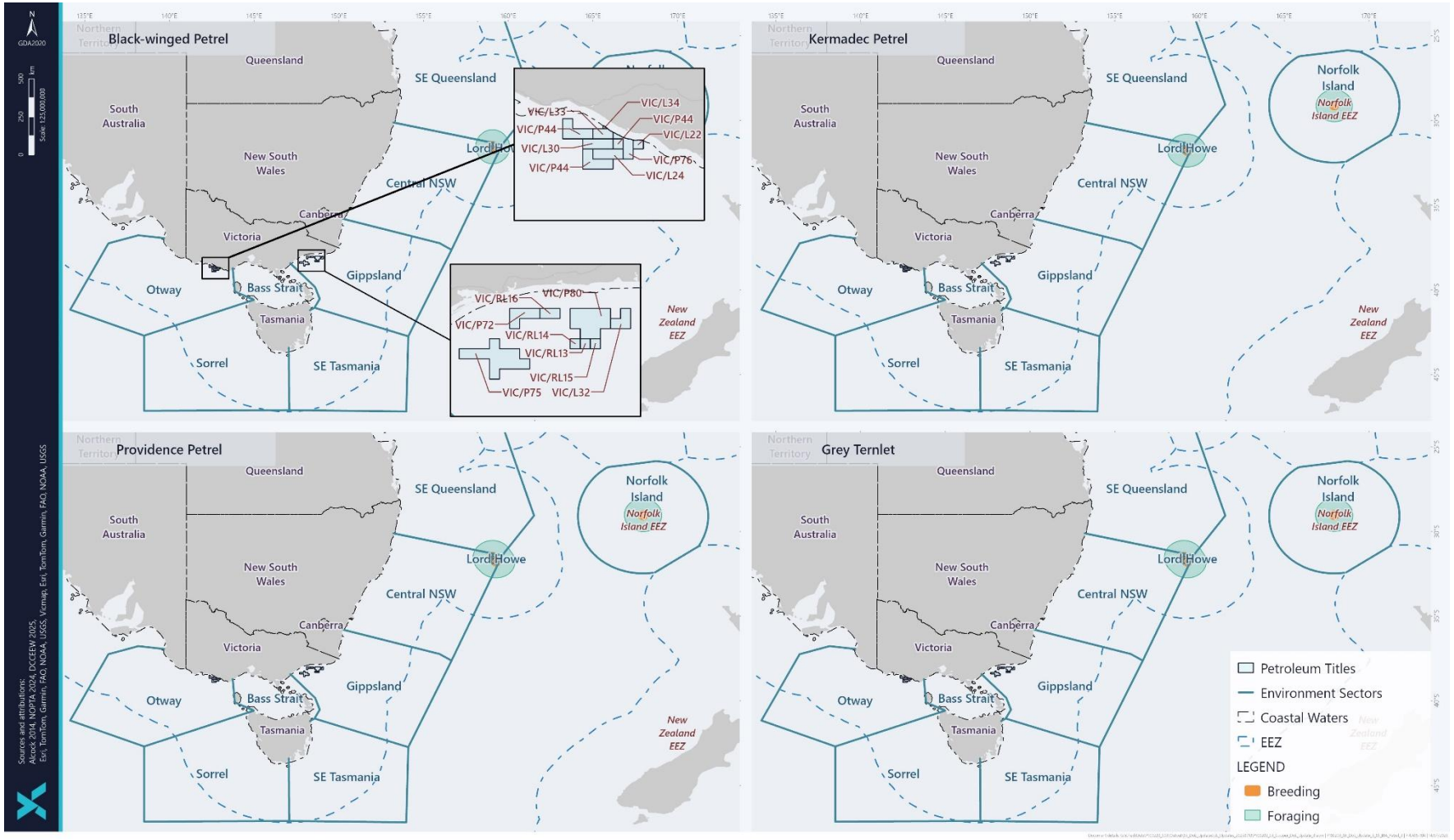


Figure 3-32: BIAs for the Black-winged Petrel, Kermadec Petrel, Providence Petrel, and Grey Ternlet

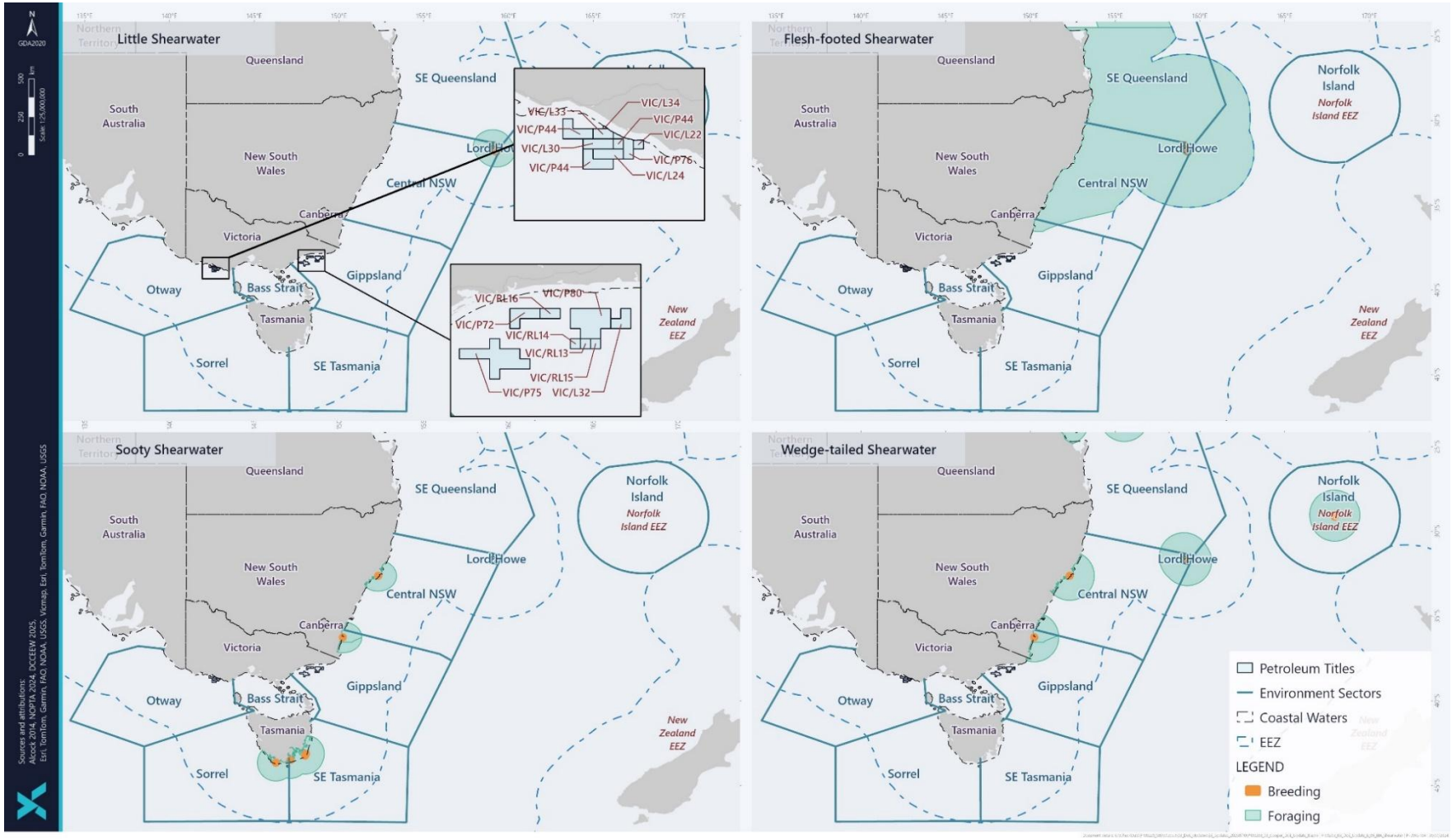


Figure 3-33: BIAs for the Little Shearwater, Flesh-footed Shearwater, Sooty Shearwater, and Wedge-tailed Shearwater

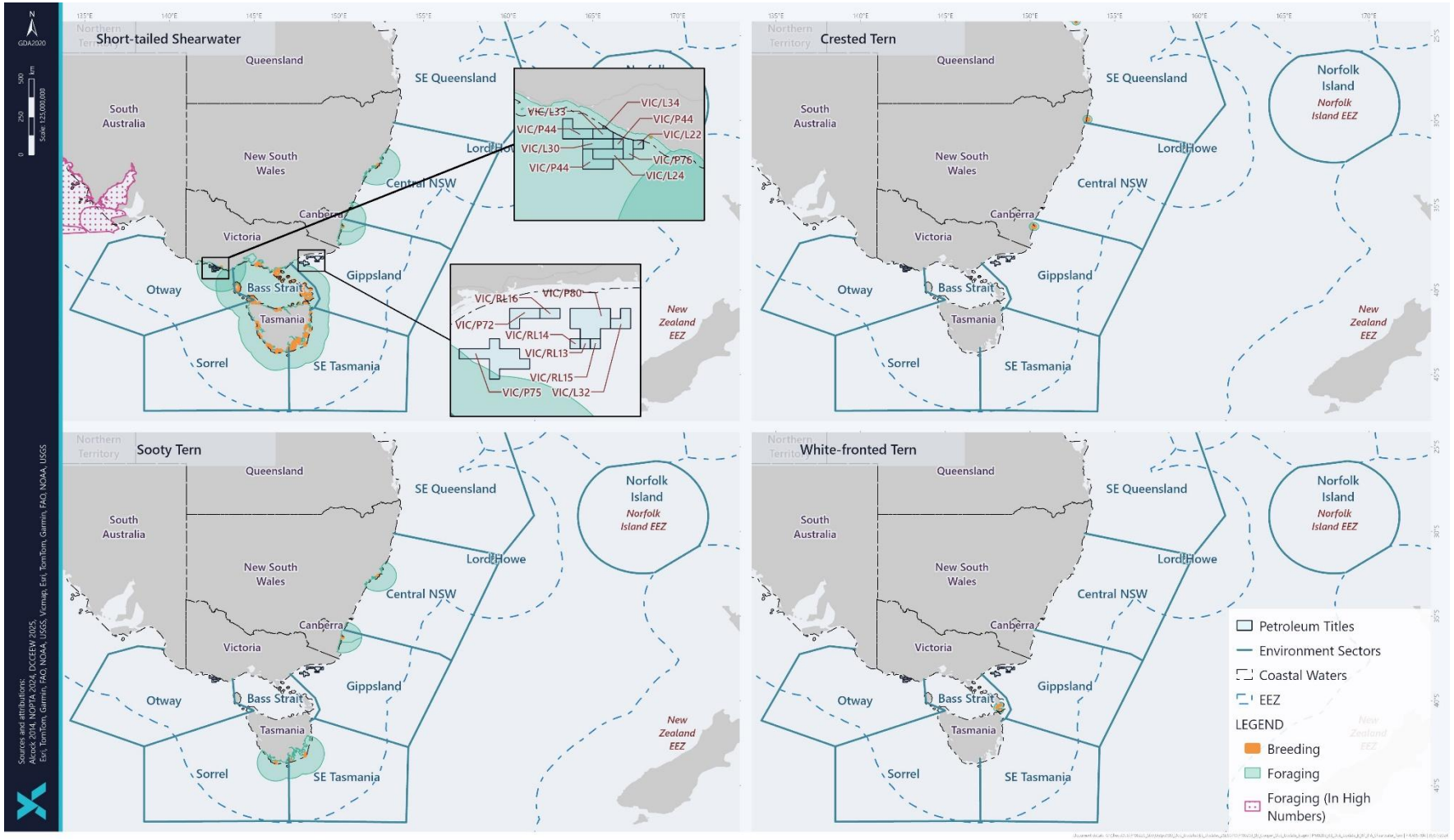


Figure 3-34: BIAs for the Short-tailed Shearwater, Crested Tern, Sooty Tern, White-Fronted Tern

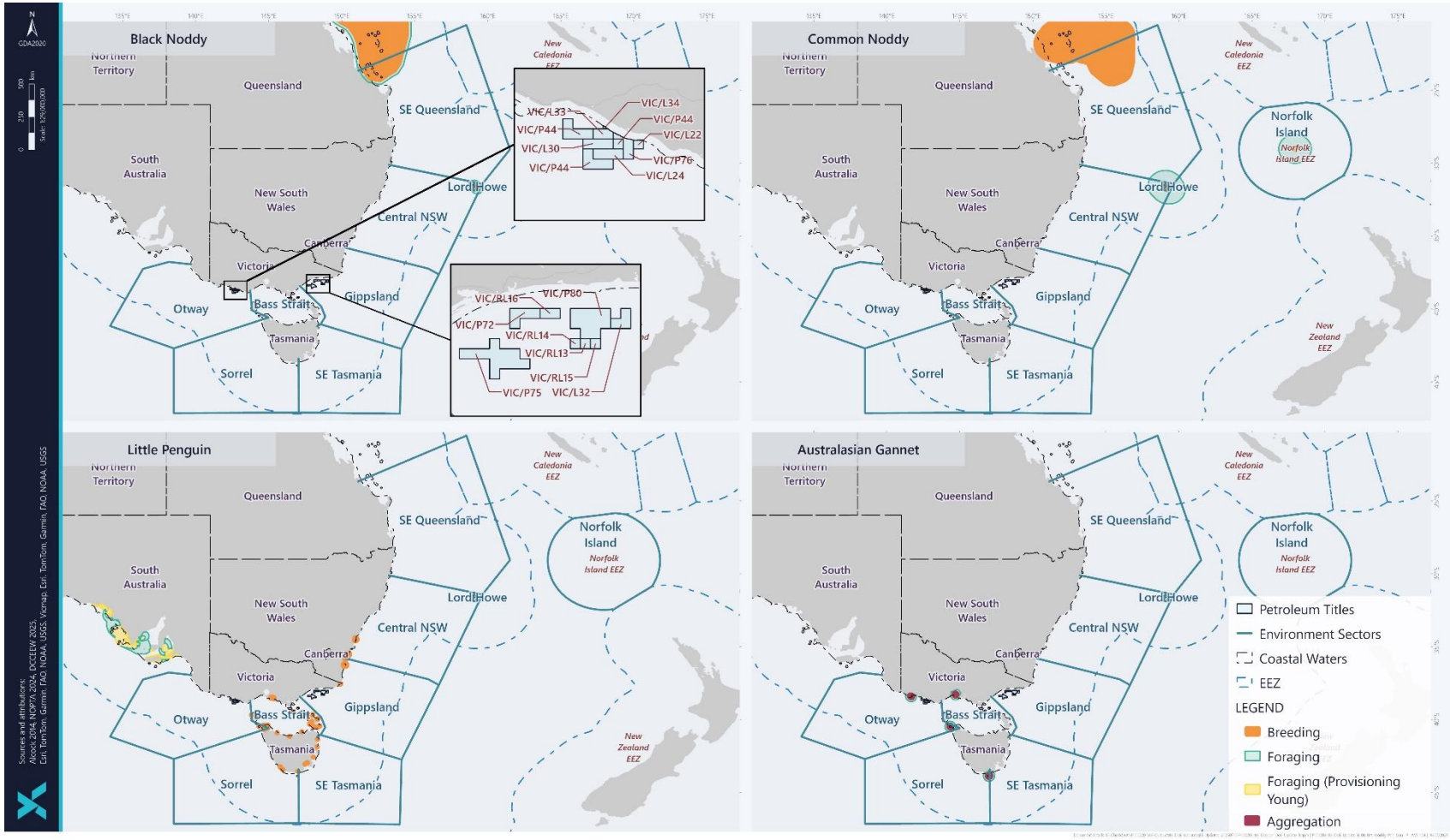


Figure 3-35: BIAs for the Black Noddy, Common Noddy, Little Penguin and Australasian Gannet

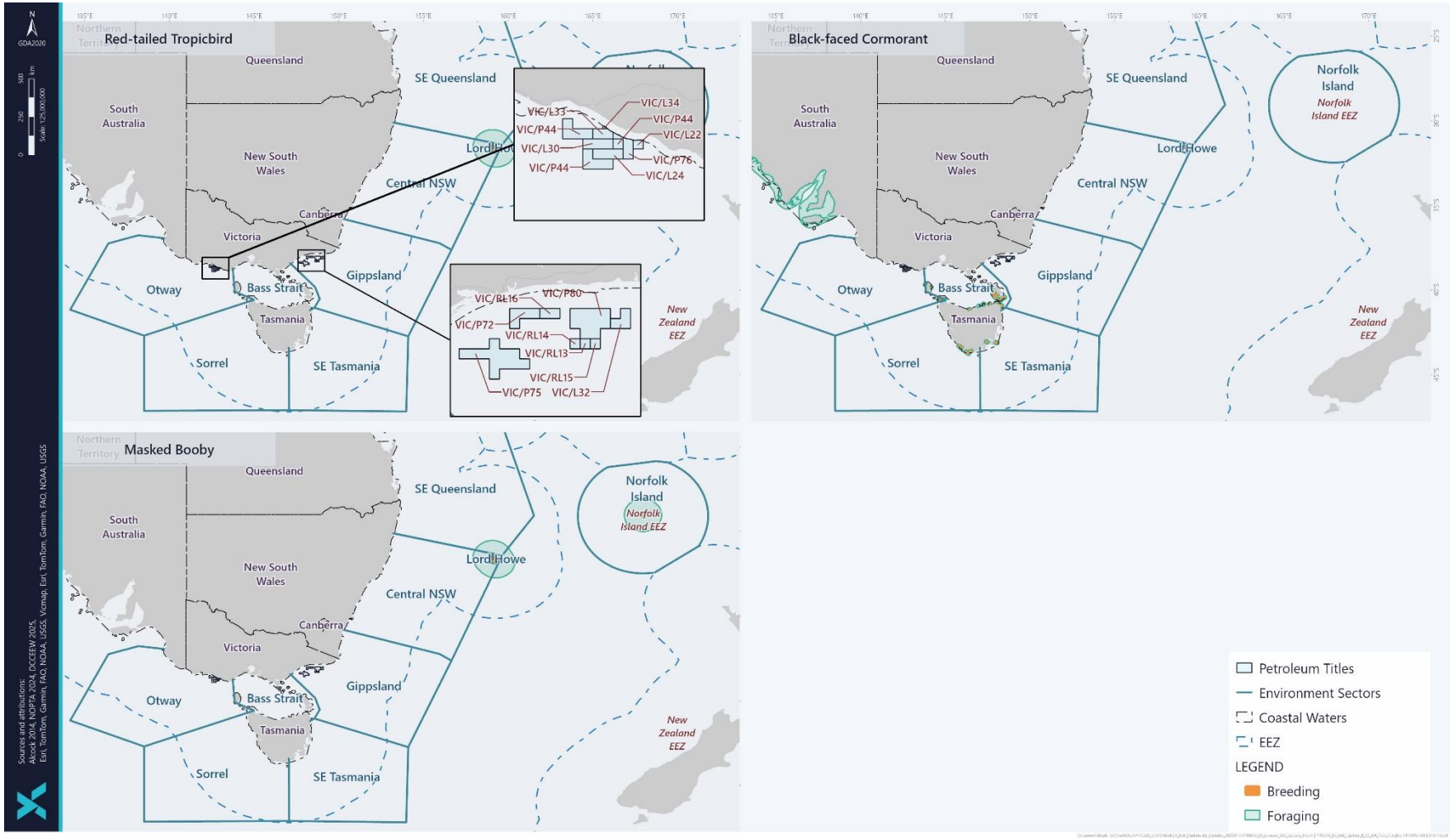


Figure 3-36: BIAs for the Red-tailed Tropicbird, Black-faced Cormorant, and Masked Booby

3.13 Marine Invertebrates

Marine invertebrates comprise a variety of different organisms and occur from the sea surface to the seafloor and into the substrate. Within the south-east marine region shelf rocky reefs, and shelf rocky reefs and hard substrates, are identified as a key ecological features (refer Section 4.6) which provides habitat and shelter for fish and are important for aggregations of biodiversity and enhanced productivity by increasing the structural diversity of shelf ecosystems (DCCEEW, 2023l; Young et al., 2022).

Their size ranges from tiny, microscopic organisms to several metres in length. In addition to their inherent ecological value, some marine invertebrates are commercially important, e.g., oysters, prawns, and scallops, whilst others, such as corals, can be a major attraction for tourists. The most common marine invertebrates include:

- porifera (sponges)
- cnidarians (e.g. hydroids, anemones, jellyfish)
- marine worms
- arthropods (e.g. sea spiders)
- crustaceans (e.g., rock lobster, krill)
- molluscs (e.g. nudibranch, sea slugs, mussels, oysters, squid, octopus)
- echinoderms (e.g. sea stars, sea urchins, sea cucumbers)
- hemichordates (e.g. acorn worms)
- bryozoans (lophophorates - microscopic filter feeders).

Studies by the Museum of Victoria (Wilson and Poore, 1987; Poore et al., 1985) found that invertebrate diversity was high in southern Australian waters, although the distribution of species was patchy, with little evidence of any distinct biogeographic regions. Shallower inshore sediment sampling by Parry et al. (1990) also showed high diversity and patchy distribution. However, in these areas, crustaceans, polychaetes and molluscs were dominant.

In 1998 the Department of Natural Resources and Environment commissioned a survey of infauna along the entire length of the open Victorian coast (the '*Victorian coastal benthos study*') (Heislers and Parry, 2007). The survey collected samples at three depths (10 m, 20 m and 40 m) on 50 transects running perpendicular to the coast. Data from the survey provided evidence that species diversity in Bass Strait was higher than that recorded in other regions, with a particular region of elevation species diversity in East Gippsland (Heislers and Parry, 2007). Crustaceans (particularly amphipods) were the dominant taxa in each depth class, representing more than half of the twenty most abundant families; followed by polychaetes. There was no clear difference in the representation of families between bioregions (e.g. between Otway and Two-fold Shelf regions) (Heislers and Parry, 2007). The total number of species per site increased with depth (Heislers and Parry, 2007).

Habitat characterisation surveys along the Patricia-Baleen pipeline route (OMV Australia, 2002) showed a sand and shell/rubble seabed, with sparse epibiotic (e.g. sponges) coverage, with no reef systems (OMV Australia, 2002).

A video survey undertaken along the Patricia-Baleen pipeline in 2003 (CEE, 2003) indicates that there are four general habitat associations on the seabed along the pipeline route. Large epibiota are very

sparse, with extensive areas of sandy and shell/rubble seabed being devoid of large epibiota except for introduced screw shells and sponges. The biota identified are described below:

- Large patches of seabed comprised of old large shells, predominantly bivalves and scallops, with New Zealand screw shells present in large numbers.
- Sponge garden – a small and distinct area of large sponges and bryozoans occurs at about 50 m water depth. The sponges varied in form and colour and included fans, spheres, massives, cups and fingers. Bryozoans included lace-like corals, concertina fans, perforated rigid sheets and fern-like branches. These associations indicate that although the seabed is comprised predominantly of sand and shell grit, it is stable enough to allow these associations to grow. Schools of jackass morwong, butterfly perch and individual gurnard and leatherjackets were attracted to the sponge garden.

There is limited information on the location, distribution and dispersion, or species composition of the epibenthic fauna in Gippsland Basin region. However, records demonstrate that within the Bass Strait (eastern Gippsland Basin) region, beyond the 'mud line' greater than ~110 m, a muddy sand biotope dominates that is recognised as quite different to the upper inner shelf areas in the region (Beaman et al., 2005).

Epifauna within the vicinity of the BMG field is expected to be sparse compared to nearshore regions given the water depths, coverage of silty sand and limited availability of hard substrate. During habitat surveys conducted within the BMG field (Ierodiaconou et al, 2021), observed epibenthic communities on the surface of subsea structures to consist primarily of sand, biofilm (thin layer of epibenthos) and shells along flowlines, with the presence of some black corals/octocorals and encrusting sponges observed on well infrastructure. Black/octocorals, bryozoans and ascidians were not observed on flowlines. Along flowlines, burrows from infauna biota in mid shelf muddy sands were identified indicating extensive bioturbation.

A past survey of the Casino Henry Netherby Development found seabed communities consistent with this description with observations at 60 to 70 m depths showing a patchy presence of epifauna such as bryozoans, gorgonian cnidarians and sponges with observed colonisation of existing infrastructure (Ramboll, 2020).

In 2022, Parks Victoria published results of predictive modelling of fish species richness offshore Victorian coastline; the modelling inputs included physical and biological attributes of the coastline, with reef and associated invertebrate communities strongly linked to high fish species richness (Young et al., 2022).

Ierodiaconou et al (2020) identified commercially fished species including arrow squid (*Nototodarus gouldi),* Balmain bug (*Ibacus peronii*), Cuttlefish (*Sepiidae spp.),* red prawn (*Haliporoides sibogae*), Tasmanian giant crab (*Pseudocarcinus gigas*) and octopus (*Octopodiadea spp.).*

Commercially important invertebrates include lobsters, prawns, scallop species (see Section 5.1).

There is one threatened echinoderm species (or species habitat) that may occur within the Environmental Sectors (Table 3-18 and Table 3-19). The Tasmanian live-bearing seastar inhabits sheltered waters in the upper intertidal zone of rocky areas of southeast Tasmania, with an estimated population size of at least 350,000 individuals within 13 isolated populations (TSSC, 2009c). The species is listed as vulnerable due to its restricted geographic distribution.

The PMST identified a number of crustaceans species that may occur within the Environmental Sectors, however, most of them occur in freshwater habitats. Only two species may occur in habitats that may have connection with the sea: Furneaux burrowing crayfish and the Orbost Spiny Crayfish (Table 3-18 and Table 3-19).

3.13.1 Porifera

Porifera, or sponges, are sessile, multicellular organisms that have bodies full of pores and channels allowing water to circulate through the organism and provide food and oxygen and removes wastes. The flow is actively generated by the beating of flagella and filter bacteria and phytoplankton from the water which passes through them (Bond and Harris, 1988). Porifera flourish in waters where water movement is strong (Butler et al., 2002). Sponges do not have nervous, digestive or circulatory systems and reproduce by asexual and sexual means. Increasing temperature is generally accepted as a major environmental factor regulating the onset of reproduction activity particularly in regions of large seasonal change (spring / summer) (Fromont, 1993). Sponges are efficient colonisers of marine hard surfaces although they will not typically colonise a newly cleared surface as rapidly as some other groups (e.g. bryozoans). Once established sponges are effective competitors in retaining living space through asexual reproduction and by using chemicals to deter competitors and predators (Butler et al., 2002).

Video transects and sediment samples within and adjacent to the Casino Henry Netherby Development saw scattered areas of hard ground supporting patchy areas of abundant epibiota such as sponges (Ramboll, 2020). While sponges were present, they were not highly abundant or morphological diverse as a taxonomic group to be considered as a sponge bed, rather sponges were interspersed throughout the patchy epifaunal covering which included other invertebrate species such as bryozoans and hydroids (Ramboll, 2020).

3.13.2 Hydrozoans

Species are found in almost every marine habitat type except heavy surf zones. They are most abundant and diverse in warm shallow waters likely reflecting food abundance.

Most species have a planktonic larval stage which is pelagic before settling onto benthic substrates and developing a polyp, A founding polyp produced new polyps by budding. In many colonies, polyps are polymorphic with different structures reflecting different functions. Polyps produce “adult” sexually-reproducing medusae which are free-swimming and release sperm and eggs in the water (broadcast spawners) where fertilisation occurs. Colonies are usually sessile benthic, but some notably the siphonophores are pelagic floaters. Most hydrozoans are predators or filter-feeders. Filter feeders trap small zooplankton; pelagic hydrozoans show selectivity in prey types taking mainly fish larvae, soft bodied invertebrates or micro-crustaceans. Predators can include snails, worms, fish and crustaceans (University of Michigan, 2017).

Video transects and sediment samples within and adjacent to the Casino Henry Netherby Development saw scattered areas of hard ground supporting patchy areas of abundant epibiota such as colonial hydroids (Ramboll, 2020).

3.13.3 Bryozoans

Bryozoans are sessile, aquatic invertebrate filter feeding animals which attach to hard substrates and form lace-like colonies. They have no respiratory organs, heart, or blood vessels. Instead, they absorb oxygen and eliminate carbon dioxide through the body wall. Colonies of bryozoans are started by a single individual that, after its larval existence, settles onto a substrate and begins to reproduce asexually (by budding) after settlement. Bryozoans are hermaphrodites and fertilisation can be external in the water column or internal with embryos brooded in the body (as do ascidians) fertilised with sperm brought in on the feeding current. The larvae which are hatched are then released and swim but do not feed; they swim towards the light then after a few hours swim down

to the sea floor to colonise. For species which do not brood but release eggs, fertilised eggs become part of the plankton stream for ~2 months until they are large enough to descend and start a new colony (Earthlife, 2014). Temperature controls all aspects of bryozoan life. In spring, rising water temperatures and increased intensity of light stimulate phytoplankton growth which initiates active budding in bryozoans and to some degree sexual reproduction (Smithsonian Institute, 2014). Most bryozoans use chemicals as well as spines as a predator deterrent and thus have only relatively few specialised predators (Butler et al., 2002).

Video transects and sediment samples within and adjacent to the Casino Henry Netherby Development saw scattered areas of hard ground supporting patchy areas of abundant epibiota such as bryozoans which were a common species observed (Ramboll, 2020).

3.13.4 Molluscs

3.13.4.1 Gastropods

Univalve gastropods can live up to 20 years growing to a shell length of over 200 mm. **Abalone** feed on algae and are prey for crabs, rock lobster, octopi, fish and rays. Blacklip abalone is the predominant species fished along the Victorian coastline area although greenlip abalone is also present. Blacklip abalone is found in shallow depths between 5-20 m and can be found in caves, on crevices and on sheltered reefs. Greenlip abalone is found in shallow reef habitats (5-40 m) and rough water at the base of steep granite cliffs. Abalone is a broadcast spawner; the species spawns from spring to autumn (Kailola et al., 1993).

Both blacklip and green abalone are target species of state fisheries including the Victorian Abalone Fishery. Habitat suitability for the blacklip abalone was mapped along the western Victorian coastline in an attempt to capture an effective footprint of the Victorian Abalone Fishery (Ierodiaconou et al., 2014). Results indicated that highly suitable regions were characterised by highly rugose seafloor structure (i.e. high-profile reefs), with the most suitable areas occurring at depths of around 10 m, and a gradual decline in suitability to depths of 20 m (Ierodiaconou et al., 2014). Colonisation success was identified to likely be driven by ecological factors such as resources and competition and physical factors such as exposure to wave energy and benthic currents (Ierodiaconou et al., 2014).

3.13.4.2 Cephalopods

Cephalopods (**squid, octopus** and **cuttlefish**) are active mobile predators. Generally, cuttlefish and octopus eat crustaceans (including lobsters) living on or near the seabed while squid eat crustaceans and fish. Cephalopods have a high growth rate, their lifespan is short and there is a single reproductive season (Boyle and Rodhurst, 2005).

The species actively swim by jet propulsion and propagate by sexual reproduction. The individual size and number of eggs (released in a jelly like egg mass) during a reproductive season is variable and ranges from a few large eggs (1 million) small eggs drifting in the plankton. The incubation period is highly temperature dependent and is completed with the hatching of the larval stage which resembles a miniature adult. After breeding the adults die within a short time and in species with a highly synchronised breeding population this can result in conspicuous mass mortality (Boyle and Rodhurst, 2005).

An important commercial cephalopod within the Otway region is the **arrow squid** which is endemic to southern Australia (Koopman et al., 2018) and inhabits waters from estuaries to ocean depths of about 500 m but are most abundant over the continental shelf from 50 m to 200 m (Kailola et al.,

1993). Arrow squid are schooling and tend to aggregate near the seabed during daylight and disperse through the water column at night, migrating to the surface to feed. Arrow squid spawn throughout their distribution; spawning occurs in all months although there are 2 -3 peaks in spawning activity during the year. Peak catches and catch rates of squid have occurred during summer months, with peak catch timings moving earlier over time (February, March) particularly off Western Australia (Koopman et al., 2018). After eggs are released, they hatch within 1-2 months post fertilisation with the larvae most abundant in continental shelf waters of 50 – 200 m. Arrow squid are relatively short-lived reaching a maximum age of 12 months and are the prey of a number of fish species (Kailola et al., 1993).

3.13.5 Crustaceans

3.13.5.1 Rock Lobster

Rock lobsters live in a variety of reef habitats on the continental shelf in water depths between 1 and 200 m. In Victoria, the abundance of rock lobsters reduces from west to east reflecting a decreasing area of suitable rocky reef habitat (VFA, 2024a). The species is carnivorous and eats molluscs, small crustaceans, echinoderms and other benthic invertebrates. Major predators of the rock lobster are octopus, gummy shark, southern rock cod, flathead, wrasse, morwongs and rock ling (Kailola et al., 1993).

The lifecycle of the southern rock lobster is complex – after mating in autumn, fertilized eggs are carried under the tail of the female for approximately three months before hatching typically between September and November / December (DPI, 2009; Kailola et al., 1993). Egg hatching typically occurs earlier in the southern waters of the species distribution (Kailola et al., 1993). A female lobster with a carapace length of 124 mm can carry up to 400,000 eggs (Kailola et al., 1993).

The eggs hatch into larvae (or phyllosoma) which undergo eleven developmental stages over a period of 12-24 months in pelagic environments while being dispersed and distributed by oceanic currents to distances at least 1,100 km from land (Kailola et al., 1993). Given the long-lived nature of the SRL larval phase, there can be up to two cohorts of larvae present in shelf waters at any one time. Larval distribution is initially in shelf waters with currents quickly dispersing larvae along shore and into offshore waters. Mixing of larvae and loss of regional integrity of larvae is prevalent in southeast South Australia, Tasmania and eastern Victoria given the net drift east. Additionally, phyllosoma are found over a variety of water depths and are assumed to have no affective horizontal swimming capacity in the marine environment (Bruce et al., 2007). Phyllosoma are observed to rise to surface waters (~0-20 m) during night hours and sink during the daylight hours (~50-200 m) (Bruce et al., 2007).

During metamorphosis juvenile rock lobsters shift from a planktonic (phyllosoma) to a benthic existence (termed puerulus) (DPI, 2009) settling into coastal and shelf habitats. Historically the southern rock lobster was thought to be a highly resident species, remaining in one area for extensive periods of time. Movement patterns of the species in Victorian waters were analysed and found that the region and water depth were the greatest drives of southern rock lobster movement (Skeer et al., 2020). Results suggest that the movement of individuals off the Warrnambool and Apollo Bay regions (within close proximity to the Casino Henry Netherby Development) was primarily in the offshore direction towards deeper water (Skeer et al., 2020). However, a maximum depth range of 50 – 60 m was observed with few recaptures observed beyond this (Skeer et al., 2020). The southern rock lobster is the key target species of a number of state fisheries including the Victorian Rock Lobster Fishery. The most productive fishing grounds for the southern rick lobster

occur in the waters adjacent to South Australia which support the largest fishery for the species, followed by Tasmania and then Victoria (VFA, 2024a).

3.13.5.2 Giant Crab

The giant crab occurs in oceanic waters of southern Australia along the continental shelf, typically found in water depths between 140 and 270 m (Levings et al., 2001). The giant crab movement is dependent on water temperature. This species lacks internal temperature control mechanisms and lives where the steep terrain of the continental margin offers easy access to a cooler or a warmer environment (Levings et al., 2001). Their growth and reproduction are linked with the food resources and physical character of where they live.

The giant crab reproduces annually. Females produce eggs in April/May and will carry eggs until October/November when they are released. Females carry approximately 1.5 million eggs on average (IMAS, 2023). Dispersal of larvae is considered to be localised due to the short planktonic phase of the species lifecycle. Survival of larvae may be dependent on factors such as prevailing currents, vertical migration (movement through the depths of the water column), temperature, light intensity, gravity, change in pressure, predator pressures, food availability, thermoclines and salinity (IMAS, 2023). The giant crab is the key target species of a number of state fisheries including the Victorian Giant Crab Fishery.

3.13.5.3 Annelids

Annelids are a large phylum of segmented worms, including polychaetes, clitellates, ragworms, earthworms and leeches.

Polychaetes are brightly coloured segmented worms. Most are less than 10 cm long, although they can range from 1 mm to 3 m and include forms such as sand worms, tube worms and clam worms. They are found in all habitats from the supra-littoral to the deepest parts of the ocean. Some such as the feather-duster worms are sedentary, living in tubes buried in sand/mud and feed by trapping food particles in mucus or by ciliary action. Others such as the clam worm are active mobile predators which capture prey in jaws (University of Michigan, 2017).

Most polychaetes have separate sexes - male and female and the sperm and eggs are released into the surrounding water through ducts or openings. The fertilised eggs hatch into larvae, which float among the plankton, and eventually metamorphose into the adult form by adding segments (MESA, 2015b).

Video transects and sediment samples within and adjacent to the Casino Henry Netherby Development saw scattered areas of hard ground supporting patchy areas of abundant epibiota (Ramboll, 2020). Polychaete tubules were visible in one sediment sample.

3.13.5.4 Ascidians

All ascidians (commonly known as sea squirts) are sessile, sac-like marine invertebrate filter feeders and include both solitary and colonial species. Ascidians occur from intertidal to deep (>2,000 m) subtidal waters and can occur in high concentrations (Butler et al., 2017). A study conducted on the distribution of ascidians along Victoria's coast at identified rocky reef locations, which identified 37 different species found in the intertidal environment (Bathie and Pett, 2020).

The species has a digestive, circulatory and nervous system however lacks any special sensory organs. Reproduction includes both asexual budding and sexual reproduction with a free-living larval

stage. The species are hermaphrodites, and fertilisation can be external with development in the water column (solitary species) or internal with embryos brooded in the body (colonial species).

Solitary larvae are free-swimming for periods of 1-24 hours and prior to hatching have been floating free in the water for up to 3 days. They are therefore subject to current dispersal which contributes to gene flow and removes risks of isolation. The colonial species are seldom free swimming for more than one hour and attach to substrates rapidly. In temperate and cold seas, breeding is usually seasonal and restricted to the warmer season but in tropical waters it may continue throughout the year (Shenkar, 2008). Only limited information on predators is available, but they include some fish, molluscs and sea-stars. While some species are known to contain toxins which deter predators and settling larvae, most solitary species tough tests and colonial species a great ability to rapidly repair any damage through vegetative growth (Butler et al., 2002).

Table 3-18: Marine Invertebrate Species or Species Habitat that May Occur within the Environmental Sectors

		Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plan	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Echinoderms															
Parvulastra vivipara	Tasmanian Live-bearing Seastar	V				[1]				LO	LO				
Crustacean															
Engaeus martigener	Furneaux Burrowing Crayfish	E				[2]		KO							
Euastacus diversus	Orbost Spiny Crayfish	E				[3]		KO							
Threatened Species: *V* *Vulnerable* *E* *Endangered*	Type of Presence: MO Species of species habitat may occur within area LO Species or species habitat likely to occur within area						Plan Reference: [1] Approved Conservation Advice for *Patiriella vivipara* (Tasmanian Live-bearing Seastar) (TSSC, 2009c) [2] Approved Conservation Advice for *Engaeus martigener* (Furneaux burrowing crayfish) (TSSC, 2016h) [3] Conservation Advice for *Euastacus diversus* (Orbost spiny crayfish) (DCCEEW, 2023r)							

Table 3-19: Marine Invertebrate Threatened Species Management Advice relevant to Petroleum Activities within Applicable Amplitude Energy Operating Areas.

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
• Tasmanian Live-bearing Seastar	Approved Conservation Advice for *Patiriella vivipara* (Tasmanian Live-bearing Seastar) (TSSC, 2009c)	• Habitat modification and destruction	• **Marine pollution:** Evaluate risk of oil spill impact and, if required, appropriate mitigation measures are implemented

3.14 Fish and Sharks

There are 22 fish, 16 shark and ray, and 75 syngnathid species (or species habitat) that may occur within the Environmental Sectors; this includes species classified as threatened and migratory (Table 3-20). A list of the relevant conservation advice and/or recovery plans is also provided in Table 3-20, with relevant management actions in Table 3-21. The type of presence varies between species and location, and includes important behaviours (e.g. foraging, breeding) for some species (Table 3-20).

Three fish species identified in the PMST Reports are freshwater species, eastern dwarf galaxias, Yarra pygmy perch and the variegated pygmy perch. These species are located in freshwater habitats outside of the spatial extent potentially affected by the activity and are not discussed further.

Although all commercially important species may not be EPBC listed they provide important economic services to ecological and social environment. Commercially important fish species which may occur within the Environmental Sectors are described in Section 3.14.10.

Note that the seabed in the vicinity of Amplitude Energy assets is predominantly sediment; and the absence of any reef structures is expected to reduce the likelihood of fish species (threatened or commercial) to aggregate in the immediate areas. That is, any presence of fish species within the immediate area is expected to be transitory.

3.14.1 Sharks and Rays

In Australia, the **grey nurse shark** (east coast population) primarily has an inshore coastal distribution in sub-tropical to cool temperate waters on the continental shelf (DoE, 2014). The east coast population covers a range extending from the Capricornia coast (central Queensland) to Narooma in southern New South Wales (DoE, 2014), and is listed as critically endangered (TSSC, 2001). The grey nurse shark generally occurs as solitary individuals or in small schools; larger aggregations of individuals may occur for courtship and mating (DoE, 2014). Preferred habitat for grey nurse sharks is inshore rocky reefs or islands, generally aggregating near the seabed in water depths of 10 - 40m in deep sandy or gravel filled gutters, or in rocky caves border (DoE, 2014). A number of key aggregation sites and habitat critical for the survival of the grey nurse shark have been identified within the Environmental Sectors (Table 3-21). The grey nurse shark migrates within its range, making seasonal north–south movements to form aggregations at critical habitat sites, thought to be related to breeding (DEE, 2017i). The precise timing of mating and pupping in Australian waters is unknown; however, in South Africa mating occurs between late-October and late-November (DEE, 2017i). A BIA for breeding and distribution has been identified for the grey nurse shark along the east coast of Australia (Figure 3-39).

The **white shark** has a range extending from central Queensland, around the south coast, to north-west Western Australia (DSEWPaC, 2013a). The white shark is primarily found on the continental shelf and coastal waters, including inshore waters around oceanic islands. Though the Great White Shark is not evenly distributed throughout its range, the entire South-east Marine Region is considered a BIA for the species with observations more frequent in some areas, including those around fur-seal or sea-lion colonies (DSEWPaC, 2013a). In the South-east Marine Region, waters surrounding pinniped colonies are considered BIAs for foraging for the species. Juvenile sharks appear to aggregate seasonally in key areas, including Wilsons Promontory (Victoria), and the coast between Newcastle and Forster (New South Wales) (DSEWPaC, 2013a). Recent studies have found that juvenile white sharks (<3m) occupy estuaries at Port Stephens, New South Wales and Corner Inlet, Victoria during October to January (Harasti et al., 2017). A BIA for breeding (nursery ground) has been established in the coastal region extending east from Wilsons Promontory; and a BIA for

aggregation off the Newcastle coast (Figure 3-38). The great white shark moves seasonally along the south and east Australian coasts, moving northerly along the coast during autumn and winter, and returning to southern Australian waters by early summer. The white shark is not known to form and defend territories; however, its seasonal return implies a degree of site fidelity (DSEWPaC, 2013a). Key threats to the species, as listed in the Recovery Plan (DSEWPaC, 2013a) and Action Statement (DSE, 2003) are mortality from targeted fishing, accidental fishing bycatch and illegal fishing, and mortality from shark control activities (such as beach meshing and drum lining).

The **shortfin mako shark** (*Isurus oxyrinchus*) has been recorded in offshore waters all around the Australian coastline except for the Arafura Sea, Gulf of Carpentaria and Torres Strait in the north (TSSC, 2014b). It is a pelagic species, primarily occurring in offshore, oceanic waters (Last and Stevens, 2009). The shortfin mako is highly migratory and can cover large distances, migrating from Australian waters to areas well beyond the Australian Exclusive Economic Zone (Rogers et al., 2009). The shortfin mako inhabits depths down to 600 m, with a slight trend indicating the species spend the majority of the night in shallow water, and the majority of daylight hours in deeper waters (Rogers et al., 2009). It is not normally found in waters below 16°C (RPS, 2015). Satellite tracking data for shortfin makos showed a potential for year-round occupation of the Otway, Bass Strait and Gippsland Basins (Rogers and Bailleul, 2015).

The **porbeagle shark** is a wide-ranging species that inhabits oceanic waters around the edge of the continental shelf in temperate, subarctic and subantarctic waters of the North Atlantic and Southern Hemisphere (DoE, 2025). In Australia this species typically occurs in oceanic waters between southern Queensland south to south-west Australia. The waters of Bass Strait are not known feeding, resting or reproductive grounds for the shortfin mako, although feeding may occur opportunistically where sufficient prey is present. The porbeagle shark may temporarily move into coastal waters and are known to utilises a broad vertical range of the water column diving to depths exceeding 1,300 m (DoE, 2025). This species is known to undertake seasonal migrations; however, they are not well understood. Individuals in the Southern Hemisphere are thought to give birth off New Zealand and Australia in winter (DoE, 2025). The waters of Bass Strait are not known feeding, resting or reproductive grounds for the porbeagle, although feeding may occur opportunistically where sufficient prey is present.

The **giant manta ray** is a migratory species that is found worldwide in tropical, subtropical, and temperate bodies of water. The species can inhabit a variety of marine environments such as, oceanic waters, coastal areas, estuarine waters, oceanic inlets, and within bays and intercoastal waterways (NOAA, 2023). The giant manta ray is a filter feeder and consumes a large quantity of zooplankton. They are seasonal visitors to productive coastlines which appear to correspond with the movement of zooplankton, current circulation and tidal patterns, seasonal upwelling, seawater temperature, and possibly mating behaviour (NOAA, 2023).

The **green sawfish** is a species of ray that has a historic range extending from northern Australia down the east coast to Jervis Bay in New South Wales (DEE, 2017j). However, no records of this species exist south of Cairns since the 1960's (DEE, 2017j). The green sawfish prefers muddy bottom habitats, and has previously been recorded in inshore marine waters, estuaries, river mouths, embankments and along sandy and muddy beaches. Sawfish return seasonally to inshore coastal waters to breed and pup; pupping may occur during the summer wet season (DEE, 2017j). Given the contraction of the green sawfish's range, this species is not expected to be encountered within the Environmental Sectors.

The whale shark is an oceanic and coastal, tropical to warm-temperate pelagic large filter-feeder. Diet includes small crustaceans, small schooling fish and squid. There is known presence from NSW, NT, Queensland, Victoria and South Australia. The whale shark is often recorded far offshore, but is

also seen close inshore, occasionally entering lagoons of coral atolls. The whale shark seasonally aggregates in December and January in the coastal waters off Christmas Island, then in the Coral Sea between November and December. There is no information on when and where the whale shark breeds, with very few juveniles having been observed or captured (Department of the Environment, 2025k).

The Harrisson's dogfish is a species of gulper shark that are relatively small, deepwater sharks (DSEWPaC, 2013e). The species is mainly recorded in water depths between 200-650 m (Last and Stevens, 2009) but have been captured in depths down to 1,050 m (Daley et al., 2002). The distance that an individual can travel is not known but the species is identified to occur from the north of Evans Head in NSW, through waters off the coast of Victoria, to Cape Hauy in Tasmania (Williams et al., 2012). The Harrisson's dogfish diet consists mainly of fish and invertebrates including mesopelagic prey such as lanternfish and squid (Daley et al., 2002; Graham and Daley, 2011). The species also exhibits slow growth, late maturity age, and low fecundity, which makes them vulnerable to overfishing (Stobutzki et al., 2011). The waters of the Bass Strait are not known feeding, resting or reproductive grounds for the Harrisson's dogfish, although feeding may occur opportunistically where sufficient prey is present.

The **little gulper shark**, commonly known as the southern dogfish, are small, deepwater sharks (DSEWPaC, 2013f). The species is endemic to Australia in habitats on the upper-slope between 180 m to 900 m of the southern continental shelf (Williams et al., 2012). There are likely three distinct stocks of the little gulper shark: eastern stock (Australian east coast down to eastern Tasmania), central stock (west Tasmania to the Great Australian Bight), and a western stock (western Great Australian Bight to south Western Australia) (USDSWG, 2012; Williams et al., 2012). The species is absent in southern Tasmania through to the Bass Strait (DSEWPaC, 2013f). Similar to the Harrisson's dogfish, the little gulper shark is also vulnerable to overfishing due to its slow growth, late maturing age, and low fecundity (Stobutzki et al., 2011). The little gulper shark is not recorded to be present within the Bass Strait, and their reproductive migration is relatively unknown (Musick, 2011).

The **oceanic whitetip shark** is a pelagic species generally found offshore in the open ocean across the globe in tropical and subtropical waters. Although they have been recorded up to depths 1,000 m, they typically live in the upper part of the water column, from the surface to around 200 m (NOAA, 2024). The species are considered a surface-dwelling shark, showing a strong preference for the surface mixed layer in warm waters above 20°C (NOAA, 2024). Within Australian waters, the oceanic whitetip sharks range extends from Cape Leeuwin, WA north through parts of the Northern Territory, down the east coast of Queensland and NSW to Sydney (FRDC, 2019). The oceanic whitetip shark is considered an opportunistic forager, feeding primarily on bony fish and cephalopods, such as squid.

3.14.2 Australian Grayling

The Australian grayling is endemic to south-eastern Australia and occurs in coastal rivers and streams in NSW, Victoria and Tasmania. The Australian grayling is a dark brown to olive-green fish that is approximately 19 cm in length. This is a dimorphous, migratory species that inhabits estuarine waters and coastal seas as larvae/juveniles, and freshwater rivers and streams as adults (Backhouse et al., 2008). The Australian grayling will spend the majority of its life in freshwater and can penetrate far inland (this species has been recorded up to 100 km upstream from the sea) (Backhouse et al., 2008). Precise marine habitats are not well known. Spawning occurs in freshwater from late summer to winter and is thoughts to be initiated by an increase in river flow and a potential drop in water temperature (Once eggs hatch, the larvae drift downstream and out to sea where they remain for ~6 months (DoE, 2025).

3.14.3 Blue Warehou

The blue warehou is a school fish that usually aggregate close to the seabed and is confined to Australian and New Zealand waters (Kaschner et al., 2010). In Australia, the species predominantly occurs in the coastal shelf, upper continental slope, and seamount waters offshore from NSW, Tasmania, Victoria and South Australia (Bruce et al., 1998; Gomon, 2008). The species is recorded at depths between 50 - 500 m (AFMA, 2024d), although it is more abundant in waters shallower than 200 m (TSSC, 2015b). Juvenile fish can sometimes be found schooling close to the surface in estuaries, often in association with jellyfish (AFMA, 2024d). The blue warehouse is a migratory species but shows preference for relatively warmer waters of between 10 and 15°C (TSSC, 2015b).

Commercial fisheries are not permitted to target blue warehou, but the species is incidentally caught within the Gillnet, Hook and Trap Sector, Commonwealth Trawl Sector, and the Great Australian Bight Trawl Sector of the SESSF (AFMA, 2024d).

The waters of the Bass Strait are not known feeding, resting or reproductive grounds for the blue warehou, although feeding may occur opportunistically where sufficient prey is present. The blue warehou can be found within the Bass Strait but has primarily been incidentally caught on the east and west coast of Tasmania (AFMA, 2024d).

3.14.4 Handfish

Handfish are relatively small (60–151 mm) marine fishes with distributions restricted to the temperate waters of south-eastern Australia, predominantly concentrated in Tasmania (Last and Gledhill, 2009). They are demersal, generally cryptic in nature. Lacking a swim bladder, they prefer to use their ‘hands’ to ‘walk’ across the sea floor, rather than swim (although can do so over short distances when disturbed). Ziebell’s handfish is the largest known handfish species and is typically found on soft bottomed habitat with patches of rock that support sponge and algae communities (CoA, 2015a). The species is restricted to the coastal waters of southern and eastern Tasmania and is most often found at depths of 10-20 m. Habitat critical to the survival of the species is located in the Waterfall Bay area of the Tasman Peninsula (CoA, 2015a). The main identified threat to species of handfish is habitat degradation resulting from one or a combination of impacts including introduced species, pollution and siltation, increasing water temperatures and the proliferation of other native species as a result of human activities (DSEWPaC, 2012h.

Site specific habitat studies of BMG subsea infrastructure noted that fish assemblages present along wells and flowlines generally reflect those known to occur in the region. During analysis of survey footage, a tentative identification of handfish (Family Brachionichthyidae) was made. The species could not be confirmed due to image resolution (Ierodiaconou, 2021).

Stuart-Smith et. al 2020 reports 14 different species of handfish. Seven species of handfish are listed on the IUCN red list as either Critically Endangered or Endangered. Three of these IUCN listed species are also EPBC listed either Vulnerable or Endangered.

The images captured of the Handfish were done so by ROV mounted high-definition camera flying over the known flowline routes. These sections of flowlines were trenched and buried in 2012 (or have been naturally buried since installation). The specimens observed at BMG were all seen on areas of seabed covering the B6 EHU and B6 Oil Flowline (Figure 3-37). The seabed appears sandy/shell/silty/muddy. There is evidence of infauna (burrows/mounds) and epifauna. It is not obvious that the seabed was trenched, or that a flowline is buried beneath. Whilst detailed footage was taken (and analysed by Deakin) of exposed sections of flowlines at similar depths; no specimens were observed on or around the exposed flowlines. This may indicate that the handfish specimens

are not interacting with the flowline directly. The specimens observed were at least 200 m from the well centres.

Based on recorded distributions (Stuart-Smith et al 2020), the more likely explanation as to what species of handfish were observed around BMG is the Australian handfish. This species is not EPBC listed threatened and is listed by the IUCN as 'least concern'. Other handfish species with recorded localities and depth ranges resembling the BMG area include the warty handfish, Moulton's handfish, narrowbody handfish and humpback handfish. These species are listed by the IUCN as 'data deficient'. No EPBC listed handfish species are expected to be found in proximity to BMG assets, due to the depth (listed species are found in water depths up to 60 m) and the location (listed species have been observed in Tasmania only).

The combination of poor dispersal potential with highly localised distributions and generally low population numbers means that they are highly susceptible to local disturbance events and broader environmental change (Bruce et al., 1998; Last and Gledhill, 2009; Last et al., 1983). Threats to handfish are noted as 'Prolonged Trawl and Dredge effort within its range possibly causing both habitat destruction and direct mortality' (Stuart-Smith et al 2020).

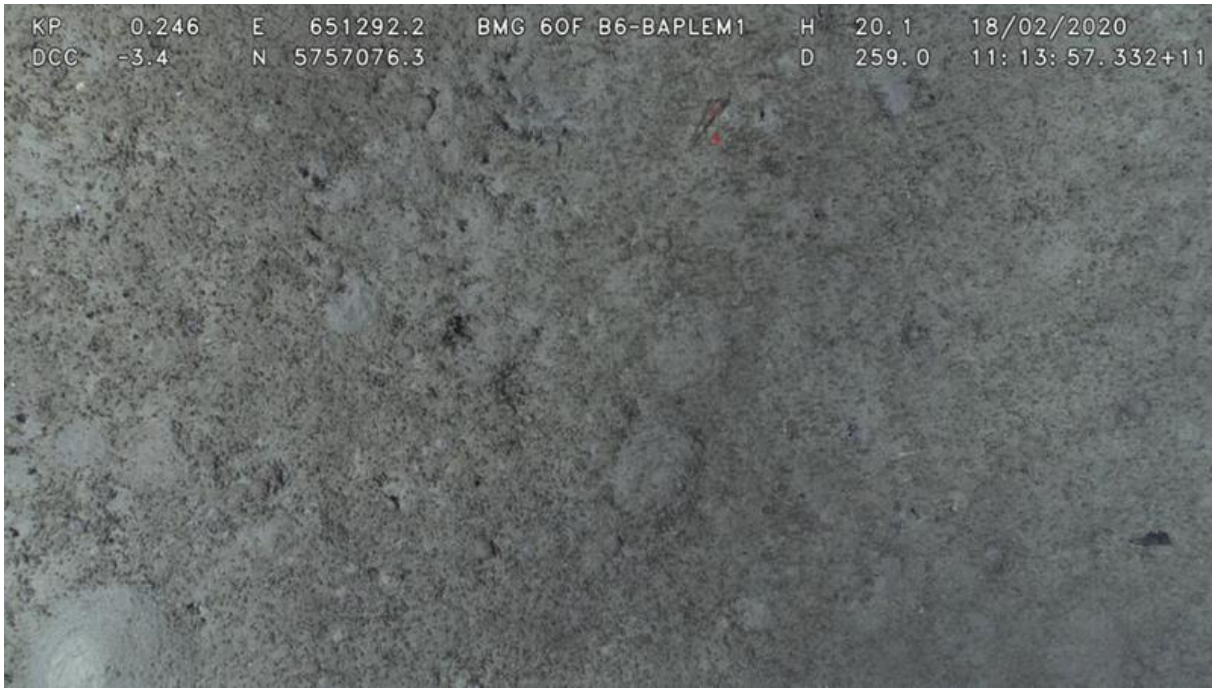


Figure 3-37: Suspected Handfish Sighting at BMG (Source: Ierodiaconou et al. 2021)

3.14.5 Pipefish, Seahorse and Seadragons

Syngnathidae is a group of bony fishes that includes **seahorses**, **pipefishes**, **pipehorses** and **sea dragons**; the closely related Solenostomidae family includes ghost pipefish. These species occupy a range of habitats. However, they generally display a preference for seagrass and macroalgal beds, coral reefs, mangroves or sponge gardens (i.e. a habitat offering a protective environment) (DSEWPaC, 2012b). Habitat that supports syngnathid populations is generally patchy, so populations of syngnathid species may be dispersed and fragmented (DSEWPaC, 2012b). Syngnathids are typically carnivorous, feeding in the water column on or near the sea floor; their diet including small crustaceans, invertebrates, and zooplankton.

3.14.6 Short-Finned Eel

The short-finned eel in adult and juvenile glass eels forms have the potential to occur within the Environmental Sectors during offshore spawning migration period. A study tracked downstream spawning migration of adult short-finned eels released from south-western Victoria (Hopkins and Fitzroy River estuaries) and observed the adult eels moved east or south along the Australian continental shelf exiting the Bass Strait to the east to migrate north to spawning grounds in tropical waters of the Coral Sea (Koster et al., 2021). From the spawning site in the Coral Sea, migration of short-finned eel larvae is influenced by ocean currents that carry the larvae from the Coral Sea south along the east Australian current and transport the developing larvae (glass eels) through the Bass Strait to the Victorian Coast (VFA, 2022a). Based on the observed migratory route of short-finned eels, short-finned eels in adult and glass eel forms may pass the Gippsland, Otway and Bass Strait Environmental Sectors.

Short-finned eels in the Otway Basin and Bass Strait have a seasonal presence. During late summer and autumn adult eels will enter the Otway Basin and Bass Strait to commence their migration to the Coral Sea. During mid-winter to late spring Short-finned eel in larvae and glass eel forms will enter Victorian estuaries to complete the upstream migration (VFA, 2022a).

3.14.7 Black Rockcod

Black Rockcod are territorial fish found off the coastline of southeastern Australia and northern New Zealand. They prefer near-shore rock and coral reef environments at depths down to 50 metres. Black rock-cod are carnivorous with diet including crustaceans and other fish. Individuals start life as female and transition to male at ~30 years of age. The Black Rockcod is common in NSW but seen infrequently due to its secretive nature, and is usually found hiding in caves and under ledges (Atlas of Living Australia, 2025b)

3.14.8 Orange Roughy

In Australia, Orange Roughy are found in cold deep waters across the southern half of the continent including Tasmania. They are predominantly found on the continental slope between 500 and 1400 m., also oceanic ridges and deep-water corals. Dense spawning and feeding aggregation are located on or near topographic features such as seamounts, canyons and plateaus. In Australian and New Zealand waters the orange roughy spawning starts between June. The Orange Roughy diet includes prawns, fish and squids with occasional mysids, amphipods and euphausiids (Department of the Environment, 2025l).

3.14.9 Eastern Gemfish

Eastern Gemfish are found in deeper continental shelf habitats and upper slope waters, generally found in water depths ~250 to 500 m. Gemfish are found throughout southern Australian temperate waters with adults migrating up the eastern Australian coast. The migration begins in June in east Bass Strait and finishes in August off the NSW central and north coast for spawning. The eastern gemfish is a carnivorous with diet including fish, royal red prawns and squid with feeding occurring near the ocean floor (Department of the Environment, 2025m)

3.14.10 Commercially Important Fish Species

There are a number of commercial fisheries that operate/ have operated across the Environmental Sectors (refer Section 5.1). Key target species (i.e., species with high monetary value) with reported fishing activity that are not EPBC listed have been identified, a number of which are described below.

The **school shark** is a globally widespread species that occurs in temperate waters offshore eastern United States, Hawaii, South America, South Africa, Europe, and New Zealand (Last and Stevens, 1994; McLoughlin, 2007). In Australian waters, the species is found in offshore waters from Moreton Bay, QLD to Perth, WA, including the offshore waters of Tasmania and Lord Howe Island (DEWHA, 2009b). The species moves more extensively in waters off southern Australia with individual migrations of up to 1,400 km recorded (DEWHA, 2009b). The school shark is primarily a demersal species and have been recorded at depths of 500 m during the day and then moving up during the night to about 100 m (McLoughlin, 2007). Female and juvenile sharks typically use inshore coastal areas around Victoria, Tasmania, and parts of South Australia for nursery areas (Pogonoski et al., 2002). The school shark is a key commercial species that is primarily caught in the Gillnet, Hook, and Trap sector of the Commonwealth Southern and Eastern Scalefish and Shark Fishery (SESSF) (DEWHA, 2009b). The species was historically the primary target within the fishery, but biomass was reduced below the limit reference point around 1990 (Davis et al., 2023). The school shark remains the second most economically important stock in the fishery despite being classified as overfished (Davis et al., 2023). The waters of the Bass Strait are not known feeding, resting or reproductive grounds for the school shark, although pups and juveniles are known to aggregate in shallow, inshore waters during the spring and summer (AFMA, 2024a).

The **gummy shark** is distributed throughout the temperate waters of Australia, from Port Stephens in NSW to Geraldton in WA, including Tasmania (Marton et al., 2014). The gummy shark is a demersal species that occurs on the continental shelf from the near shore region to depths of 80 - 350 m (AFMA, 2024e). The species remain either on or near the seabed with females traveling longer distances as their age increases (AFMA, 2024e). The gummy shark is a commercially important species and a key target in the Gillnet, Hook and Trap Sector of the Commonwealth SESSF (AFMA, 2024e). The species became the main target of the fishery from 1986 due to the adoption of monofilament gillnets and the concern surrounding mercury poisoning from large school sharks and declining school shark catches (Davis et al., 2023). The gummy shark has primarily been caught nearshore Tasmania, Victoria and South Australia (AFMA, 2024e). The waters of the Otway are not known feeding, resting, or reproductive grounds for the gummy shark.

Sawsharks are a common demersal species that inhabit the continental shelf and upper slope (AFMA, 2024f). There are three species of sawsharks that are frequently caught in Australian waters: the common, southern, and the delicate sawshark (Raoult et al., 2020). The southern and common sawshark have overlapping distributions and occur down to 630 m (Last and Stevens, 2009). However, the depth where these two sawfish species are most common is not known (Raoult et al., 2020). The sawshark is incidentally caught within the Gillnet Hook and Trap Sector and the Commonwealth Trawl Sector of the SESSF, and state managed fisheries (AFMA, 2024f). In Commonwealth waters, the highest total catches of sawshark were observed on the northeastern side of Bass Strait (Raoult et al., 2020) approximately 90% of catch within the SESSF (Davis et al., 2023).

Species of **wrasse** have different lifestyle characteristics such as diets (ranging from highly specialised diets to highly opportunistic carnivores), use different habitats, and occurrence across different depths (Berkstrom et al.,2012). Wrasses are key target species for the Victorian Wrasse

(Ocean) Fishery. The bluethroat wrasse and purple wrasse are the most caught species within the fishery, comprising of approximately 90% of the commercial Victorian wrasse harvest (VFA, 2025b). Small catches of rosy, senator, and southern Maori wrasse are also caught within the fishery (VFA, 2025b). The wrasse species targeted in Victoria can occur down to depths of 160 m. However, species are mostly caught in depth shallower than 30 m to reduce loss due to barotrauma (where the swim bladder expands and damages the fish brought to the surface) (VFA, 2025b).

Flathead species are bottom-dwelling fish that are distributed in tropical and temperate waters around Australia (VFA, 2021). There are many species of flathead but the southern bluespotted, sand, rock, tiger, and dusky flathead are the most commonly target species by recreational fisheries (VFA, 2021). The tiger flathead is also caught within the Commonwealth Trawl and Scalefish Hook Sector of the SESSF (Emery et al., 2023). The tiger flathead is endemic to Australia and found on sandy or muddy substrates in the continental shelf and upper-slope waters from Coffs Harbour in NSW through Bass Strait and around Tasmania to south-east South Australia (Emery et al., 2023). Majority of the commercial catch for the tiger flathead comes from depths between 50 m and 200 m (Emery et al., 2023).

The **pink ling** is a demersal species that can be found along the continental shelf and slope, occurring at depths between 20 – 1,000 m (AFMA, 2024g). Juveniles are generally found in shallower locations than adults (Bessell-Browne et al., 2021). In Australia, the species is found from central NSW to the south-west coast of WA (Bessell-Browne et al., 2021). The pink ling is a commercially important species and a key target in the Gillnet, Hook and Trap Sector and the South East Trawl Sector of the Commonwealth SESSF (AFMA, 2024g). The species has been commercially caught in southern Australia since the 1970s by both Commonwealth and state fisheries (Bessell-Browne et al., 2021).

The **blue grenadier** is a deepwater species and is found in the continental slope, occurring at depths between 200 - 700 m (AFMA, 2024h). The species is found from NSW around southern Australia, including Tasmania, to WA (Castillo-Jordan and Tuck, 2018). The blue grenadier is a commercially important species and a key target in the South East Trawl Sector of the SESSF (AFMA, 2024h). The species is primarily caught off western and eastern Tasmania and mostly during winter (AFMA, 2024h), which coincides with peak spawning (Castillo-Jordan and Tuck, 2018).

Table 3-20: EPBC Act Listed Fish Species or Species Habitat that May Occur within the Environmental Sectors

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Fish															
Amphiprion mccullochi	Whitesnout Anemonefish	CE				[1]						KO	KO	KO	
Brachionichthys hirsutus	Spotted Handfish	CE				[2],[3], [4]				MO	KO				
Brachiopsilus ziebelli	Ziebell's Handfish	V				[4]				LO	LO				
Epinephelus daemelii	Black Rockcod	V				[5], [6]			LO			LO	LO	LO	KO
Gadopsis sp. SWV	Western Victorian Blackfish	E				[7]	LO								
Galaxias fontanus	Swan Galaxias	E				[8], [9]					MO				
Galaxias terenasus	Roundsnout Galaxias	E				[10]			MO						
Galaxiella pusilla	Eastern Dwarf Galaxias	E				[11] [12]	KO	KO	LO	KO	MO				
Hippocampus bargibanti	Pygmy Seahorse												MO		
Hoplostethus atlanticus	Orange Roughy	CD					LO	LO	LO	LO	LO	LO	LO	LO	LO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Prototroctes maraena	Australian Grayling	V				[13], [14]	KO	KO	KO	KO	KO	KO			
Maccullochella mariensis	Mary River Cod	E				[15], [16]							KO		
Maccullochella peelii	Murray Cod	V				[17], [18], [19]		KO				Tr			
Macquaria australasica	Macquarie Perch	E				[20], [21]						Tr			
Mordacia praecox	Precocious Lamprey	E				[22]			LO			LO	LO		
Nannoperca obscura	Yarra Pygmy Perch	E				[23] [24]	KO	KO							
Nannoperca oxleyana	Oxleyan Pygmy Perch	E				[25], [26]							KO		
Nannoperca variegata	Variegated Pygmy Perch	V				[27], [28]	KO								
Pseudomugil mellis	Honey Blue Eye	E				[29]							KO		
Rexea solandri	Eastern Gemfish	CD				[30]	MO	LO	LO	LO	LO	LO	LO		
Seriolella brama	Blue Warehou	CD				[31]	KO	KO	KO	KO	KO	KO	KO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Thymichthys politus	Red Handfish	CE				[32],[33], [4]		MO		MO	KO				
Sharks and Rays															
Anoxupristis cuspidata	Narrow Sawfish		✓										LO		
Carcharhinus longimanus	Oceanic Whitetip Shark		✓						MO			LO	LO	MO	MO
Carcharias taurus	Grey Nurse Shark		✓				MO	MO	C/A *f.m	MO		C/A *f.m	C/A *f.m		
Carcharias taurus	Grey Nurse Shark (east coast population)	CE			*	[34], [35]			C/A *f.m			C/A *f.m	C/A *f.m		
Carcharodon carcharias	White Shark	V	✓		*	[36]	FKO *d	BKO *b,d	BKO *b,d	FKO *d	MKO *d	BKO *a,d	C/A *a,d	LO	LO
Centrophorus harrissoni	Harrisson's Dogfish	CD				[37]		LO	LO	LO	LO	LO	LO		LO
Centrophorus uyato	Little Gulper Shark	CD				[38]	LO	LO	LO	LO	LO	LO			
Galeorhinus galeus	School Shark	CD				[39]	LO	LO	LO	LO	LO	MO	MO	MO	MO
Isurus oxyrinchus	Shortfin Mako		✓				LO	LO	LO	LO	LO	LO	LO	LO	LO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Isurus paucus	Longfin Mako		✓									LO	LO	LO	LO
Lamna nasus	Porbeagle, Mackerel Shark		✓				LO	LO	LO	LO	LO	LO	MO	MO	MO
Manta alfredi	Reef Manta Ray		✓									KO	KO	LO	
Manta birostris	Giant Manta Ray		✓						KO			LO	LO	LO	
Pristis zijsron	Green Sawfish	V				[40], [41], [42]							BMO		
Rhincodon typus	Whale Shark	V	✓			[43], [44]		MO	MO			MO	MO		
Sphyrna lewini	Scalloped Hammerhead	CD				[45]						KO	KO	LO	LO
Zearaja maugeana	Maugean Skate	E				[46]				KO					
Pipefish, Seahorse and Seadragons															
Acentronura australe	Southern Pygmy Pipehorse			✓			MO								
Acentronura tentaculate	Shortpouch Pygmy Pipehorse			✓					MO			MO	MO		
Campichthys tryoni	Tryon's Pipefish			✓			MO					MO	MO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Choeroichthys brachysoma	Pacific Short-bodied Pipefish			✓									MO		
Choeroichthys suillus	Pig-snouted Pipefish												MO		
Corythoichthys amplexus	Fijian Banded Pipefish			✓								MO	MO		
Corythoichthys flavofasiatus	Reticulate Pipefish			✓									MO		
Corythoichthys haematopterus	Reef-top Pipefish			✓									MO		
Corythoichthys intestinalis	Australian Messmate Pipefish			✓									MO		
Corythoichthys ocellatus	Orange-spotted Pipefish			✓								MO	MO		
Corythoichthys paxtoni	Paxton's Pipefish			✓									MO		
Corythoichthys schultzi	Schultz's Pipefish			✓									MO		
Cosmocampus darrosanus	D'Arros Pipefish			✓									MO		
Cosmocampus howensis	Lord Howe Pipefish			✓					MO			MO	MO	MO	

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Doryrhamphus excisus	Bluestripe Pipefish			✓									MO		
Doryrhamphus negrosensis	Flagtail Pipefish			✓									MO		
Festuclex cinctus	Girdled Pipefish			✓								MO	MO		
Filicampus tigris	Tiger Pipefish			✓								MO	MO		
Halicampus boothae	Booth's Pipefish			✓								MO	MO	MO	MO
Halicampus dunckeri	Red-hair Pipefish			✓									MO		
Halicampus grayi	Mud Pipefish			✓								MO	MO		
Halicampus macrorhynchus	Whiskered Pipefish			✓									MO		
Halicampus nitidus	Glittering Pipefish			✓									MO		
Halicampus spinirostris	Spiny-snout Pipefish			✓									MO		
Heraldia nocturna	Upside-down Pipefish			✓			MO	MO	MO	MO	MO	MO			
Hippichthys cyanospilos	Blue-speckled Pipefish			✓								MO	MO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Hippichthys heptagonus	Madura Pipefish			✓								MO	MO		
Hippichthys peniculls	Beady Pipefish			✓								MO	MO		
Hippocampus abdominalis	Big-belly Seahorse			✓			MO	MO	MO	MO	MO	MO			
Hippocampus bargibanti	Pygmy Seahorse			✓									MO		
Hippocampus breviceps	Short-head Seahorse			✓			MO	MO	MO	MO	MO	MO			
Hippocampus kelloggi	Kellogg's Seahorse			✓								MO	MO	MO	
Hippocampus kuda	Spotted Seahorse			✓								MO	MO		
Hippocampus minotaur	Bullneck Seahorse			✓			MO	MO	MO						
Hippocampus planifrons	Flat-face Seahorse			✓								MO	MO		
Hippocampus trimaculatus	Three-spot Seahorse			✓								MO	MO		
Hippocampus whitei	White's Seahorse	E		✓								KO	MO		
Hippocampus zebra	Zebra Seahorse			✓									MO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Histiogamphelus briggsii	Crested Pipefish			✓			MO	MO	MO	MO	MO	MO			
Histiogamphelus cristatus	Rhino Pipefish			✓			MO	MO	MO	MO					
Hypselognathus rostratus	Knifesnout Pipefish			✓			MO	MO	MO	MO	MO				
Kaupus costatus	Deepbody Pipefish			✓			MO	MO	MO	MO	MO				
Kimblaeus bassensis	Trawl Pipefish			✓			MO	MO	MO		MO	MO			
Leptoichthys fistularius	Brushtail Pipefish			✓			MO	MO	MO	MO					
Lissocampus caudalis	Australian Smooth Pipefish			✓			MO	MO	MO	MO					
Lissocampus runa	Javeline Pipefish			✓			MO	MO	MO	MO	MO	MO	MO		
Maroubra perserrata	Sawtooth Pipefish			✓			MO	MO	MO	MO	MO	MO	MO		
Micrognathus andersonii	Anderson's Pipefish			✓								MO	MO		
Micrognathus brevirostris	Thorntail Pipefish			✓								MO	MO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Microphis manadensis	Manado Pipefish			✓								MO	MO		
Mitotichthys mollisoni	Mollison's Pipefish			✓			MO	MO	MO	MO	MO				
Mitotichthys semistriatus	Halfbanded Pipefish			✓			MO	MO	MO	MO	MO				
Mitotichthys tuckeri	Tucker's Pipefish			✓			MO	MO	MO	MO	MO				
Nannocampus pictus	Painted Pipefish			✓									MO		
Notiocampus ruber	Red Pipefish			✓			MO	MO	MO	MO	MO	MO			
Phycodurus eqques	Leafy Seadragon			✓			MO	MO	MO	MO					
Phyllopteryx taeniolatus	Common Seadragon			✓			MO	MO	MO	MO	MO	MO			
Pugnaso curtirostris	Pugnose Pipefish			✓			MO	MO	MO	MO	MO				
Solegnathus dunckeri	Duncker's Pipehorse			✓								MO	MO	MO	
Solegnathus harwickii	Pallid Pipehorse			✓								MO	MO		
Solegnathus robustus	Robust Pipehorse			✓			MO	MO	MO	MO	MO				

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Solegnathus spinosissimus	Spiny Pipehorse			✓			MO	MO	MO	MO	MO	MO	MO		
Solenostomus cyanopterus	Robust Ghostpipefish			✓					MO			MO	MO		
Solenostromus paradoxus	Ornate Ghostpipefish			✓								MO	MO		
Stigmatopora argus	Spotted Pipefish			✓			MO	MO	MO	MO	MO	MO			
Stigmatopora nigra	Widebody Pipefish			✓			MO	MO	MO	MO	MO	MO	MO		
Stipecampus cristatus	Ringback Pipefish			✓			MO	MO	MO	MO					
Syngnathoides biaculeatus	Double-end Pipehorse			✓				MO	MO			MO	MO		
Trachyrhamphus bicoarctatus	Bentstick Pipefish			✓								MO	MO		
Trachyrhamphus longirostris	Straightstick Pipefish			✓									MO		
Urocampus carinirostris	Hairy Pipefish			✓			MO	MO	MO	MO	MO	MO	MO		
Vanacampus margaritifer	Mother-of-pearl Pipefish			✓			MO	MO	MO	MO		MO	MO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Vanacampus phillipi	Port Phillip Pipefish			✓			MO	MO	MO	MO	MO	MO			
Vanacampus poecilolaemus	Longsnout Pipefish			✓			MO	MO	MO	MO	MO				
Vanacampus vercoi	Verco's Pipefish			✓			MO								

Threatened Species:

V *Vulnerable*

E *Endangered*

CE *Critically Endangered*

Migratory Species:

M *Marine*

W *Wetland*

T *Terrestrial*

Biologically Important Area

* *BIA Present*

a *Aggregation*

b *Breeding*

Type of Presence:

MO Species or species habitat may occur within area

LO Species or species habitat likely to occur within area

KO Species or species habitat known to occur within area

Tr Translocated population known to occur within area

C/A Congregation or aggregation known to occur within area

FKO Foraging, feeding or related behaviour known to occur within area

BMO Breeding may occur within area

BKO Breeding known to occur within area

MKO Migration known to occur within area

Plan Reference:

[1] Conservation Advice *Amphiprion mccullochi* McCulloch's anemonefish, whitesnout anemonefish (TSSC, 2024a)

[2] Approved Conservation Advice on *Brachionichthus hirsutus* (Spotted Handfish) (TSSC 2012b)

[3] Commonwealth Listing Advice on *Brachionichthys hirsutus* (Spotted Handfish) (TSSC, 2012c)

[4] Recovery Plan for Three Handfish Species: Spotted Handfish (*Brachionichthys hirsutus*), Red Handfish (*Thymichthys politus*), and Ziebell's Handfish (*Branchiopsilus ziebelli*) (DoE, 2015b)

[5] Approved Conservation Advice for *Epinephelus daemelii* (Black Rock-cod) (DSEWPaC, 2012f)

[6] Commonwealth Listing Advice on *Epinephelus daemelii* (Black Rock-cod) (TSSC, 2012d)

[7] Conservation Advice for *Gadopsis sp. SWV* (western Victorian blackfish) (DCCEEW, 2025c)

[8] Conservation Advice *Galaxias fontanus* Swan galaxias (TSSC, 2016k)

[9] Recovery Plan: Tasmanian *Galaxiidae* 2006-2010 (TSSC, 2006a)

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
f *Foraging*							[10] Conservation Advice for *Galaxias terenasus* (roundsnout galaxias) (DCCEEW, 2023s) [11] Conservation Advice for *Galaxiella pusilla* (dwarf galaxias) (DCCEEW, 2023m) [12] National recovery plan for the Dwarf Galaxias (*Galaxiella pusilla*) (Saddlier et al., 2010a) [13] Conservation Advice *Prototroctes maraena* Australian Grayling (TSSC, 2021) [14] National Recovery Plan for Australian Grayling (DEWHA, 2008) [15] Conservation Advice *Maccullochella mariensis* Mary River cod (TSSC, 2016l) [16] The Mary River Cod Research and Recovery Plan (Simpson & Jackson, 1996). [17] Conservation Advice for *Maccullochella peelii* (Murray cod) (DCCEEW, 2024k) [18] Commonwealth Listing Advice on *Maccullochella peelii peelii* (Murray Cod, Cod, Goodoo) (TSSC, 2003). [19] National Recovery Plan for the Murray Cod *Maccullochella peelii peelii* (National Murray Cod Recovery team (2010) [20] Approved Conservation Advice for *Macquaria australasica* (Macquarie perch) (DCCEEW, 2013) [21] National Recovery Plan for the Macquarie Perch (*Macquaria australasica*) (DEE, 2018c) [22] Conservation Advice for Mordacia praecox (*precocious lamprey*) (DCCEEW, 2023)								

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[23] National recovery plan for the Yarra Pygmy Perch (Nannoperca obscura) (Saddlier and Hammer, 2010a) [24] Conservation Advice for Nannoperca obscura (Yarra pygmy perch) (DCCEEW, 2023b) [25] Conservation Advice for *Nannoperca oxleyana* (Oxleyan pygmy perch) (DCCEEW, 2022f) [26] Oxleyan pygmy perch (*Nannoperca oxleyana*) Recovery Plan (NSW DPI, 2008) [27] National recovery plan for the Variegated Pygmy Perch (Nannoperca variegate) (Saddlier and Hammer, 2010b) [28] Conservation Advice for *Nannoperca variegata* (variegated pygmy perch) (DCCEW, 2024l) [29] Conservation Advice for *Pseudomugil mellis* (honey blue eye) (DCCEEW, 2023t) [30] Commonwealth Listing Advice on *Rexea solandri* (TSSC, 2009) [31] Listing Advice *Seriolella brama* blue warehou (TSSC, 2015r) [32] Approved Conservation Advice for Thymichthys politus (Red Handfish) (DSEWPaC, 2012h) [33] Commonwealth Listing Advice on *Thymichthys politus* (Red Handfish) (TSSC, 2012e) [34] Commonwealth Listing Advice on *Carcharias taurus*, Grey Nurse Shark (East Coast population) (TSSC, 2021a) [35] Recovery Plan for the Grey Nurse Shark (*Carcharias Taurus*) (DoE, 2014)								

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
							[36] Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPaC, 2013a) [37] Commonwealth Listing Advice on *Centrophorus harrissoni* (Harrisson's dogfish) (TSSC, 2013c) [38] Commonwealth Listing Advice on *Centrophorus zeehaani* (southern dogfish). (TSSC, 2013d) [39] Commonwealth Listing Advice on *Galeorhinu galeus* (TSSC, 2009b)[40] Approved Conservation Advice for *Pristis zijsron* (Green Sawfish) (TSSC, 2008a) [41] Listing Advice for *Pristis zijsron* (Green Sawfish) (TSSC, 2008)[42] Sawfish and River Sharks Multispecies Recovery Plan (DoE, 2015c) [43] Approved Conservation Advice for *Rhincodon typus* (Whale Shark) (TSSC, 2015h) [44] Commonwealth Listing Advice on *Rhincodon typus* (Whale shark) (TSSC, 2001c) [45] Listing Advice for *Sphyrna lewini* (scalloped hammerhead) (TSSC, 2024) [46] Conservation Advice for *Zearaja maugeana* (Maugean Skate) (TSSC, 2008b)								

Table 3-21: Fish Threatened Species Management Advice Relevant to Petroleum Activities within Applicable Amplitude Operating Areas

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
• Spotted Handfish • Ziebell's Handfish • Red Handfish	Recovery Plan for Three Handfish Species: Spotted Handfish (*Brachionichthys hirsutus*), Red Handfish (*Thymichthys politus*), and Ziebell's Handfish (*Branchiopsilus ziebelli*) (DoE, 2015b)	None identified	None identified
Spotted Handfish	Approved Conservation Advice on *Brachionichthus hirsutus* (Spotted Handfish) (TSSC 2012b)	None identified	None identified
Red Handfish	Approved Conservation Advice for *Thymichthys politus* (Red Handfish) (DSEWPaC, 2012h)	None identified	None identified
Black Rockcod	Approved Conservation Advice for *Epinephelus daemelii* (Black Rock-cod) (TSSC, 2012b)	None identified	None identified
Australian Grayling	National Recovery Plan for Australian Grayling (DEWHA, 2008)	None identified	None identified
Dwarf Galaxias	Conservation Advice for Galaxiella pusilla (dwarf galaxias) (DCCEEW, 2024m)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
	National Recovery Plan for the Dwarf Galaxias (*Galaxiella pusilla*) (Saddlier, et al., 2010)		
Yarra Pygmy Perch	Conservation Advice for *Nannoperca obscura* (Yarra pygmy perch) (DCCEEW, 2023b) National Recovery Plan for the Yarra Pygmy Perch (*Nannoperca obscura*) (Saddlier and Hammer, 2010a)	None identified	None identified
Variegated Pygmy Perch	National recovery plan for the Variegated Pygmy Perch (Nannoperca variegata) (Saddlier and Hammer, 2010b)	None identified	None identified
Sharks and Rays			
Grey Nurse Shark (east coast population)	Recovery Plan for the Grey Nurse Shark (*Carcharias Taurus*) (DoE, 2014)	None identified	None identified
Great White Shark	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPaC, 2013a)	None identified	None identified

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
Green Sawfish	Approved Conservation Advice for *Pristis zijsron* (Green Sawfish) (TSSC, 2008a) Sawfish and River Sharks Multispecies Recovery Plan (DoE, 2015c)	None identified	None identified
Whale Shark	Approved Conservation Advice for *Rhincodon typus* (Whale Shark) (TSSC, 2015h)	• Vessel strike • Habitat disruption from mineral exploration, production and transportation • Marine debris	• Vessel disturbance: Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented
Maugean Skate	Approved Conservation Advice for *Raja sp. L* (Maugean Skate) (TSSC, 2008b)	None identified	None identified

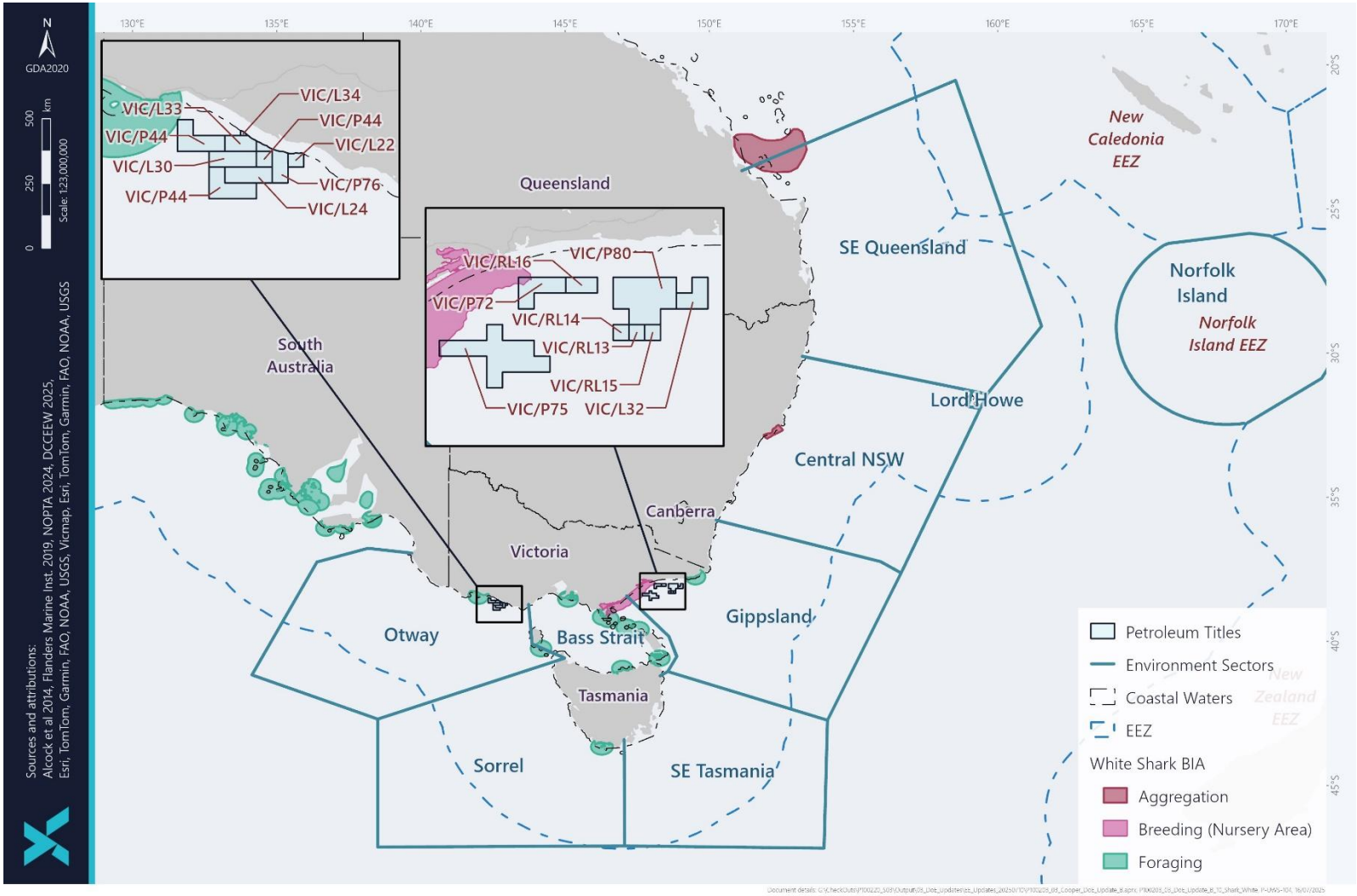


Figure 3-38: BIAs for the White Shark

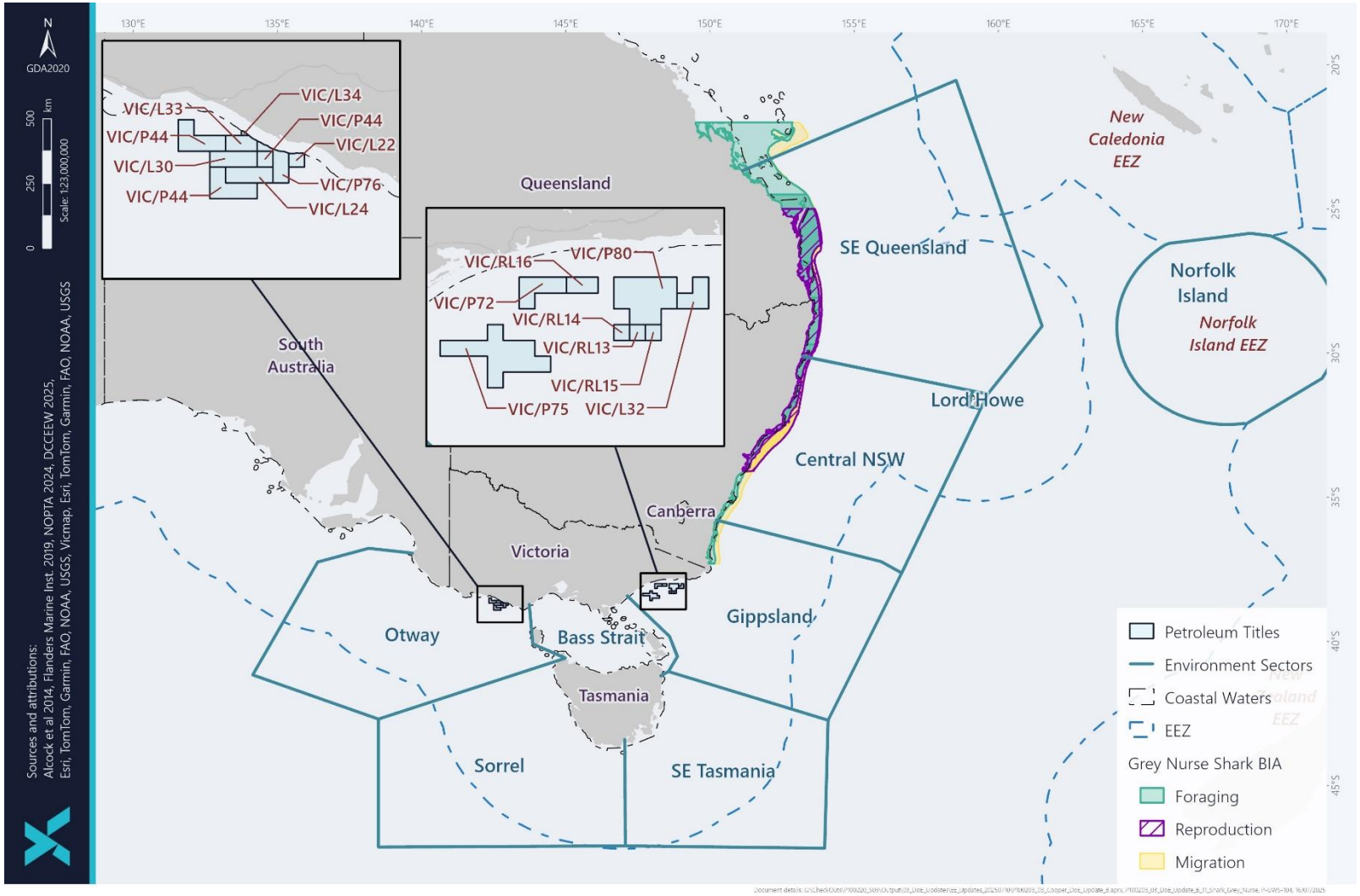


Figure 3-39: BIAs for the Grey Nurse Shark

Table 3-22: Known Key Aggregation Sites[1] critical for the Survival of the Grey Nurse Shark in Australian Waters

Queensland Waters	New South Wales Waters	Commonwealth Waters
• Wolf Rock off Rainbow Beach • Cherubs Cave off Moreton Island • Henderson's Rock off Moreton Island • Flat Rock off North Stradbroke Island.	• Julian Rocks near Byron Bay • North Solitary Island (Anemone Bay) • South Solitary Island (Manta Arch) • Green Island near South West Rocks • Fish Rock near South West Rocks • Mermaid Reef near Laurieton • The Pinnacle near Forster • Big Seal, Seal Rocks • Little Seal, Seal Rocks • Little Broughton Island near Port Stephens • Magic Point at Maroubra, Sydney • Tollgate Islands near Batemans Bay • Montague Island near Narooma.	• Pimpernel Rock off Brooms Head (northern section of Solitary Islands Marine Park) • Cod Grounds off Laurieton.

[1]'Key Aggregation Sites' defined as being locations where five or more Grey Nurse Sharks were consistently found throughout the year (DoE, 2014).

3.15 Marine Reptiles

There are six marine turtles, 13 sea snakes, and one crocodile species (or species habitat) that may occur within the Environmental Sectors; this includes species classified as threatened and migratory (Table 3-23). A list of the relevant conservation advice and/or recovery plans is also provided in Table 3-24, with relevant management actions in Figure 3-41. The type of presence varies between species and location, and includes important behaviours (e.g. foraging, breeding) for some species (Table 3-23).

3.15.1 Marine Turtles

Adult marine turtles spend the majority of their lives in the ocean, typically only coming onshore to nest (Figure 3-40). Females can lay (on average) between two and six clutches per season (DEE, 2017k); with the period between clutches known as the internesting period. Female turtles typically remain close to the same nesting site during an internesting period. Egg incubation varies between species, but is typically approximately two months (DEE, 2017k). Hatchlings disperse into oceanic currents, and the juveniles will stay in pelagic waters until large enough to settle into coastal feeding habitats. Leatherback turtles are an exception to these general patterns, often exhibiting larger internesting zones, and travelling vast distances to forage rather than settling in a coastal habitat (DEE, 2017k). Flatback turtles also lack an oceanic phase and remain in the surface waters of the continental shelf.

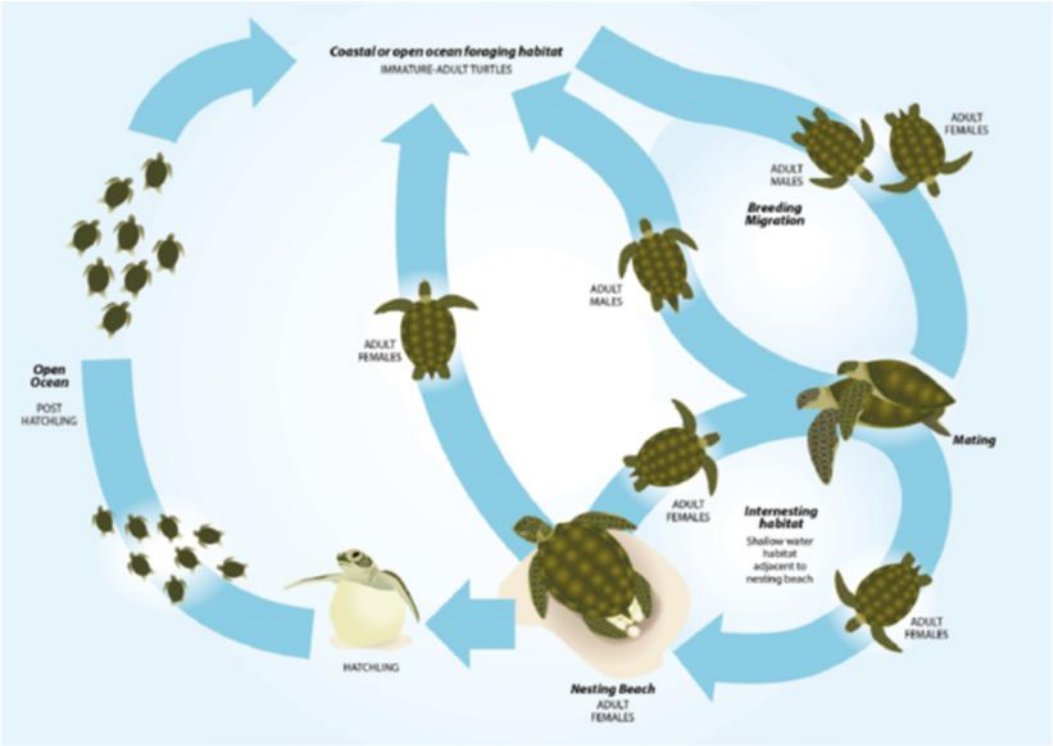


Figure 3-40: Generalised Life Cycle of a Marine Turtle (Source: DEE, 2017k)

The **loggerhead turtle** has a global distribution throughout tropical, sub-tropical and temperate waters; and in Australia typically occurs in the waters of coral and rocky reefs, seagrass beds, or muddy bays throughout eastern, northern and western Australia (DEE, 2017l). While the species has a broad foraging range throughout Australian waters, nesting is known to occur (from two different

genetic stocks) on sandy beaches on the central western and eastern coasts (Figure 3-41) (DEE, 2017l). Loggerhead turtles will migrate over distances in excess of 1,000 km between breeding and foraging grounds each season showing strong fidelity to these important areas (Limpus, 2008). Nesting on the east coast typically occurs between October and March each year (Table 3-25). A BIA, for nesting and internesting, has also been identified for this species in this area (Figure 3-42). More recent information released in the Recovery Plan (DEE, 2017k) presents draft critical habitat areas for the loggerhead turtle; some of which overlap with previously defined BIAs (Figure 3-42). The eastern Australian population is smaller than the western Australian population; and has also undergone a decline from approximately 3,500 nesting females in 1977, to approximately 500 nesting females in 2000 (DEE, 2017l). Important local foraging areas for the species, include the Great Barrier Reef area and Moreton Bay (DEE, 2017l). Loggerhead turtles are carnivorous, feeding primarily on benthic invertebrates (DEE, 2017l).

Green turtles are found in tropical and subtropical waters throughout the world; usually occurring within the 20°C isotherms, although individuals can stray into temperate waters (DEE, 2017m). Within Australia, green turtles typically nest, forage and migrate across tropical northern Australia (Figure 3-41) (DEE, 2017m). The first 5-10 years of the green turtles life is spent drifting on ocean currents, consuming plankton, crustaceans and algae (DoE, 2025; CoA, 2017). Once they reach an adequate size the species moves to shallow foraging grounds. There is one nesting stock for green turtles within the Environmental Sectors, with nesting typically occurring between October and April; and peaking in January (Figure 3-41, Table 3-25). A BIA, for nesting, internesting, and foraging, has also been identified for this species in this area (Figure 3-42). More recent information released in the Recovery Plan (DEE, 2017k) presents draft critical habitat areas for the Green Turtle; some of which overlap with previously defined nesting BIAs (Figure 3-42). The total Australian population of green turtles is approximately 70,000 individuals, with approximately 8,000 of these found in the Southern Great Barrier Reef area (DEE, 2017m). Adult green turtles consume mainly seagrass and algae, although they will occasionally eat mangroves, fish-egg cases, jellyfish, and sponges; juvenile green turtles are typically more carnivorous and will also consume plankton during their pelagic stage (DEE, 2017m).

The **leatherback turtle** has the widest distribution of any marine turtle, occurring in tropical to sub-polar oceans (TSSC, 2008c). In Australia, the leatherback turtle has been recorded foraging in all Australian states, but no large nesting populations have been recorded (Figure 3-41) (TSSC, 2008c). Small numbers of nesting females have previously been recorded in central Queensland, northern NSW, and the Northern Territory; however, no nesting has been recorded in eastern Australian since 1996 (TSSC, 2008c). There is a BIA established, for nesting and internesting, for a small area in central Queensland (Figure 3-42). The leatherback turtle is a highly pelagic species, venturing close to shore mainly during the nesting season (DEE, 2017n). Adults feed mainly on pelagic soft-bodied creatures such as jellyfish, tunicates, salps, squid (DEE, 2017n).

The **flatback turtle** is found in tropical waters of northern Australia and is one of only two species of sea turtle without a global distribution (DEE, 2017o). All known nesting locations for this species are within Australia (Figure 3-41) (DEE, 2017o). A BIA for nesting has been identified for this species, with the southern extent of this occurring within the 'SE Queensland' Environmental Sector (Figure 3-42); the majority of flatback turtle nesting in Queensland occurs further north. More recent information released in the Recovery Plan (DEE, 2017k) presents draft critical habitat areas for the flatback turtle; some of which overlap with previously defined BIAs (Figure 3-42). In Queensland nesting occurs between October and March, with a peak in December (Table 3-25) (DEE, 2017o). Nesting trends at Mon Repos and Curtis Island show no signs of decline (DEE, 2017o). Flatback turtles are primarily carnivorous, feeding on soft-bodied invertebrates; juveniles eat gastropod

molluscs, squid, siphonophores (DEE, 2017o). Limited data also indicate that cuttlefish, hydroids, soft corals, crinoids, molluscs and jellyfish may also form part of their diet (DEE, 2017o).

The **hawksbill turtle** is found in tropical, subtropical and temperate waters all around the world (DEE, 2017p). Nesting within Australia for the hawksbill turtle occurs outside the Environmental Sectors; however, their known range does extent into the temperate waters of southern Queensland and New South Wales (Figure 3-41). Hawksbill turtles are omnivorous, feeding on sponges, hydroids, cephalopods (octopus and squid), gastropods (marine snails), cnidarians (jellyfish), seagrass and algae (DEE, 2017k, 2017p). The first 5-10 years of the hawksbill turtles life is spent drifting on ocean currents, consuming plankton (DoE, 2025). Once they reach an adequate size the species moves to reef foraging grounds feeding on sponges, soft bodied invertebrates, seagrass and algae (DEE, 2017p; CoA, 2017). Hawksbill turtles that forage on the Great Barrier Reef migrate to neighbouring countries including Papua New Guinea, Vanuatu, and the Solomon Islands; it is not known from which stock hawksbill turtles foraging in New South Wales originate (DEE, 2017k).

The **Olive Ridley** turtle is found in waters across northern Australia and to the southern Queensland border (Figure 3-41). No nesting for Olive Ridley turtles occurs within the Environmental Sectors (Figure 3-41) (DEE, 2017q). Olive Ridley Turtles are primarily carnivorous, feeding on soft-bodied invertebrates such as sea pens, soft corals, sea cucumbers, and jellyfish (DEE, 2017k). Both juveniles and adults have been observed foraging over shallow benthic habitats from northern Western Australia to south-east Queensland; although occurrences in pelagic foraging habitats also occur (DEE, 2017q). The Great Barrier Reef area is an important foraging area for this specie (DEE, 2017q).

Table 3-23: EPBC Act Listed Marine Reptile Species or Species Habitat that May Occur within the Environmental Sectors

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Turtles															
Caretta caretta	Loggerhead Turtle	E	✓	✓	*	[1]	BLO	FKO	BLO		LO	BKO	BKO*n, i	LO	LO
Chelonia mydas	Green Turtle	V	✓	✓	*	[1]	MO	MO	FKO	MO	MO	FKO	BKO*n, i,f	LO	LO
Dermochelys coriacea	Leatherback Turtle	E	✓	✓	*	[1], [2], [3]	FKO	FKO	FKO	BLO	LO	FKO	BKO*n, i	LO	LO
Eretmochelys imbricata	Hawksbill Turtle	V	✓	✓		[1]			FKO			FKO	FKO	LO	LO
Lepidochelys olivacea	Olive Ridley Turtle	E	✓	✓		[1]							FKO		
Natator depressus	Flatback Turtle	V	✓	✓	*	[1]			FKO			FKO	BKO*n	LO	LO
Sea Snakes															
Aipysurus duboissi	Dubois' Seasnake			✓									MO		
Aipysurus laevis	Olive Seasnake			✓									MO		
Aipysurus mosaicus	Mosaic Sea Snake			✓									MO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Hydrophis kingii	Spectacled Seasnake			✓									MO		
Hydrophis major	Olive-headed Seasnake			✓									MO		
Emydocephalus annulatus	Turtle-headed Seasnake			✓									MO		
Hydrophis elegans	Elegant Seasnake			✓								MO	MO		
Hydrophis peronii	Horned Seasnake			✓									MO		
Hydrophis platura	Yellow-bellied Sea Snake			✓								MO	MO		
Hydrophis stokesii	Stoke's Seasnake			✓									MO		
Hydrophis hardwickii	Spine-bellied Seasnake			✓									MO		
Laticauda colubrina	Yellow-lipped Sea Krait			✓									MO		
Laticauda laticaudata	a sea krait (1093)			✓									MO		
Crocodile															
Crocodylus prorsus	Salt-water Crocodile		✓	✓									LO		

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Threatened Species: • V Vulnerable • E Endangered • CE Critically Endangered Migratory Species: • M Marine • W Wetland • T Terrestrial Biologically Important Area • * BIA Present • a Aggregation • b Breeding • f Foraging	Type of Presence: MO Species of species habitat may occur within area LO Species or species habitat likely to occur within are KO Species or species habitat known to occur within area FKO Foraging, feeding or related behaviour known to occur within area BLO Breeding likely to occur within area BKO Breeding known to occur within area	Plan Reference: [1] Recovery Plan for Marine Turtles in Australia, 2017-2027 (DEE, 2017k) [2] Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (TSSC, 2008c) [3] Commonwealth Listing Advice on *Dermochelys coriacea* (TSSC, 2009)												

Table 3-24: Marine Reptile Threatened Species Management Advice Relevant to Petroleum Activities within Applicable Amplitude Energy Operating Areas

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
• Loggerhead Turtle • Green Turtle • Leatherback Turtle • Hawksbill Turtle • Olive Ridley Turtle • Flatback Turtle	Recovery Plan for Marine Turtles in Australia, 2017-2027 (DEE, 2017k)	• Marine debris • Chemical discharge • Light pollution • Habitat modification • Vessel disturbance • Noise interference	• Marine pollution: Evaluate risk of oil spill impact to marine turtles and, if required, appropriate mitigation measures are implemented. • Marine debris: Evaluate risk of marine debris (including risk of entanglement and/or ingestion) and, if required, appropriate mitigation measures are implemented. • Noise interference: Evaluate risk of noise impacts to marine turtles and, if required, appropriate mitigation measures are implemented. • Light interference: Evaluate risk of light impacts to marine turtles and, if required, appropriate mitigation measures are implemented. • Vessel disturbance**:** Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented.
Leatherback Turtle	Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (TSSC, 2008c)	• Ingestion of marine debris • Boat strike • Degradation of foraging areas and changes to breeding sites	See above (for Recovery Plan for Marine Turtles in Australia, 2017-2027)

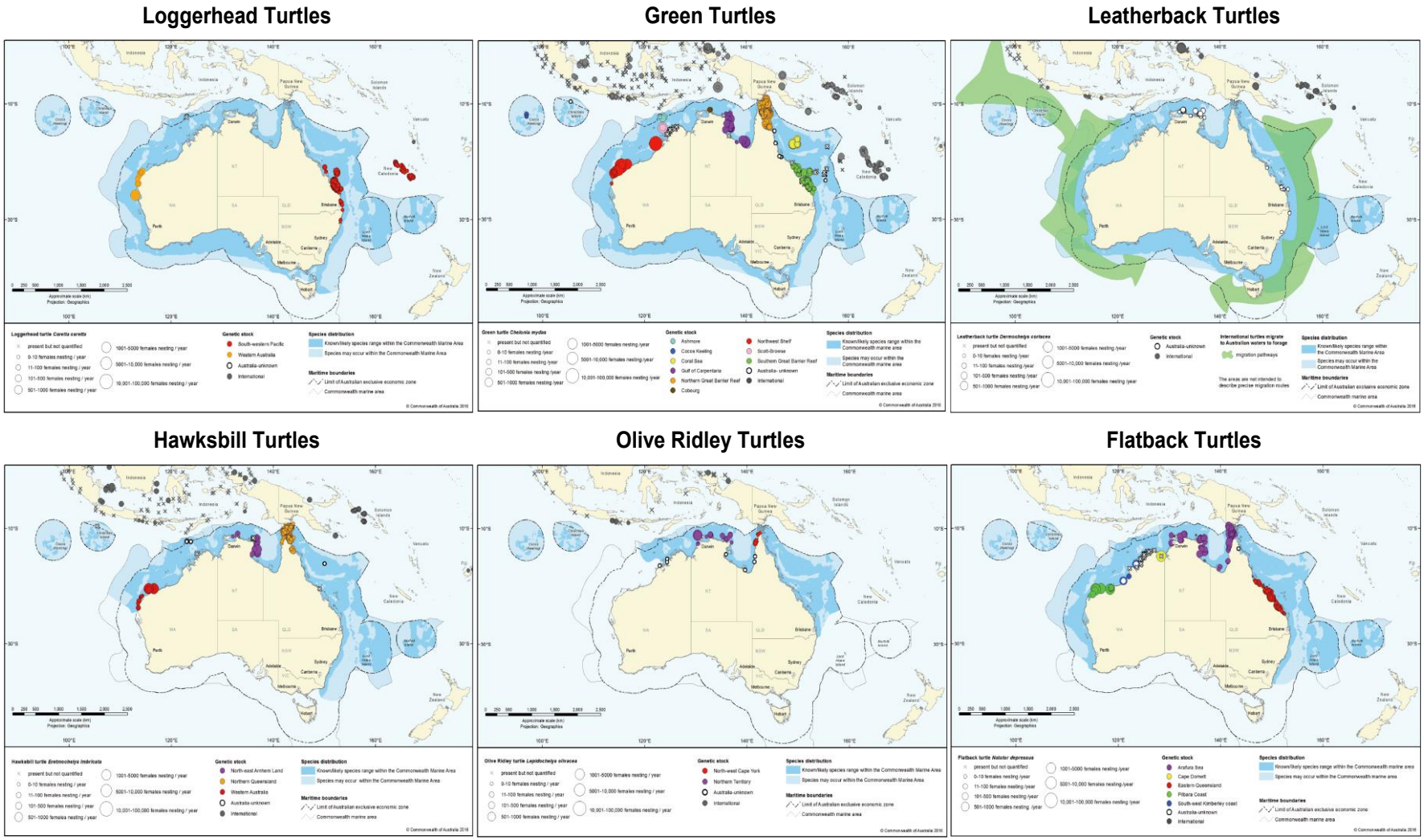


Figure 3-41: Marine Turtle Nesting Sites in Australia and Surrounding Regions (Source: DEE, 2017k)

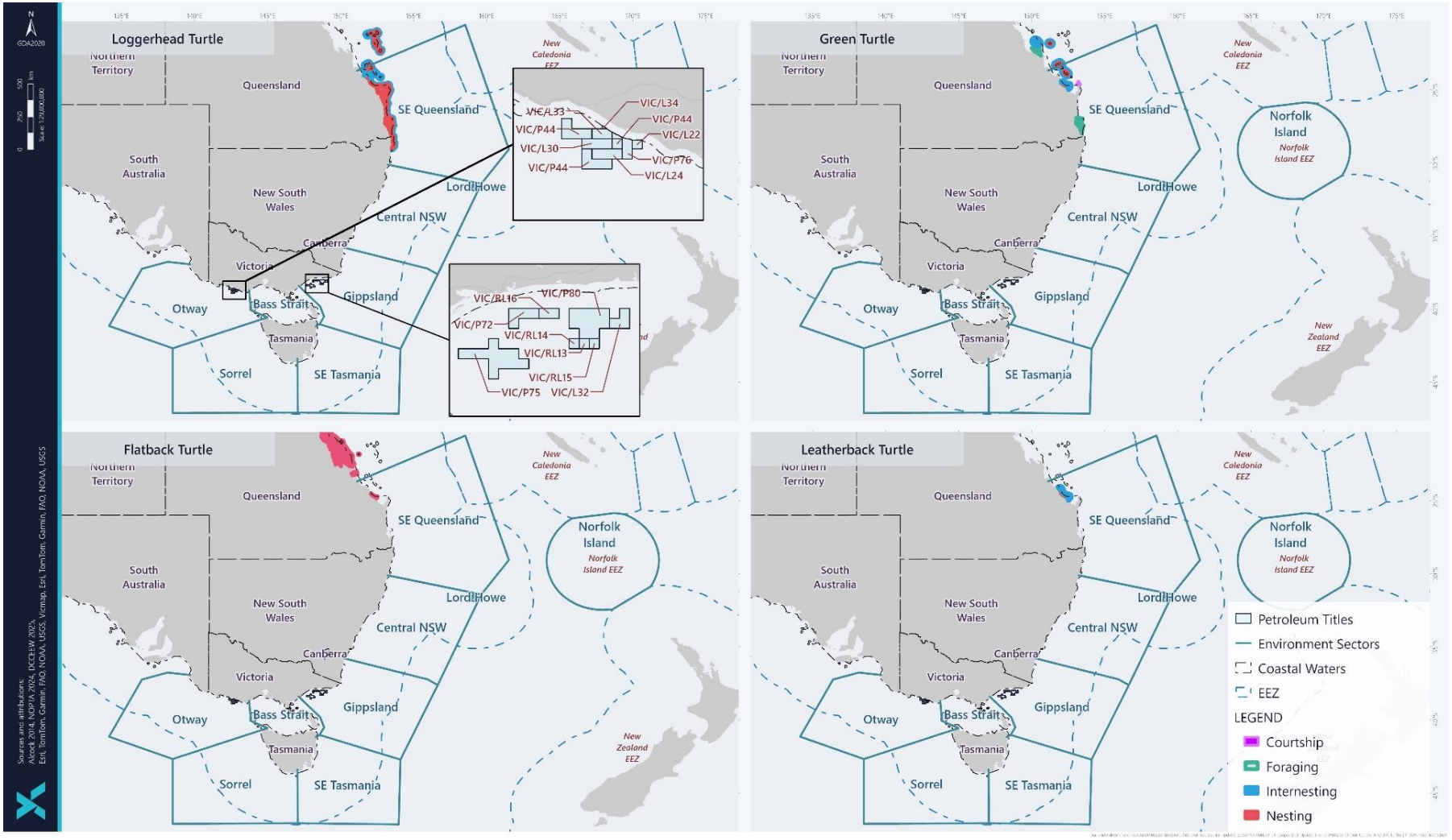


Figure 3-42: BIAs and Critical Habitat for the Loggerhead, Green, Leatherback and Flatback Turtles

Table 3-25: Nesting and Internesting Areas Identified as Critical Habitat[1] for Marine Turtles present within the Environmental Sectors

Species (Genetic Stock)	Nesting Locations	Internesting Buffer	Time of Year
Loggerhead Turtles (South-west Pacific)	Coastal beaches from Elliot River to Bustard Head, Swain Reefs. Tryon, Capriconia-Bunker Group, Pumistone Passage to Double Island Point.	20 km	Oct–Mar
Green Turtles (Southern GBR)	Islands of the Capriconia-Bunker Group, Wreck Rock to Burnett Head	20 km	Oct–Apr
Flatback Turtles (Eastern Queensland)	Curtis Island, Mon Repos	60 km	Oct–Mar

[1] Critical habitat to the survival of a marine turtle species was determined by a panel of experts and includes habitat for at least 70% of nesting for the stock (DEE, 2017k).

3.16 Marine Mammals

There are four pinniped, one sirenian, 28 whales, 19 dolphins, and one porpoise species (or species habitat) that may occur within the Environmental Sectors; this includes species classified as threatened and migratory (Table 3-27). A list of the relevant conservation advice and/or recovery plans is also provided in Table 3-26, with relevant key threats and management actions further discussed in Table 3-27. The type of presence varies between species and location, and includes important behaviours (e.g. foraging, breeding) for some species (Table 3-27).

3.16.1 Pinnipeds

The **New Zealand fur-seal** (long-nosed fur-seal) and the **Australian fur-seal** have the widest range of the pinnipeds, occurring in coastal regions from South Australia through to New South Wales (Table 3-26). While breeding for the New Zealand fur-seal in Australian waters, does occur along the coasts of Victoria at Kanowna Island, Deen Maar, The Skerries and Cape Bridgewater and southern Tasmania at Flat Witch, Maatsuyker and Tasman Islands(Table 3-26, Figure 3-43), the main breeding colonies (accounting for over 80% of the national population) are located further west in Western and South Australia (i.e. outside of the defined Environmental Sectors) (Kirkwood et al, 2009; DSEWPaC, 2012c). Conversely, the main breeding locations for the Australian fur-seal are within the Environmental Sectors, typically on islands within Bass Strait (Table 3-26, Figure 3-43) (DEE, 2017r; Kirkwood et al., 2010). New Zealand fur-seal breeding colonies are typically found in rocky habitat with jumbled boulders; Australian fur-seal prefer flatter rocky shelves (Shaughnessy, 1999). Colonies for both species are typically occupied year-round, with greater activity during breeding seasons (Shaughnessy, 1999; DEE, 2017r). There are 20 Australian fur seal breeding colonies, all located at islands within Bass Strait; the largest colonies occurring at Deen Maar and Seal Rocks off the Victorian coast (McIntosh, 2018).

Numbers of Australian fur-seals on Montague Island (New South Wales), fluctuate through the year, with peak numbers occurring in September and October; this reflects the northward migration over the winter, and the subsequent return to the breeding colonies of the Bass Strait in late spring (DEE, 2017r). The Australian and New Zealand fur-seals have been recorded using Beware Reef (approximately 40 km north-west of the Sole wells, and 50 km north-northeast of the BMG wells) as a haul-out site (Parks Victoria, 2017).

Reports by Arnould and Kirkwood (2008 and 2011) tracked the foraging habits of female Australian fur seals from four breeding sites in northern Bass Strait during the winters of 2001-2003. The studies found that all individuals foraged over the shallow continental shelf of Bass Strait and none of the foraging trips recorded any individuals venturing beyond the continental shelf-edge of Bass Strait. This data supports earlier studies that suggested the species is an exclusively benthic forager, although will opportunistically hunt throughout their transit to feeding grounds. Analysis of habitat use indicated that individuals selected areas with depths of 60–80 m and sea surface temperature of 16.0-16.8^{o}C with several areas regularly frequented and considered ‘hot spots’, while others with similar bathymetries were never entered by the individuals in this study. Furthermore, while there was substantial inter-individual variation, most seals displayed some degree of foraging site fidelity (Arnould and Kirkwood, 2008 and 2011).

Hoskins et al (2015) considered the role of intensive foraging zones for Australian fur seal, finding that foraging intensity ‘hot spots’ occur in a mosaic throughout the Bass Basin (within the Bass strait), primarily to the SW of the known colonies. Diving data suggests that individuals were maximising their time within the benthic foraging zone.

Arnould and Kirkwood (2011) also evaluated the degree of overlap between foraging sites of female Australian fur seals and marine reserves. Foraging areas of seals tracked in this study overlapped with only two reserves of the South-east Commonwealth Marine Reserve Network for <1% of the time-at-sea. Very little overlap in foraging habitat use by lactating females and the network of reserves suggests that several important habitats in south-eastern Australian waters may be poorly represented in the current marine reserve network.

McIntosh et al. (2018) undertook a critical analysis of existing population data for Australian fur seal, which identified a drop in live pup numbers which could indicate stabilisation or decline in the population within the study area (SE Australia). The study concluded that further data was necessary to understand the reasons behind and implications of this perceived drop in live pup numbers, however stressed the importance of accurate population statistics for management.

Australian fur-seal populations are in a phase of slow recovery following near-extinction after commercial sealing during 18th and 19th centuries (Shaughnessy, 1999), with current populations thought to be <60% of estimated pre-exploitation levels (Arnould et al., 2015). All but one of the known 20 breeding colonies (total number quoted in McIntosh, 2018) occur on islands within Bass Strait, characterised by a shallow continental shelf region with a relatively uniform bathymetry (average depth 60 m) with few features and is considered to be a region of low primary productivity (Arnould et al., 2015). The Australian Fur-seal is considered to be IUCN “Lower Risk, conservation dependent” species due to the cessation of a “habitat specific conservation program” which due to the species’ slow recovery rate could lead to it be becoming Threatened if disturbance of breeding sites during the breeding season is ongoing (Shaughnessy, 1999). Critical habitat for Australian seals comprises breeding colonies of the terrestrially breeding species in Australian mainland waters (Shaughnessy, 1999) The largest breeding colonies are at Deen Maar and Seal Rocks in Victoria (McIntosh, 2018).

The **Australian sea-lion** is the only endemic, and least abundant, pinniped that breeds in Australia (DoE, 2015a). All current breeding populations are outside of the Environmental Sectors, being located from the Abrolhos Islands (Western Australia) to the Pages Islands (South Australia) (Table 3-26; Figure 3-43). The Australian sea-lion uses a variety of shoreline types but prefer the more sheltered side of islands and typically avoid rocky exposes coasts (Shaughnessy, 1999). The Australian sea-lion is considered to be a specialised benthic forager; i.e. it feeds primarily on the sea floor (DSEWPaC, 2013b). A foraging BIA for males occurs within the Great Australian Bight, Eyre Peninsula, Spencer Gulf, Investigator Passage, Gulf of St Vincent and Kangaroo Island. An additional foraging BIA for both males and females occurs at Kangaroo Island, Investigator Passage and the Gulf of St Vincent. The Australian sea-lion feeds on the continental shelf, most commonly in depths of 20–100 m, with adult males foraging further and into deeper waters (DSEWPaC, 2013b). They typically forage up to 60 km from their colony but can travel up to 190 km when over shelf waters (Shaughnessy, 1999).

Southern elephant seals are the largest of all seals and have a nearly circumpolar distribution. Main breeding colonies in Australian waters are located outside of the define Environmental Sectors at Heard and Macquarie Islands; however occasional pupping has been recorded on Maatsuyker Island, off the southern Tasmanian coast (Table 3-26) (Shaughnessy, 1999). Southern elephant seals spend most of their lives at sea and prefer to haul-out on gently sloping sandy and cobblestone beaches (but will also utilise sea ice, snow and rocky terraces) (TSSC, 2016c).

In practice, seals are frequently observed offshore and around vessels; hundreds of sightings of seals were recorded near vessels over the course of the BMG Closure Project – Phase 1 offshore Gippsland in 2024, Marine mammal observers for the project reported behaviours including foraging, milling and swimming.

Table 3-26: Known Breeding Locations (within the Environmental Sectors) for Pinnipeds

Species	Locations	Pupping Season
New Zealand Fur-seal	Remote islands off southern coast of Tasmania; the largest breeding colonies occur at Flat Witch, Maatsuyker and Tasman Islands. Kanowna Island, Deen Maar, The Skerries and Cape Bridgewater off the Victorian coast.	Nov–Jan
Australian Fur-seal	There are 20 breeding colonies, all located at islands within Bass Strait; the largest colonies occurring at Deen Maar and Seal Rocks off the Victorian coast (McIntosh, 2018).	Oct–Dec
Australian Sea-lion	None identified.	Asynchronous
Elephant Seal	Occasional pupping has been recorded on islands off the southern coast of Tasmania (Maatsuyker Island).	Sep–Nov

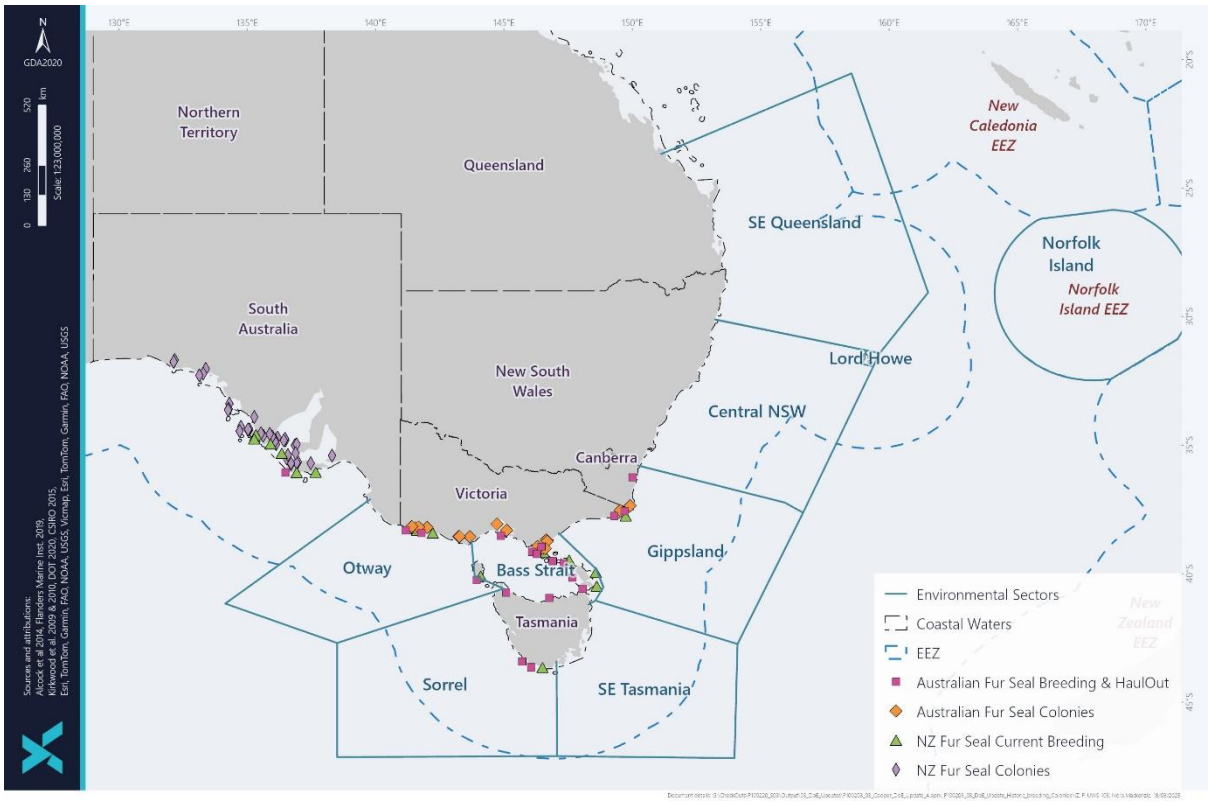


Figure 3-43: Historic and Current Colonies, Breeding and Haul out locations for the Australian and New Zealand (NZ) Fur-seals

3.16.2 Whales

3.16.2.1 Southern Right Whale

Southern right whales have a circumpolar distribution in the Southern Hemisphere occurring seasonally in all state coastal waters of Australia. Between April and November each year southern right whales may occur within Australian waters (Figure 3-44). There are two populations of the southern right whale within Australian waters (eastern and western). The geographical boundary between populations has been delineated as:

- Western population: West Australia and South Australia (west of Ceduna) (outside of Environmental Sectors).
- Eastern population: South Australia (east of Ceduna), Victoria, Tasmania, NSW and Queensland (within Environmental Sectors) (DCCEEW, 2024l).

The seasonal presence of the southern right whale in Australia correlates with breeding behaviours. The peak abundance period occurs between May and October each year when the southern right whale will predominately occur in shallow (< 10 m) coastal waters within 1 km of the coast (Charlton, et al., 2019, Smith, et al., 2019 cited in DCCEEW, 2024l). Breeding behaviours (i.e., mating, calving and nursing) typically occur within reproductive areas which have been defined by the National Recovery Plan for the Southern Right Whale (DCCEEW, 2024l) as habitat critical to the survival of the species (Figure 3-45). The importance of the reproductive BIAs to the species is twofold. Female southern right whales are known to show strong site fidelity to breeding locations, often returning to the same location to breed each cycle (approximately once every 3 years) and it is believed that females transmit this preference to offspring within the first year of their life (Valenzuela, et al., 2009, Carroll, et al., 2015, Carroll, et al., 2016 cited in DCCEEW, 2024l). Additionally, while partaking in breeding behaviours within Australian waters female southern right whales do not feed, resulting in a decline in energy stores. Considering their finite energy stores and the energetic costs of reproduction, environmental influences and/or disturbance has the potential to impose further demands on the whale's limited energy stores and affect the body condition of lactating females and the reproductive viability of offspring (DCCEEW, 2024l). Therefore, habitat critical to survival for the southern right whale has been identified as all reproductive BIAs across the species range (Figure 3-45).

As highly mobile migratory species, the southern right whale travels thousands of kilometres between habitats used for essential life functions. Similar to breeding areas, the southern right whale is known to show strong site fidelity to foraging locations. Similar to breeding areas the southern right whale is known to show strong site fidelity to foraging locations. The foraging ecology of the southern right whale is poorly understood, and observations of feeding whales are rare. Feeding has not been observed in coastal Australian waters, although other parts of the Australian EEZ may be utilised for feeding (Torres et al. 2013 cited in DCCEEW, 2024l). A counter-clockwise migration between foraging and breeding areas has been suggested whereby movements from Australian coastal waters include directly southern and western migration pathways (DCCEEW, 2024l). Migration areas include the movement of whales along the coast (highlighting the importance of coastal habitat connectivity) and the movement from offshore areas, including foraging areas, to nearshore and coastal areas (DCCEEW, 2024l). Along with the reproductive BIA a migration BIA has been defined for the southern right whale in Australian waters (Figure 3-52).

First Nations people around Australia have long had a strong connection to whales, which has significance as totemic ancestors to some groups. Whales that travel through Sea Country are recognised by Gunditjmara First Nations people within the Gunditjmara Nyamat Mirring Plan 2023-

2033 (GMTOAC, 2023). The southern right whale (Koontapool) migration which occurs along the Victorian coast provides known resting and feeding sites for the species, and safe havens for mothers with calves (DCCEEW, 2024l). First Nations people's cultural heritage, including identified values and sensitivities are further described in Section 5.6.1.

The south-eastern population of southern right whales currently have one established calving ground located at Logans Beach, Warrnambool in south-west Victoria, located ~25 km northwest of the Casino Henry Netherby Development. A sighting of two southern right whales was reported during Amplitude Energy projects in the Otway region in 2018. Sighting cues were body and blow. The sighting was in April, which may seem unusually early for southern right whale occurrence in the region, though is not unprecedented; the ALA reports eight southern right whale sightings in April between 2000 and 2019.

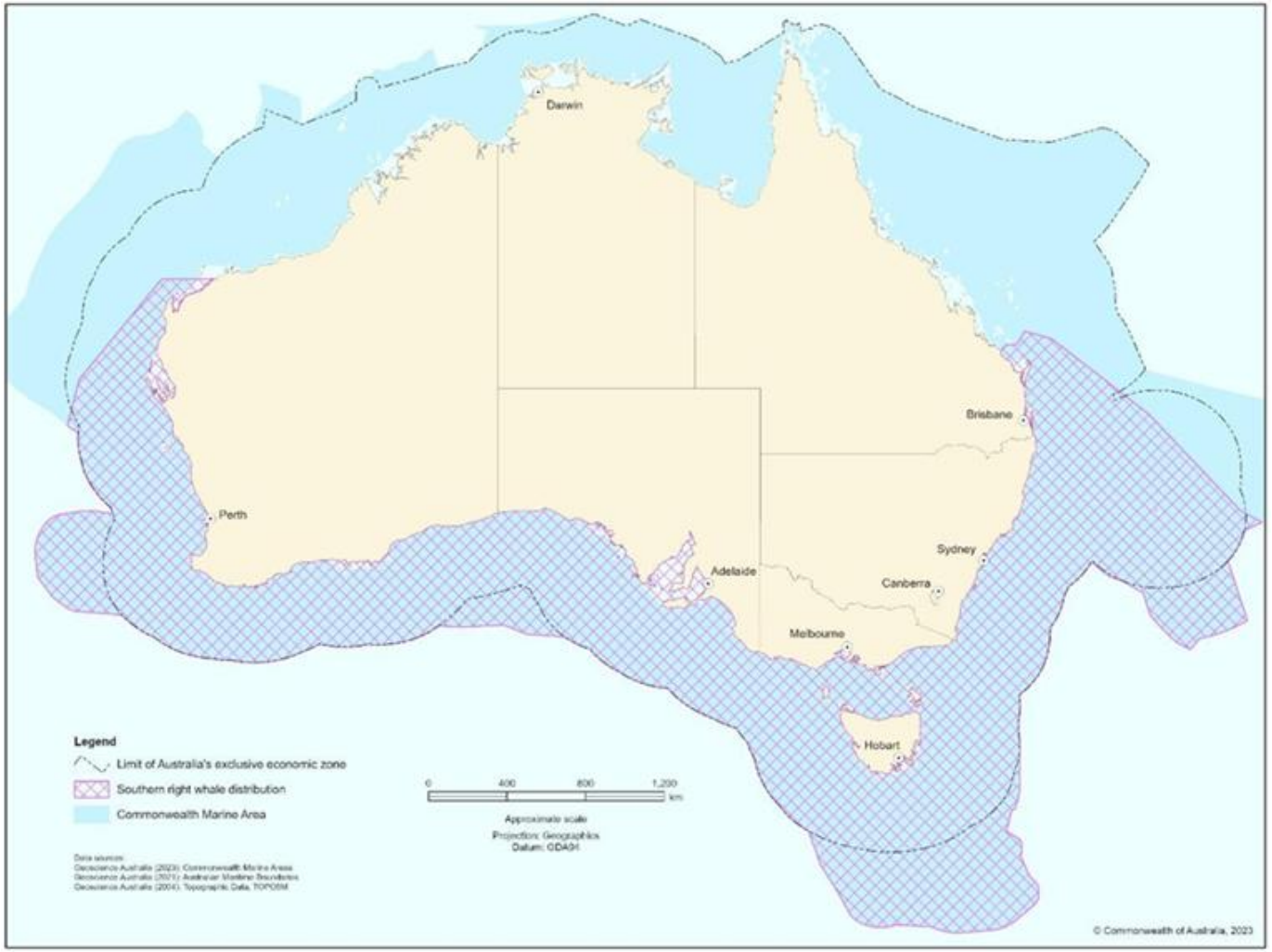


Figure 3-44: Spatial Distribution of the Southern Right Whale within the Commonwealth Marine Area and State Waters (DCCEEW, 2024l)

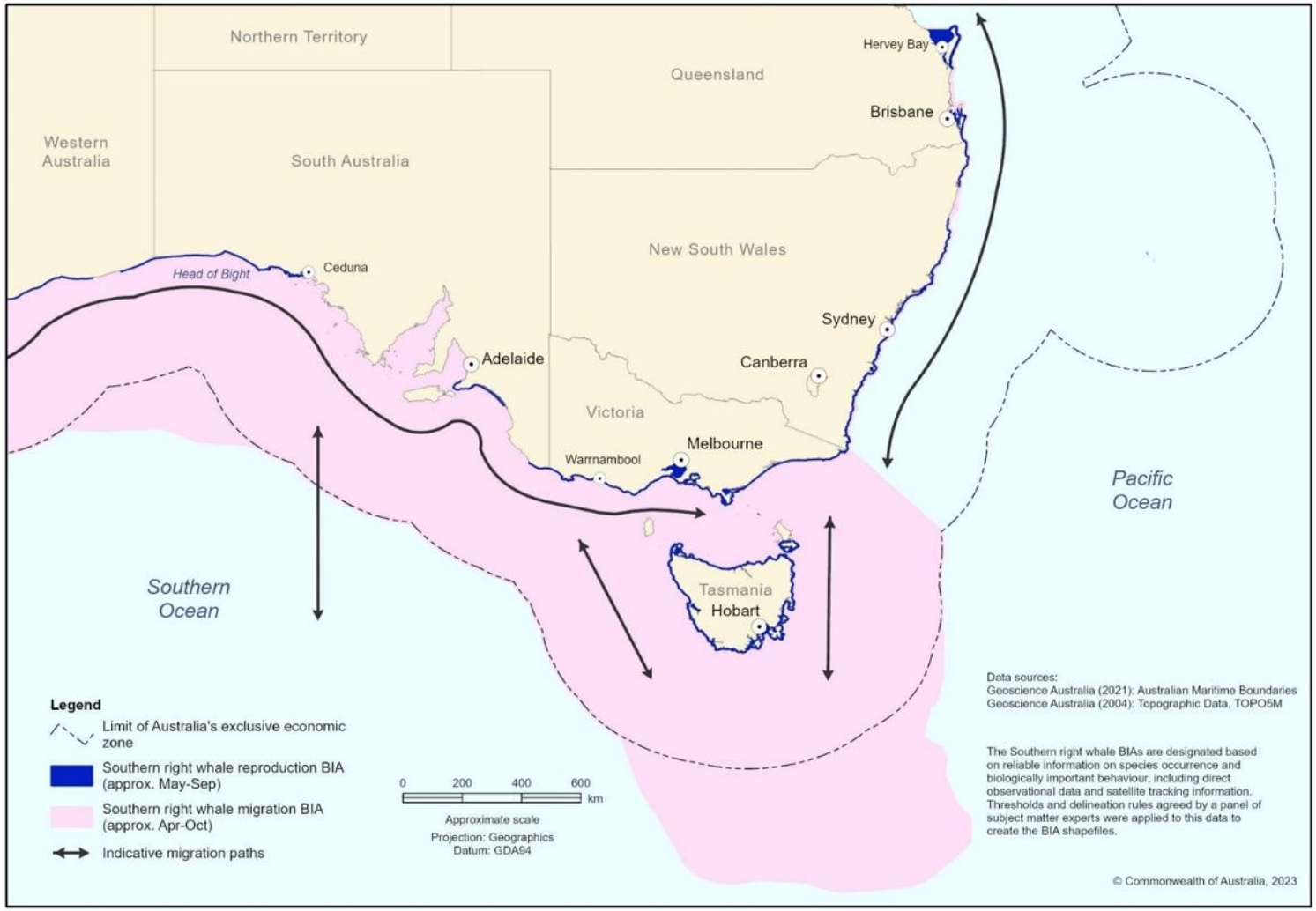


Figure 3-45: Southern Right whale Biologically Important Areas and Habitat Critical to the Survival (Reproduction BIA) in Eastern Australia (DCCEEW, 2024l)

3.16.2.2 Humpback Whale

Humpback whales have a near global distribution, migrating annually between high latitude feeding areas and low latitude breeding and calving areas; the Australian migration period is from May to November each year (Figure 3-51) (TSSC, 2015i). Peak migration time occurs between June and July each year (northern migration); there has been no such peak observed during the southern migration (Figure 3-51) (TSSC, 2015i). Predominantly humpback whales migrate within 50 km of the coast of mainland Australia (TSSC, 2015i). There are some narrow corridors along the migration pathways where the whale population passes within 30 km of the coast, including east of Moreton Island (Queensland) and Cape Byron (New South Wales).

Known calving areas for Humpback Whales within the Environmental Sectors are within the Great Barrier Reef area (approximately 14–27°S), and less frequently, along the migratory pathways (TSSC, 2015i). Predictive habitat modelling has identified two core areas for calving: the region east of Mackay, and the Capricorn and Bunker Island groups off Gladstone (Figure 3-51) (TSSC, 2015i). After breeding and calving during the winter months, the humpback whales migrate south. Resting areas are used by cow-calf pairs and attendant males during this southern migration; locations include Hervey Bay and Moreton Bay (Queensland), and Twofold Bay and Jervis Bay (New South Wales) (Figure 3-51, Figure 3-53). A BIA for the humpback whale, for migration and breeding, has been identified along the east coast of Australia (Figure 3-53). Humpback whales in the southern Hemisphere primarily feed on Antarctic krill (*Euphausia superba*) (TSSC, 2015i). While most feeding grounds are located south of Australian waters, there are some feeding grounds that are regularly used on the southern migration in Australian coastal waters: off the coast of Eden in New South Wales, and east coast of Tasmania (TSSC, 2015i).

Humpback whales have been sighted during Amplitude Energy projects in the Gippsland region, including multiple sightings 2018, 2019 and 2023. Many of the sightings were of whales moving in close proximity to vessels. Over the course of a 33-day period of in-field and in-transit activities in 2023 in the Gippsland, there were approximately 435 whales sighted by marine mammal observers on board the work vessel (Figure 3-46). Sightings were primarily of humpback whales undertaking their southerly migration, including mothers and calves. Whales were observed at distances between 0.05 km and 6.2 km from the vessel. Behaviours observed include fast and slow travel, milling and surface active (e.g. fin slapping and breaching), with the majority being surface active and slow travel within 3 km of the vessel (Figure 3-47).

Humpback whales feed primarily on krill in Antarctic waters south of 55°S, though opportunistic feeding during migration has been observed in Eden, NSW (DoE, 2025). A foraging area (Figure 3-53) for the Humpback Whale occurs along the NSW-QLD border to Eden, which corresponds with the migration (North and South) BIA. which is overlapped by the Environmental Sectors (Figure 3-53). In 2022, the humpback whales EPBC threatened species status was removed due to significant population recovery (TSSC, 2022). The Humpback Whale remains a MNES under the EPBC Act as a listed Migratory Species, and as a Cetacean.

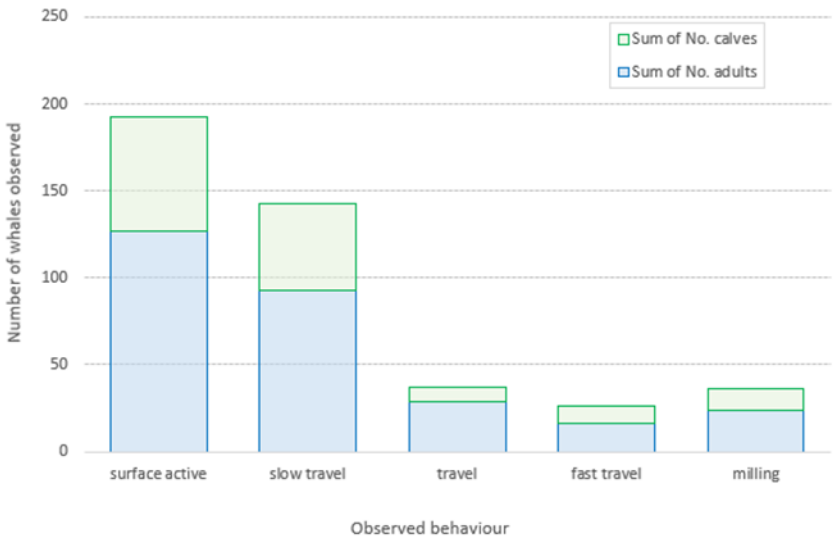


Figure 3-46: Whale Observations (behaviour) (Source: Amplitude Energy Vessel Based IMR Activity in Gippsland 2023)

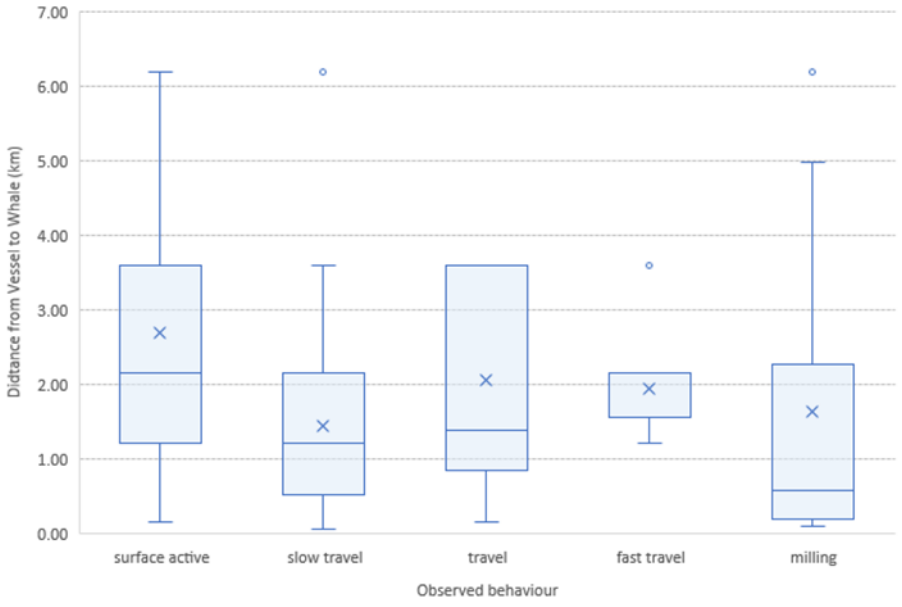


Figure 3-47: Whale observations (behaviour with distance from vessel) (Source: Amplitude Energy Vessel Based IMR Activity in Gippsland 2023)

3.16.2.3 Blue Whale

The blue whale is a large baleen whale with a broad spatial distribution. Three groups of blue whale - Eastern Indian Ocean pygmy blue, South West Pacific Ocean pygmy blue, and Antarctic blue, have been recorded acoustically in the Bass Strait (McCauley et al. 2018), with scientists now considering the Bass Strait to be the boundary between the East Indian Ocean and South West Pacific Ocean populations. No East Indian Ocean pygmy blues have been recorded on Australia's east coast

(Balcazar et al. 2015) or in New Zealand, where South West Pacific Ocean pygmy blue gather to forage in the South Taranaki Bight west of Cook Strait (Barlow et al. 2018).

There are two subspecies of blue whale that occur within Australian waters: Antarctic blue whale and the pygmy blue whale. There are populations of pygmy blue whales that are known to visit Australian waters; Indo-Australian (IA) pygmy blue whales occupying or passing through waters from Indonesia to western and southern Australia, and the Tasman-Pacific (TP) pygmy blue whale occupying or passing through waters in southeast Australia and the Pacific (DoE 2015d).

Blue whales have the highest known prey requirements, consuming up to two tonnes of krill per day (DoE, 2015d). Blue whale sightings in Australia are widespread, and much of the shelf and coastal waters are unlikely to hold significance for this species with the exception of some foraging locations. Australia has three known seasonal feeding aggregations of pygmy blue whales; two occurs within the Otway Environmental Sector: adjacent to the Bonney Upwelling system off South Australia and Victoria (Figure 3-54) and south along the sub-tropical convergence zone within the Bass Strait between Victoria and Tasmania (Thums et al., 2022). BIAs for the pygmy blue whale are illustrated in Figure 3-54.

The IA Pygmy blue whale population shows three migratory stages around Australia, a “southbound migratory stage” where whales travel southwards from Indonesian waters down the WA coast, mostly over October to December but possibly into January of the following year, a protracted “southern Australian stage” (January to June) where animals spread across southern waters of the Indian Ocean and south of Australia, then a northbound migratory stage (April to August) where whales meander north back to Indonesia again (McCauley et al., 2018).

Pygmy blue whale (TP blue whale population) is identified as possibly exhibiting foraging behaviours within the Gippsland Environmental Sector (Figure 3-54). The pygmy blue whale possible foraging BIA has been identified where evidence for feeding is based on limited direct observations or through indirect evidence, such as occurrence of krill in close proximity of whales, or satellite tagged whales showing circling tracks. Blue whales travel through on a seasonal basis, possibly as part of their migratory route (Commonwealth of Australia, 2015a). Blue whale feeding grounds are typically in areas of high primary productivity that can support sufficient densities of krill, such as oceanographic upwelling or frontal systems (DoE, 2015d). Typically, blue whale migrates between breeding grounds (low latitudes) where mating and calving take place in the winter, to feeding grounds (high latitudes) where foraging occurs in the summer.

IA Pygmy blue whales typically forage off eastern South Australia and Victoria (e.g. between Robe, SA and Cape Otway, Vic) between January and April (DoE, 2015d), with some studies suggesting foraging could occur for an extended season of November to May (Gill et al., 2002; Gill et al., 2011). The abundance of whales in the area varies within and between seasons and is closely in-sync with the strength of the Bonney Upwelling (DoE, 2015d., Gill et al., 2011, McCauley et al., 2018). This has been confirmed by ongoing studies from 2002-2011, which conclude that blue whales are twice as likely to be found to the west of Portland (Western side of the Bass strait) than to it’s east (Gill, 2011). Blue whale presence in the Bonney Upwelling is associated with several seascape variables, but with sea surface temperature appearing to play a major role (Gill et al., 2011). Prey availability is also key, with krill likely responding to prevailing environmental conditions from previous seasons (Szesciorka et al., 2020). This makes upwelling events and subsequent foraging presence difficult to predict.

A recent study analysed satellite tracking data for 38 Eastern Indian Ocean pygmy blue whales and applied movement models to identify relationships between whale occurrence and the environment and predict foraging and migration habitat suitability in Australia and Southeast Asia (Ferreira, et al.

2024). Where there was low movement persistence, behaviours such as foraging, or reproduction were assumed, where there was high movement persistence, migration was assumed. Results indicated that the depth of the water column was a top predictor of suitable habitat for most regions, however dynamic localised oceanic processes also influenced the probability of occurrence (Ferreira, et al. 2024). In southern Australia suitable habitat was represented as a semi-continuous area encompassing both shelf and slope habitats (43% of suitable habitat on the shelf and 48% on the slope) (Ferreira, et al. 2024). Suitable foraging habitat occurred on the slope and shelf break throughout Australia with the use of the continental shelf in south west and southern Australia (Figure 3-48) (Ferreira, et al. 2024). While the shelf off the Bonney Upwelling, Great Australian Bight and southern Western Australia and the slope off WA coast was identified as suitable migration habitat (Figure 3-48) (Ferreira, et al. 2024). It is important to note that the relationship between whale occurrence and environment is not static, and the findings presented in Figure 3-48(a) must be considered within a temporal context.

Outside of these main feeding areas, foraging areas for pygmy blue whale include the Bass Strait, and diving and presumably feeding at depth off the west coast of Tasmania (DoE, 2015d). There is a paucity of data to support predictions of presence in these areas adjacent to the key feeding grounds of the Bonney Upwelling, and even less data available for waters in the Gippsland region.

The unique song of TP pygmy blue whales feeding in New Zealand predominates in the western South Pacific (Balcazar et al., 2015; Barlow et al., 2018). New Zealand subpopulations of pygmy blue whale are typically found in New Zealand waters year-round, with studies indicating that individuals do not move far from feeding grounds in the South Taranaki Bight (Barlow et al., 2020).

Sightings of NZ pygmy blue whale have been recorded in the SE region, and Antarctic blue whale have been recorded on noise loggers. It is possible that Antarctic blue whales and TP pygmy blue whales may be present within the Gippsland offshore region. Based on current knowledge of patterns of behaviour elsewhere, it can be assumed that if blue whales are sighted, they are most likely foraging (Peter Gill pers comms July 2021).

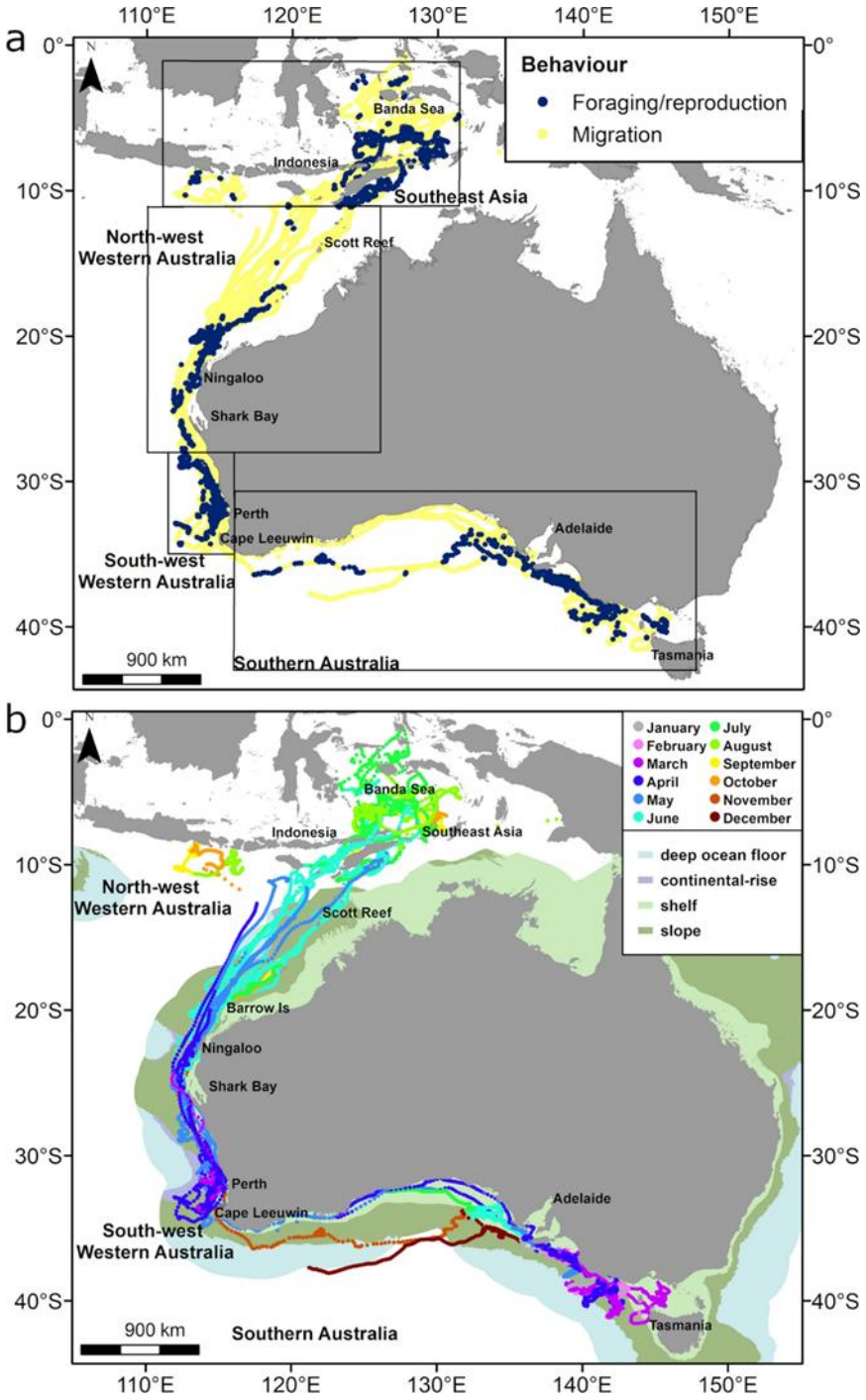


Figure 3-48: Predicted Suitable Habitats for Foraging and Migration in Eastern Indian Ocean Pygmy Blue Whales from Satellite Tracking (Source: Ferreira, et al. 2024)

Sightings of blue whales in the Gippsland region have been reported recently in June 2020 (2 sightings, CGG pers comms), and historically, individual sightings in October and November (ALA database). The ALA holds <10 sightings records since the 1970's, though based on historical catch data (Cwth Australia 2015), the low sightings may in part be a function of lower levels of monitoring compared to the Otway. Contemporary acoustic recording of blue whales in the region are considered to be more reliable than historic sightings; based on their migration patterns (as described above), and acoustic detection of both TP and Antarctic blue whale populations within the

Bass Strait (McCauley et al., 2018), blue whales may be more likely to be moving through the region in April, May and June; outside of this time period, presence is very unlikely. April and June are considered shoulder times given detections of both Antarctic Blues and TP pygmy in central Bass Strait blues between April-June followed by detections of whales moving north, off mid NSW and Tonga from June/July (Balthazaer et al. 2015) (Figure 3-49). McCauley et al. (2018) indicates that in some years there is evidence physical mechanisms drive productive water into the Bass Strait over April to May inferring this period as being potentially favourable for foraging in the region.

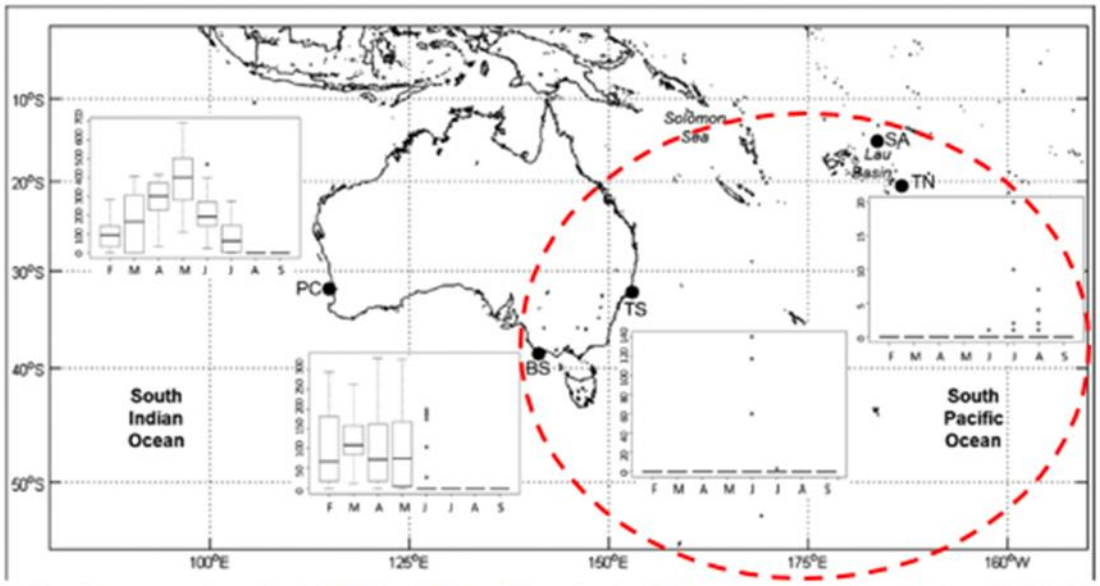


Fig. 2.—Box plots represent the median (with 0.25 and 0.75 quantile) number of calls detected per month (February to September) for AUSB at the PC = Perth Canyon and BS = Bass Strait and NZB at the TS = Tasman Sea and TN = Tonga. No AUSB or NZB whale calls were detected off SA = Samoa. Bars indicate maximum and minimum values and outliers are plotted as individual points.

Figure 3-49: Acoustic Detections of Blue Whale Populations in the Indian Ocean and Pacific Ocean (Source: Balcazar et al. 2015).

Studies published in 2023, and which review in detail the existing records base, indicate that these recent historical records of TP Pygmy blue whales in the Gippsland are considered to be vagrant individuals form the NZ pygmy blue whale population. Sightings of Antarctic blues are expected to be of those on migration to/from breeding grounds at lower latitudes (Barlow et al., 2023). Overall numbers of blue whales are expected to be low in the Gippsland region at any time of year, with the Gippsland being outside of predominant feeding grounds for any population of blue whales (Figure 3-50).

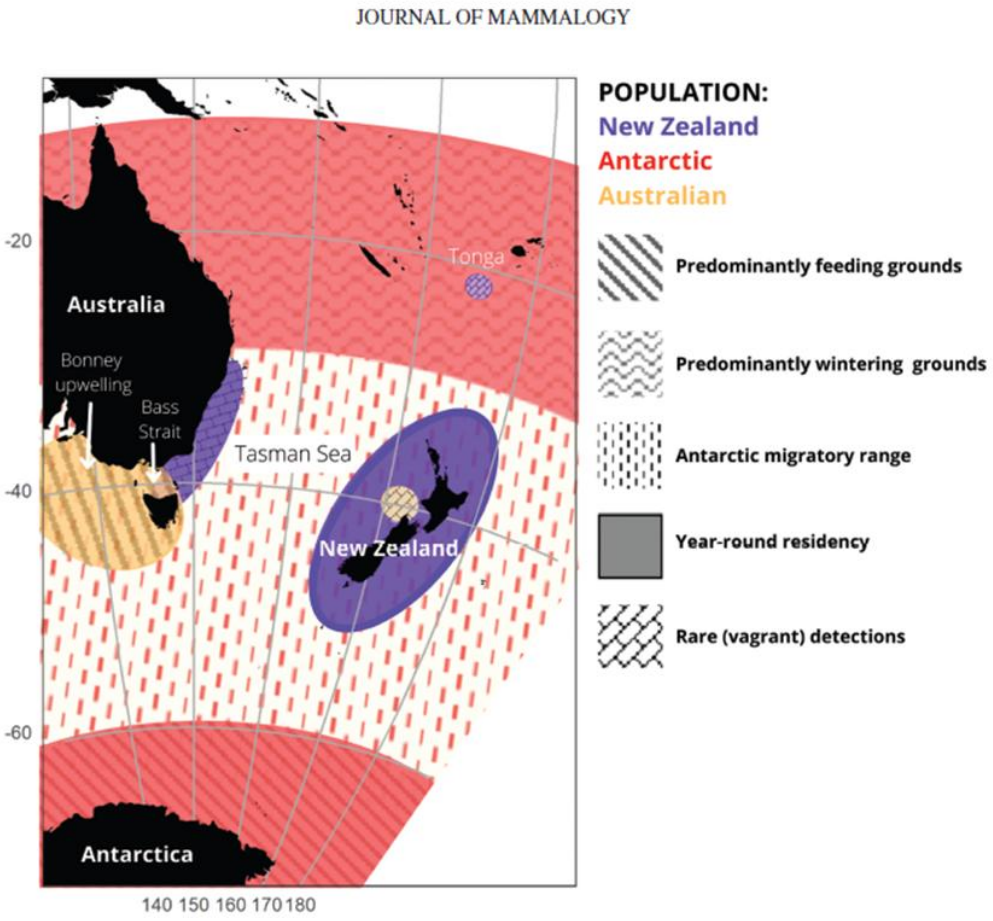


Figure 3-50: Conceptual Map Illustrating the Current Understanding of the Approximate Typical Range of each Blue Whale Population (Source: Barlow et al., 2023)

3.16.2.4 Sei Whale

Sei whales are considered a cosmopolitan species, ranging from polar to tropical waters, but tend to be found more offshore than other species of large whales. They show well-defined migratory movements between polar, temperate and tropical waters. Migratory movements are strictly north-south with little longitudinal dispersion.

Sei whales have been infrequently recorded in Australian waters; however occasional sightings have been recorded off Tasmania, New South Wales, Queensland and within the Great Australian Bight (DEE, 2017s). Sei whales typically feed between the Antarctic and Subtropical convergences, and their diet is planktonic crustacea, in particular copepods and amphipods (DEE, 2017s). However, sei whales have also been observed feeding on the continental shelf in the Bonney Upwelling region during November and May, suggesting the area may be used for opportunistic feeding (DEE, 2017s).

3.16.2.5 Fin Whale

Fin whales are considered a cosmopolitan species and occur from polar to tropical waters and are rarely in inshore waters. They show well-defined migratory movements between polar, temperate and tropical waters. Migratory movements are strictly north–south with little longitudinal dispersion.

The distribution of fin whales in Australian waters is uncertain, but they have been recorded in Commonwealth waters off most States (the species is rarely found in inshore waters) (DEE, 2017t). Fin whales frequently lunge or skim feed, at or near the surface, feeding on planktonic crustacea, some fish and cephalopods (DEE, 2017t). Fin whales generally feed in high latitudes, however depending upon prey availability and locality, it may also feed in lower latitudes. Fin whales have been observed in waters off the Bonney Upwelling during November and May, suggesting the region may be used for opportunistic feeding (DEE, 2017t). Fin whales have also been detected acoustically south of Portland, Victoria (Erbe et al., 2016).

3.16.2.6 Pygmy Right Whale

Records of pygmy right whales in Australian waters are distributed between 32°S and 47°S but are not uniformly spread around the coast (DEE, 2017u). Areas of coastal upwelling events appear to be an important component regulating pygmy right whale distribution. Pygmy right whales have primarily been recorded in areas associated with upwellings and with high zooplankton abundance, particularly copepods and small euphausiids which constitute their main prey (DEE, 2017u). There is some evidence to indicate that the area south of 41°S is important for weaned pygmy right whales, possibly because of the higher prey abundance in these waters (DEE, 2017u).

3.16.2.7 Bryde's Whale

The Bryde's whale can be found in tropical and warm temperate waters exceeding 16.3°C, but generally in the 20°C isotherm is where they stay year-round (DoE, 2025). The species appears to have coastal and offshore forms which display different life cycle characteristics such as migration patterns and feeding preferences. In Australia, the Bryde's Whale has been recorded in all states except the Northern Territory. Typically, the coastal form is restricted to within 32 km from the coast, while the offshore form occupies waters over 80 km from the coast (DoE, 2025).

The Bryde's whale is considered an opportunistic feeder, consuming any shoaling prey that is available and frequently exploit the activities of other predators. There is no evidence of large-scale movements of the inshore form of the species. However, it appears that the offshore form may migrate seasonally, heading towards warmer tropical waters during the winter (DoE, 2025). The waters of Bass Strait are not known feeding, resting or calving grounds for Bryde's whales, although feeding may occur opportunistically where sufficient krill density is present.

3.16.2.8 Antarctic Minke Whale

Antarctic minke whales appear to primarily occupy offshore and pelagic habitats and can be found throughout the southern hemisphere within cold temperate to Antarctic waters (DoE, 2025). In Australia, the Antarctic minke whale has been recorded in all states except the Northern Territory. Little is known about their foraging or breeding locations in Australian waters. The species undergo extensive migration between the summer Antarctic feeding grounds and winter sub-tropical to tropical breeding grounds (DoE, 2025). The Antarctic minke whale feeds primarily on Antarctic krill and do not appear to feed much whilst in the breeding grounds of lower latitudes (DoE, 2025).

3.16.2.9 Sperm Whale

The sperm whale inhabits a large geographical range from the polar regions to the equator, typically occurring offshore in deep waters (>600 m). In Australia, the sperm whale has been recorded in all

states, with concentrations of individuals known to occur at the shelf edge off Albany WA and south-west of Kangaroo Island (DoE, 2025).

In the open ocean, there is a generalised movement of sperm whales southwards in summer, and corresponding movement northwards in winter, particularly for males (DoE, 2025). Male and female sperm whales exhibit different distributions. Females mostly inhabit tropical and subtropical waters while adult males are found at higher latitudes (apart from the breeding season) in ice-free deep waters or along the edges of continental shelves (Chambault et al., 2021). After accompanying the females from 4 to 21 years, young males may leave their female relatives to migrate towards higher latitudes. The diet of the sperm whale is primarily composed of oceanic cephalopods, however, may include demersal fishes, rays and sharks. Sperm whales are deep and prolonged divers and are able to forage throughout the entire water column, however, they seem to forage mainly on or near the bottom (DoE, 2025).

The species is considered to have a known foraging presence overlapping within some Environmental Sectors.

3.16.2.10 Killer Whale

The killer whale can be found throughout all oceans; however, they are found in highest concentrations in coastal waters and in cooler regions where productivity is high (DoE, 2025). In Australia, they are recorded in all states, with concentrations reported around Tasmania and frequent sightings in South Australia and Victoria. Individuals are most often seen in along the continental slope and on the shelf, particularly near seal colonies. Due to their cosmopolitan nature and ability to inhabit most marine environments the killer whale is difficult to characterise (DoE, 2025).

Killer whales make seasonal migrations. However, little is known about specific seasonal movement patterns as it is likely that movements are related to the movement of their prey. It is thought that some individuals migrate to Antarctica during the southern summer to prey on Antarctic minke whales and then migrate back to lower altitudes during the southern winter (DoE, 2025). The killer whale is an apex predator whose diet fluctuates seasonally and regionally. A 'resident' whale will eat mostly fish, while a 'transient' whale will feed on birds and marine mammals (DoE, 2025). Pack-hunting strategies have been reported in Australian waters for individuals preying on pods of whales or dolphins.

3.16.3 Dolphins

The Indo-Pacific humpback dolphin is found in coastal and estuarine waters of Queensland and New South Wales. Species have been recorded in the Great Sandy Strait, and Moreton Bay (Queensland), and further south to Cabarita Beach (northern New South Wales) (DSEWPaC, 2012d). They inhabit a variety of inshore (<20 m water depth) habitats including, inshore reefs, tidal and dredged channels, mangroves and river mouths. It is a generalist feeder, preying on bottom-dwelling and pelagic fish and cephalopods (DSEWPaC, 2012d). A BIA for both foraging and breeding has been identified in Queensland waters (Figure 3-55).

The Indian Ocean bottlenose dolphin is distributed continuously around Australia (DEE, 2017v). The Indian Ocean bottlenose dolphin occurs mainly in riverine and shallow coastal waters (on the shelf or around oceanic islands) (DSEWPaC, 2012d). Known populations include Jervis Bay, Twofold Bay, and Port Phillip Bay (New South Wales), and Moreton Bay and Hervey Bay (Queensland) (DSEWPaC, 2012d). Calving peaks occur in spring and summer or spring and autumn (DEE, 2017v). Gestation lasts approximately 12 months, so peak mating period coincides with peak calving period in each

location (DEE, 2017v). A BIA for both breeding has been identified within Queensland and New South Wales coastal waters (Figure 3-56).

A new species of dolphin, the Burrunan dolphin, has been identified and is considered endemic to south-eastern Australian waters (Charlton-Robb et al., 2011). The current distribution of the Burrunan dolphin ranges from South Australia, east to Victoria and south to Tasmania (Charlton-Robb et al., 2011). Resident populations have been found in Port Philip Bay (approx. 90 animals) and Gippsland Lakes (approx. 50 animals) (Charlton-Robb et al., 2011). A tentative sighting of a Burrunan dolphin was recorded during vessel transit for an Amplitude Energy project in September 2018 off Bullock Island Quay, Lakes Entrance. The sighting was reported to the Australian Marine Mammal Centre. This dolphin species does not yet appear in the DEE Species Profile and Threats Database (or consequently the Protected Matters Search tool) but has been added to the species listed within Table 3-27. In May 2013 the Burrunan dolphin was listed as threatened under Victoria's Flora and Fauna Guarantee Act 1988.

The dusky dolphin can be found throughout the southern hemisphere in temperate and sub-Antarctic regions, typically in association with cold currents. This species primarily occupies inshore habitats but may also be pelagic at times (DoE, 2025). In Australia, the dusky dolphin occurs along the southern coastline from WA to Tasmania. The seasonal reports of dusky dolphin sightings suggest a link with changes in oceanographic features in this region (DoE, 2025). For example, movement patterns may be linked to the position of the Subtropical Convergence and/or El Nino Southern Oscillation events (DoE, 2025). This species is generally considered a surface feeder that preys on schooling fish, cephalopods or other benthic prey.

Table 3-27: EPBC Act Listed Marine Mammal Species or Species Habitat that May Occur within the Environmental Sectors

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Pinnipeds															
Arctocephalus forsteri	New Zealand Fur-seal			✓			MO	MO	MO	BKO	MO	MO			
Arctocephalus pusillus	Australian Fur-seal			✓			BKO	BKO	MO	MO	MO	MO			
Neophoca cinerea	Australian Sea-lion	V		✓	*	[2]	KO								
Mirounga leonina	Southern Elephant Seal	V		✓		[3], [4]				BMO					
Sirenians															
Dugong dugon	Dugong		✓	✓								MO	KO		
Whales and other cetaceans															
Whales															
Balaenoptera acutorostrata	Minke Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Balaenoptera bonaerensis	Antarctic Minke Whale		✓				LO	LO	LO	LO	LO	LO	LO	LO	LO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Balaenoptera borealis	Sei Whale	V	✓			[5]	FKO	FLO	FLO	FLO	FLO	FLO	FLO	LO	LO
Balaenoptera edeni	Bryde's Whale		✓				MO	MO	LO		MO	LO	LO	LO	LO
Balaenoptera musculus	Blue Whale	E	✓		*	[6]	FKO*d, f	FKO*f	LO*f	LO*f	LO*f	MO	MO	MO	MO
Balaenoptera omurai	Omura's Whale		✓										LO		
Balaenoptera physalus	Fin Whale	V	✓			[7]	FKO	FLO	FLO	FLO	FLO	FLO	FLO	LO	LO
Berardius arnuxii	Arnoux's Beaked Whale						MO	MO	MO	MO	MO	MO			MO
Caperea marginata	Pygmy Right Whale		✓				FLO	FMO	FLO	FMO	FMO	FLO			
Eubalaena australis	Southern Right Whale	E	✓		*	[8] [11]	BKO*m, r	KO*m, c	KO*m	KO*c	BKO*b, c	KO	LO	MO	MO
Feresa attenuata	Pygmy Killer Whale											MO		MO	MO
Globicephala macrorhynchus	Short-finned Pilot Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Globicephala melas	Long-finned Pilot Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Hyperoodon planifrons	Southern Bottlenose Whale						MO		MO	MO	MO	MO	MO		
Kogia breviceps	Pygmy Sperm Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Kogia simus	Dwarf Sperm Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Megaptera novaeangliae	Humpback Whale		✓		*	[9], [10]	KO	KO	KO*f	KO	FKO	KO*f,m	BKO*f, mr	MO	MO
Mesoplodon bowdoini	Andrew's Beaked Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Mesoplodon densirostris	Blainville's Beaked Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Mesoplodon ginkgodens	Gingko-toothed Beaked Whale								MO			MO	MO		
Mesoplodon grayi	Gray's Beaked Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Mesoplodon hectori	Hector's Beaked Whale						MO	MO	MO	MO	MO	MO			
Mesoplodon layardii	Strap-toothed Beaked Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Mesoplodon mirus	True's Beaked Whale						MO	MO	MO	MO	MO	MO		MO	MO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Peponocephala electra	Melon-headed Whale											MO	MO	MO	MO
Physeter macrocephalus	Sperm Whale		✓				FKO	MO	MO	MO	MO	MO	MO	MO	MO
Tasmacetus shepherdi	Shepherd's Beaked Whale						MO		MO	MO	MO	MO			
Ziphius cavirostris	Cuvier's Beaked Whale						MO	MO	MO	MO	MO	MO	MO	MO	MO
Dolphins															
Delphinus delphis	Common Dolphin						MO	MO	MO	MO	MO	MO	MO	MO	MO
Feresa attenuata	Pygmy Killer Whale											MO	MO	MO	
Grampus griseus	Risso's Dolphin						MO	MO	MO	MO	MO	MO	MO	MO	MO
Lagenodelphis hosei	Fraser's Dolphin												MO		MO
Lagenorhynchus cruciger	Hourglass Dolphin									MO	MO				
Lagenorhynchus obscurus	Dusky Dolphin		✓				LO	MO	LO	LO	LO	LO			

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Lissodelphiss peronii	Southern Right Whale Dolphin						MO	MO	MO	MO	MO	MO	MO	MO	MO
Orcaella Heinsohni	Australian Snubfin Dolphin	V	✓	✓									KO		
Orcinus orca	Killer Whale		✓				LO	LO	LO	LO	LO	LO	MO	MO	MO
Pseudorca crassidens	False Killer Whale						LO	MO	LO	LO	LO	LO	LO	LO	LO
Sousa sahulensis	Australian Humpback Dolphin	V	✓	✓									BKO		LO
Stenella attenuata	Spotted Dolphin											MO	MO	MO	MO
Stenella coeruleoalba	Striped Dolphin											MO	MO	MO	MO
Stenella longirostris	Long-snouted Spinner Dolphin											MO	MO	MO	MO
Steno bredanensis	Rough-toothed Dolphin											MO	MO	MO	MO
Tursiops aduncus	Indian Ocean Bottlenose Dolphin				*		LO	LO	LO*b			LO*b,f	LO*b		
Tursiops australis sp. nov.[1]	Burrunan Dolphin[1]							KO[1]	KO[1]						MO

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Tursiops truncatus s. str.	Bottlenose Dolphin						MO	MO	MO	MO	MO	MO	MO	MO	MO
Phocoena dioptrica	Spectacled Porpoise		✓							MO	MO				

Threatened Species:

V *Vulnerable*

E *Endangered*

CE *Critically Endangered*

Migratory Species:

M *Marine*

W *Wetland*

T *Terrestrial*

Biologically Important Area

*** *BIA Present*

a *Aggregation*

b *Breeding*

f *Foraging*

Type of Presence:

MO Species of species habitat may occur within area

LO Species or species habitat likely to occur within area

KO Species of species habitat known to occur within area

FLO Foraging, feeding or related behaviour likely to occur within area

FKO Foraging, feeding or related behaviour known to occur within area

BMO Breeding may occur within area

BKO Breeding known to occur within area

Plan Reference:

[1] Recovery Plan for the Australian Sea Lion (*Neophoca cinereal*) (DSEWPaC, 2013b)

[2] Conservation Advice for *Neophoce cinera* (Australian Sea Lion) (TSSC, 2020b)

[3] Approved Conservation Advice for *Mirounga leonine* (Southern Elephant Seal) (TSSC, 2016c)

[4] Sub-Antarctic Fur Seal and Southern Elephant Seal Recovery Plan (DEH, 2003)

[5] Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015j)

[6] Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015d)

[7] Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015k)

[8] Conservation Management Plan for the Southern Right Whale, 2011-2021 (DSEWPaC. 2012g)

[9] Approved Conservation Advice for *Megaptera novaeangliae* (Humpback Whale) (TSSC, 2015i)

[10] Listing Advice for *Megaptera novaeangliae* (Humpback Whale) (TSSC, 2022)

Scientific Name	Common Name	Threatened Species	Migratory Species	Listed Marine Species	BIA	Conservation/ Recovery Plans	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
									[11] National Recovery Plan for the Southern Right Whale (DCCEEW, 2024l)						

[1] Burrunan Dolphin is not included in the DEE Species Profile and Threats Database; and has been manually added to this table of results. Distribution of the dolphin has been identified from Charlton-Robb et al. 2011.

Table 3-28: Marine Mammal Threatened Species Management Advice relevant to Petroleum Activities within Applicable Amplitude Energy Operating Areas

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
Pinnipeds			
Australian Sea-lion	Recovery Plan for the Australian Sea Lion (*Neophoca cinereal*) (DSEWPaC, 2013b)	• Marine debris • Pollution and oil spills	• Marine pollution: Evaluate risk of oil spill impact to pinnipeds and, if required, appropriate mitigation measures are implemented. • Marine debris: Evaluate risk of marine debris (including risk of entanglement and/or ingestion) and, if required, appropriate mitigation measures are implemented. • Vessel disturbance: Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented.
Southern Elephant Seal	Approved Conservation Advice for *Mirounga leonine* (Southern Elephant Seal) (TSSC, 2016c)	• Pollution (including marine debris)	• Marine pollution: Evaluate risk of oil spill impact to pinnipeds and, if required, appropriate mitigation measures are implemented.

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
			• Marine debris: Evaluate risk of marine debris (including risk of entanglement and/or ingestion) and, if required, appropriate mitigation measures are implemented.
Whales and other Cetaceans			
Sei Whale	Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015j)	• Anthropogenic noise and acoustic disturbance • Habitat degradation including pollution • Pollution (persistent toxic pollutants) • Vessel strike	• Vessel disturbance: Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented
Blue Whale	Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015d)	• Noise interference • Habitat modification from marine debris or chemical discharge • Vessel strike	• Noise interference: Evaluate risk of noise impacts to cetaceans and, if required, appropriate mitigation measures are implemented. • Vessel disturbance: Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented.
Fin Whale	Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015k)	• Anthropogenic noise and acoustic disturbance • Pollution (persistent toxic pollutants) • Vessel strike	• Vessel disturbance: Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented
Southern Right Whale	Conservation Management Plan for the Southern Right Whale, 2011-2021 (DSEWPaC. 2012g) National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (DCCEEW, 2024l)	• Entanglement • Vessel strike • Noise Interference • Habitat modification • Pollution (acute chemical discharge)	• Noise interference: Assess, manage, and mitigate impacts from anthropogenic noise. • Vessel disturbance: Manage, minimise, and mitigate the threat of vessel strike. • Entanglement: Manage and mitigate the threat of entanglements from commercial active or discarded fishing gear.

Species	Conservation Advice/Recovery Plan	Key Threats relevant to Petroleum Activities	Management Actions relevant to activities within applicable Amplitude operating areas
			• Habitat modification: Address habitat degradation impacts from coastal and offshore marine infrastructure developments.
Humpback Whale (removed from Threatened species list as of 26 February 2022).	Listing Advice for Megaptera novaeangliae (Humpback Whale) in effect from 26 February 2022 (TSSC, 2022).	• Noise interference • Habitat degradation • Entanglement • Vessel disturbance and strike	Current impacts*: • Noise interference: Evaluate risk of noise impacts to cetaceans and, if required, appropriate mitigation measures are implemented • Vessel disturbance: Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented. • Marine debris: Evaluate risk of marine debris (including risk of entanglement and/or ingestion) and, if required, appropriate mitigation measures are implemented. Current impacts* and future threats: • Vessel disturbance: Evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented. • **not threatening or preventing population growth (DAWE 2022).*

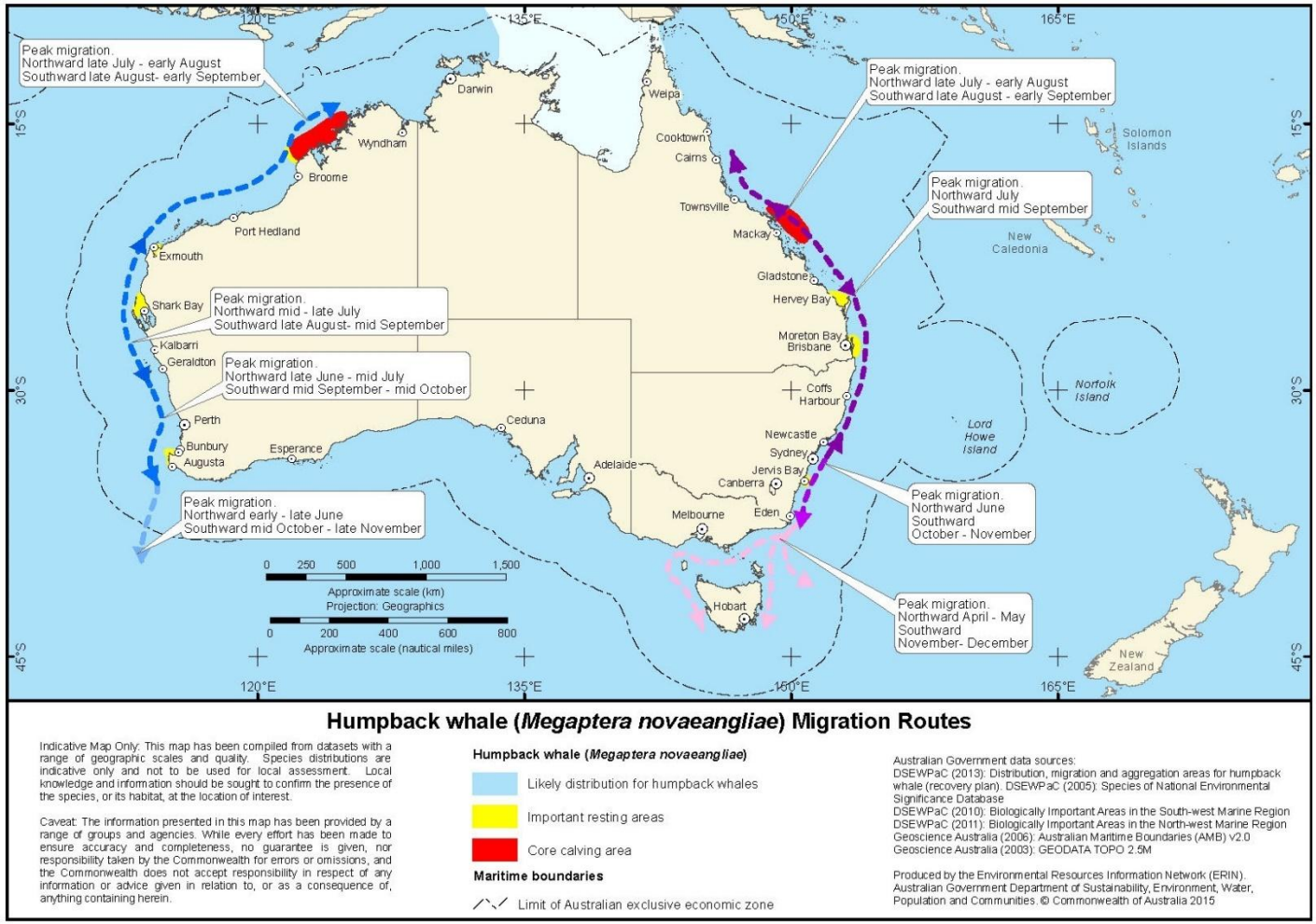


Figure 3-51: Migration Routes for Humpback Whales around Australia (Source: TSSC, 2015i)

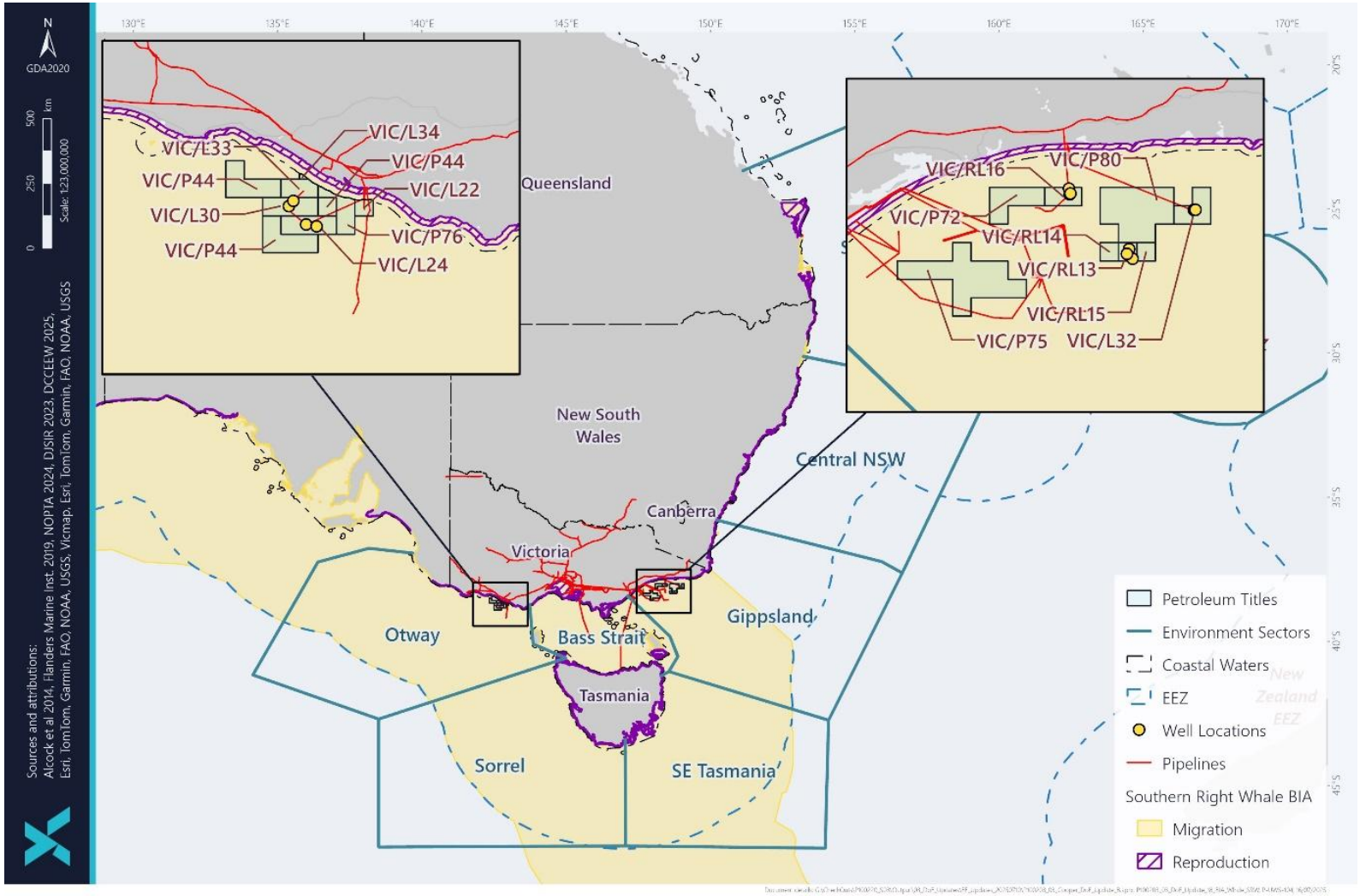


Figure 3-52: BIAs for the Southern Right Whale

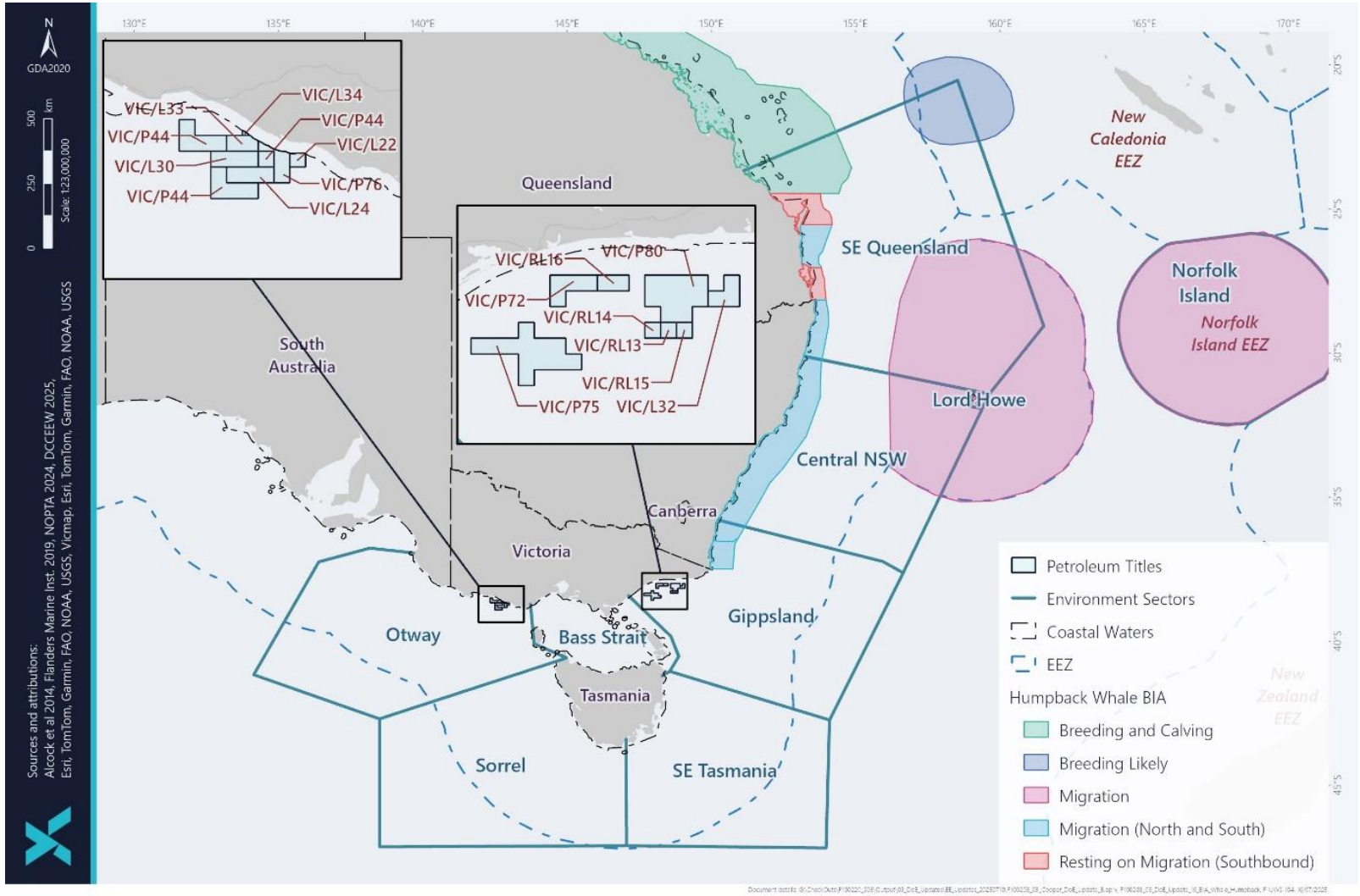


Figure 3-53: BIAs for the Humpback Whale

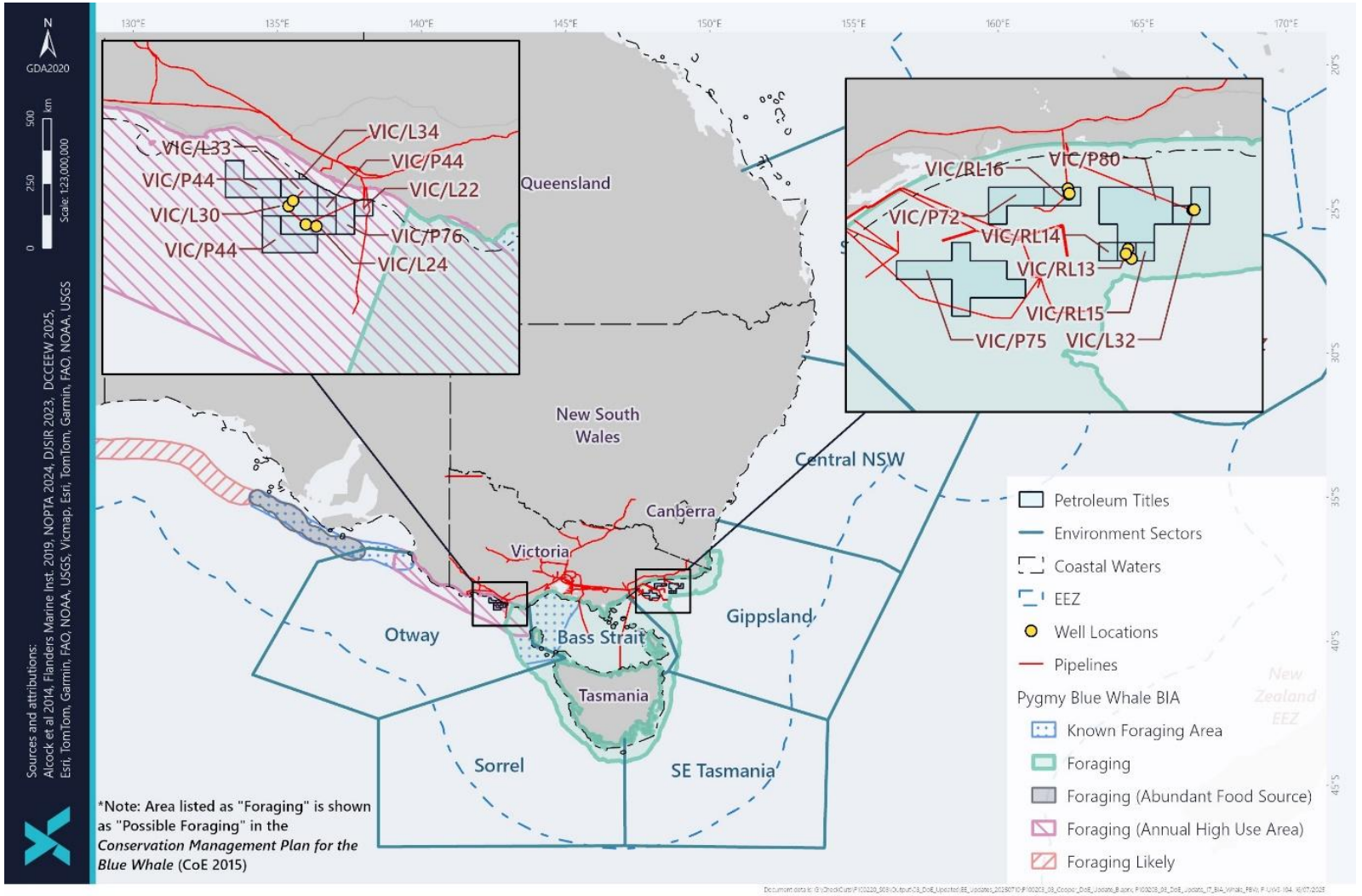


Figure 3-54: BIAs for the Pygmy Blue Whale

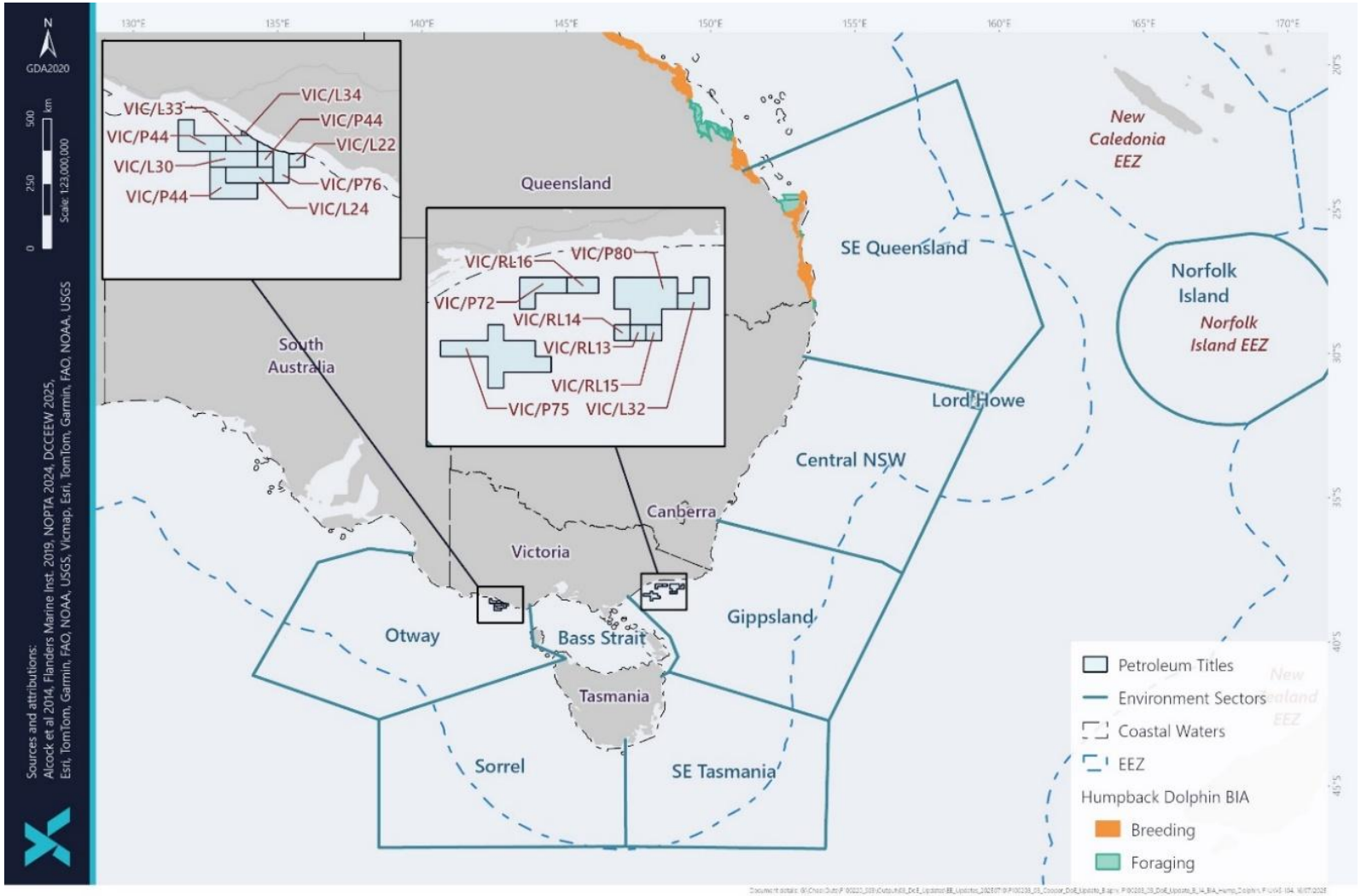


Figure 3-55: BIAs for the Humpback Dolphin

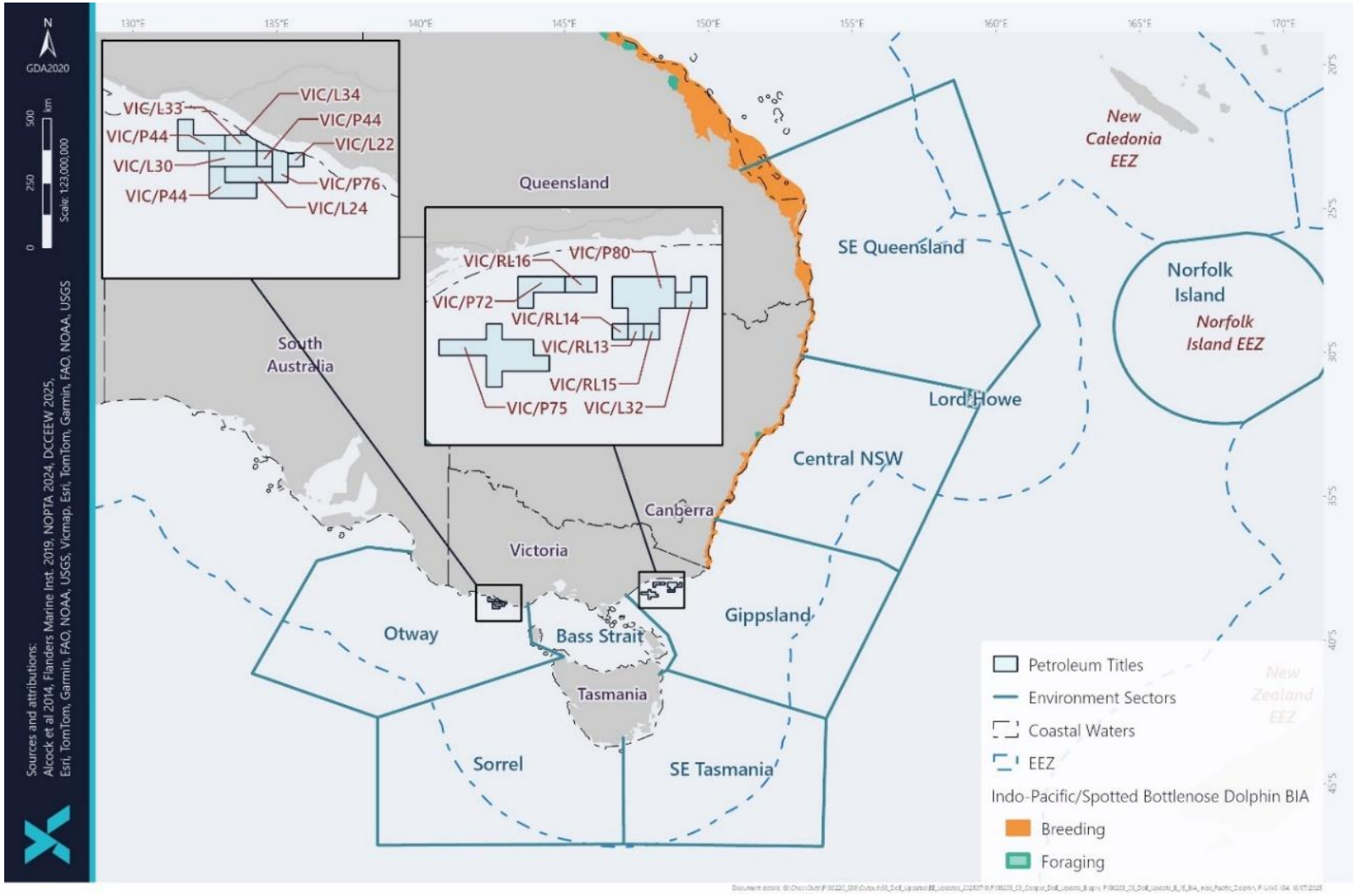


Figure 3-56: BIAs for the Indo-Pacific Humpback Dolphin

3.17 Seasonality of Key Sensitivities

Some species may occur year, round which some may be transient, or have a seasonal occurrence. The arrival of some species to the region is linked to physical processes such as seasonal upwellings in the region and may vary from year to year. This information is used to inform the impact and risk assessment, including the likelihood of a particular consequence eventuating. Table 3-29 identifies when species described above typically occur within the Otway Basin region.

Table 3-29: Seasonality of Key Sensitivities within the Otway Region

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Marine Mammals (Migratory / Listed)												
Antarctic minke whale			Likely to occur in the austral summer									
Australian sea lion	Assumed present year-round – South-east marine region (SEMR) is a known range											
Australian fur seal (Koorn Moorn)	Present year-round – Islands of the Bass Strait are known colonies Breeding occurs during summer months (October-December)											
Pygmy blue whale		Foraging occurs linked to Bonney Upwelling – BIA										
Bryde's whale	Prefers water depths ranging from 200 m – 1000 m											
Dusky dolphin	Assumed present year-round – prefers inshore habitats but may also be pelagic at times											
Fin whale	Present during the Bonney Upwelling events											
Humpback whale				Nth Migration through SEMR						Sth Migration through SEMR		
Killer whale	Assumed present year-round – frequent sightings off Vic along the continental slope and shelf											
Long-nosed Fur-Seal (NZ Fur Seal)	Assumed present all year-round											

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pygmy right whale	Uncommon / few or no records available for Vic.											
Sei whale	Sighted during the Bonney Upwelling event											
Southern right whale – migration												
Southern right whale – reproduction				Shoulder							Shoulder	
Sperm whale	Prefer deep offshore environments >600 m											
Marine Reptiles												
Green turtle	Occurs in limited numbers in Vic and SA											
Leatherback turtle	Foraging in the SEMR is known to occur											
Loggerhead turtle	Uncommon in southern Australia											
Fish, Sharks and Rays												
Kooyang (Short finned eel)		Adult eels begin seasonal migration to the Coral Sea.				Larvae and glass eel forms enter Victorian estuaries and upstream migration.						
Australian grayling		Spawning from late Summer to Winter (freshwater)				Assumed present year-round – typically occurs in freshwater but can occur in coastal seas						
Eastern dwarf galaxias	Occurs in freshwater habitats											
Porbeagle	Assumed present year-round											
Shortfin mako shark	Assumed present year-round											
White shark	Assumed present year-round with foraging BIAs identified across the Environmental Sectors											
Yarra pygmy perch	Occurs in freshwater habitats											

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Blue warehou	Assumed present year-round											
Eastern school shark	Assumed present year-round											
Orange roughy	Assumed present year-round											
Southern dogfish (little gulper shark)	Assumed present year-round											
Seabirds and Shorebirds												
Antipodean albatross	Foraging known to occur all year											
Australasian gannet						Present year-round – foraging and aggregation BIAs				Breeding occurs Oct – May		
Black-browed albatross				Fledglings (Apr – May)		Present – foraging BIA			Breeding within SEMR on Macquarie Is.			
Black-faced cormorant	Assumed present year-round (endemic to southern Australia)											
Buller's albatross	Foraging BIA – however, records indicate the species is mainly present around Tas when in the SEMR (species endemic to NZ)											
Campbell albatross					Present in the non-breeding season – foraging BIA			Breeds on Campbell Island, south of NZ Aug - May				
Common diving petrel		Present year-round – foraging BIA					Breeding occurs Jul-Jan – breeding BIA					
Indian yellow-nosed albatross			Fledgling Mar-Apr			Non-breeding visitor – foraging BIA			Breeding occurs in South Africa – eggs laid in Sep-Oct			
Little penguin			Present year-round – foraging BIA						Breeding Sept – Feb			
Short-tailed shearwater (mutton bird)	Present Sep-May – foraging BIA					Migrates north for Winter				Breeding Oct – May		
Shy albatross	Assumed present year-round – foraging BIA. Breeding occurs in SEMR with eggs laid in Sept and fledglings in Apr											

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wandering albatross	Assumed present year-round – foraging BIA. Breeding occurs biennially on Macquarie Island with eggs laid in Dec and fledglings between mid-Nov and late-Feb											
Wedge-tailed shearwater	Present Aug-May – foraging BIA											
White-faced storm petrel	Fledglings mid-Feb – mid-Mar Foraging BIA during breeding season			Migrates to tropical and subtropical locations in non-breeding season					Species arrive at breeding colonies late-Sept – early-Oct with egg laying occurring in early Summer. Foraging BIA during breeding season			
Birds – other seabirds (With no BIAs identified)	Various species – assumed present											
Birds – shorebirds	Various species – assumed present											
Conservation												
Bonney Upwelling												
Legend												
	Peak occurrence / activity (reliable and predictable)											
	Low level of occurrence/ activity (may vary from year to year), or otherwise as described above											
	No occurrence											

Table 3-30: Seasonality of Key Sensitivities within the Gippsland Region

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Marine Mammals												

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Antarctic minke whale			Likely to occur in the austral summer									
Australian fur seal (Koorn Moorn)	Present year-round – Islands of the Bass Strait are known colonies Breeding occurs during summer months (October-December)											
Blue whale				Distribution – possible foraging (Apr-June)								
Bryde's whale	Prefers water depths ranging from 200 m – 1000 m											
Dusky dolphin	Assumed present year-round – prefers inshore habitats but may also be pelagic at times											
Fin whale	Foraging likely to occur (Dec – May)											
Humpback whale				Nth Migration through SEMR						Sth Migration through SEMR		
Killer whale	Assumed present year-round – frequent sightings off Vic along the continental slope and shelf											
Pygmy right whale	Uncommon / few or no records available for Vic.											
Sei whale	Foraging likely to occur (Dec -May)											
Southern right whale				Migration					Migration			
Sperm whale	Prefer deep offshore environments >600 m											
Marine Reptiles												
Green turtle	Species or species habitat likely to occur											
Leatherback turtle	Species or species habitat likely to occur											
Loggerhead turtle	Species or species habitat likely to occur											
Fish, Sharks and Rays												
Australian grayling		Spawning from late Summer to Winter (freshwater)				Assumed present year-round – typically occurs in freshwater but can occur in coastal seas						

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Eastern dwarf galaxias	Occurs in freshwater habitats											
Porbeagle	Assumed present year-round											
Shortfin mako shark	Assumed present year-round											
White shark		Distribution (low density)										
Whale shark	Species or species habitat may occur											
Blue warehou	Assumed present year-round											
Eastern school shark	Assumed present year-round											
Orange roughy	Assumed present year-round											
Harrisson's Dogfish, Endeavour Dogfish, Dumb Gulper Shark, Harrison's Deepsea Dogfish	Assumed present year-round											
Seabirds and Shorebirds												
Antipodean albatross	Foraging known to occur all year											
Australian fairy tern	Foraging, feeding or related behaviour likely to occur											
Australasian gannet						Present year-round – foraging and aggregation BIAs				Breeding occurs Oct – May		
Black-browed albatross				Present – foraging BIA								
Black-faced cormorant				Present – foraging BIA								
Blue Petrel							Species may occur					
Buller's albatross	Foraging BIA and species may occur											
Campbell albatross	Foraging BIA and species may occur											

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chatham albatross	Foraging BIA and species may occur											
Common diving petrel	Present year-round – foraging BIA											
Curlew sandpiper									May occur Sept - Mar			
Eastern curlew	Species or species habitat may occur											
Fairy prion				Species or species habitat may occur								
Gibson's albatross	Species or species habitat likely to occur											
Gould's petrel	Species or species habitat may occur											
Grey-headed albatross	Species may occur											
Indian yellow-nosed albatross			Foraging BIA. birds present Mar - June									
Northen Giant Petrel					Species or species habitat may occur							
Northern royal albatross	Species or species habitat likely to occur											
Red Knot	Species or species habitat likely to occur							Arrive late Aug through to April				
Salvin's Albatross				Species or species habitat likely to occur								
Shy albatross	Foraging BIA, Species or species habitat likely to occur											
Sooty Albatross	Species or species habitat likely to occur											
Southern giant petrel				Species or species habitat may occur								
Southern royal albatross	Species or species habitat likely to occur											
Wandering albatross	Foraging BIA, Species or species habitat likely to occur											
White-bellied storm petrel	Species or species habitat likely to occur											
White-capped albatross	Species or species habitat likely to occur											

Environmental Sensitivity	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
White-faced storm petrel	Foraging BIA during breeding season			Migrates to tropical and subtropical locations in non-breeding season					Foraging BIA during breeding season			
Conservation												
Upwelling of East Eden												
Legend												
	Peak occurrence / activity (reliable and predictable)											
	Low level of occurrence/ activity (may vary from year to year), or otherwise as described above											
	No occurrence											

3.18 Marine Pests

Estuarine and marine non-native species are typically introduced and spread through coastal waters by vessel movements and, to a lesser extent, the aquarium trade and aquaculture (Clark and Johnston, 2017). Over 250 introduced marine plants and animals have been recorded in Australian waters (DAFF, 2017). Marine pests are non-native plants or animals which can have a detrimental impact on native marine ecosystems. Not all non-native species become pests, but, when they do, they are classified as invasive. Invasive species often occur in high proportions on artificial substrates (Clark and Johnston, 2017).

The Australian Government National Introduced Marine Pest Information System (NIMPIS) provides information on marine pests in Australian Waters (Table 3-31). Two locations identified on NIMPIS are in the same regions as Amplitude Energy Operational Areas: Portland (Otway Region), and Melbourne (Gippsland Region). Both have multiple IMS established.

See **https://www.marinepests.gov.au/** for further details on the IMS identified in Table 3-31.

Table 3-31: IMS Recorded in Victorian Waters[3]

Scientific name	Common name	Gippsland/Lakes	Corner Inlet/ surrounds	West port	Port Phillips Bay	Apollo Bay	Portland Harbour
Asterias amurensis	Northern Pacific sea star	✓	✓	✓	✓		
Carcinus maenas	European green shore crab	✓	✓	✓	✓		
Codium fragile (subsp. fragile)	Dead man's fingers	✓		✓	✓		✓
Varicorbula gibba	European or basket clam			✓	✓		✓
Magallana gigas	Pacific oyster	✓	✓	✓	✓		
Grateloupia turuturu	Red seaweed				✓		
Maoricolpus roseus	New Zealand screwshell[4]	✓	✓				
Arcuatula senhousia	Asian bag mussel	✓		✓	✓		✓
Sabella spallanzanii	European fan worm			✓	✓		✓
Undaria pinnatifida	Wakame[5]		✓		✓	Y	
Styela Clava	Stalked sea squirt	✓		✓	✓		
Styela plicata	Pleated sea squirt	✓		✓	✓		
Ciona intestinalis	Sea vase tunicate	✓		✓	✓		

[3] Information provided by the DJPR (now DEECA) (pers comms Richard Stafford Bell March 2019); also informed by review of marinepests.gov.au (accessed August 2025).

[4] New Zealand Screw Shell (Maoricolpus roseus) – somewhat widespread in Gippsland. No records of it occurring in Port Philip Bay or elsewhere in Victoria. It remains an IMS for the Melbourne region.

[5] Japanese Kelp (Undaria pinnatifida) – widespread in Port Phillip Bay and recently detected in Port Welshpool (roughly 7km from Barry Beach marine terminal). Reducing the potential spread of this species is a priority.

Scientific name	Common name	Gippsland/Lakes	Corner Inlet/ surrounds	West port	Port Phillips Bay	Apollo Bay	Portland Harbour
Euchone limnicola	Fanworm						✓
Amathia distans	White bushy bryozoan						
Cryptosula pallasiana and Bugula neritina	Bryozoan spp.						
Ascidiella aspersa	Solitary Ascidian						✓
Theora lubrica	East Asian Bivalve						✓
Alexandrium tamarense and Alexandrium minutum	Toxic Dinoflagellate spp.						✓

✓ Present

4.0 Conservation Values and Sensitivities

4.1 World Heritage Properties

World Heritage Places are sites of outstanding universal value, defined by cultural and/or natural criteria. Australia is home to more listed natural World Heritage Sites than any other country and contains a total of 20 World Heritage Places altogether (DCCEEW, 2025e).

There are 11 World Heritage Properties that intersect the Environmental Sectors (DCCEEW, 2025) and are listed in Table 4-1.

There are no World Heritage Properties in the Gippsland region.

There is one declared property in the Otway region (Budj Bim Cultural Landscape), located near Portland, VIC. Budj Bim holds an ancient and complex freshwater aquaculture system developed by Gunditjmara to trap and harvest short-finned eel (Anguilla australis) which migrate to/from oceanic breeding grounds from freshwater habitat (budjbim.com.au, ari.vic.gov.au; also see Section 5.6.1).

Table 4-1: World Heritage Properties within the Environmental Sectors

	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Australian Convict Sites (Coal Mines Historic Site and Buffer Zone)					✓				
Australian Convict Sites (Darlington Probation Station and Buffer Zone)					✓				
Australian Convict Sites (Kingston and Arthurs Vale Historic Area)									✓
Australian Convict Sites (Port Arthur Historic Site and Buffer Zone)					✓				
Budj Bim Cultural Landscape	✓								
Gondwana Rainforests of Australia						✓	✓		
Great Barrier Reef							✓		
K'gari (Fraser Island)							✓		
Lord Howe Island Group						✓		✓	
Sydney Opera House and Buffer Zone						✓			
Tasmanian Wilderness				✓					

4.1.1 Australian Convict Sites

On 31 July 2010 the *Australian Convict Sites* became Australia's 18th World Heritage listed place. The 11 places that make up the *Australian Convict Sites* World Heritage serial listing tell a story of exile from one side of the world to the other and how a new nation was formed from hardship,

inequality and adversity (DCCEEW, 2025f). Together the sites represent the global phenomenon of convictism - the forced migration of convicts to penal colonies in the 18th and 19th centuries - and global developments in the punishment of crime in modern times. The *Australian Convict Sites* are the preeminent examples of our rich convict history, with more than 3000 convict sites remaining around Australia. This is unique in the world today (DCCEEW, 2025f). Four of these sites intersect the Environmental Sectors.

4.1.1.1 Coal Mines Historic Site and Buffer Zone

Located in bushland on the northern promontory of Tasman Peninsula, within Little Norfolk Bay, the Coal Mines Historic Site contains a collection of ruins and landscape modifications that tell the story of a convict establishment and penal colliery that operated from 1833-48 (DCCEEW, 2025f). It is one of several probation stations established on Tasman Peninsula to exploit natural resources and provide for the reform of convicts through hard labour in a secure and isolated landscape. The site is made up of ruined structures and archaeological features from the convict era within 214 hectares of open forest and bushland. It includes the remains of a prison complex, solitary underground isolation cells, hospital, military buildings, wharves, tramways, quarries, garden plots, constable station, semaphore station and cemetery (DCCEEW, 2025f).

Darlington Probation Station located on Maria Island off the east coast of Tasmania, offers a glimpse into our convict past and the probation system that was unique to Tasmania. The 13 intact structures that remain are set amongst a relatively unchanged landscape and uniquely demonstrating the philosophy behind the probation system (DCCEEW, 2025f).

4.1.1.2 Darlington Probation Station and Buffer Zone

Established as a convict station between 1825 and 1832 and operated as a probation station between 1842 and 1850. Its isolated location on Maria Island made it an ideal choice for a probation station. The probation system was a major phase of the control and reform of convicts in Australia (DCCEEW, 2025f). Convicts were classified into three classes, and this determined their treatment and conditions including their labour, sleeping and eating arrangements and privileges. A regime of moral redemption through education and religious instruction was an important feature of the new system. There are 16 convict structures and remains in a bushland setting of over 360 hectares. The landscape has survived largely unchanged since the convict era (DCCEEW, 2025f).

4.1.1.3 Kingston and Arthurs Vale Historic Area

This historic area located on Norfolk Island, is of outstanding significance to the nation as a convict settlement spanning the era of transportation to eastern Australia from 1788 to 1855 (DCCEEW, 2025f).

Norfolk Island was first established as a penal settlement in 1788 for its remote location to deter escapes and resources for ship building and food production. KAVHA later became infamous as a 'hell on earth' with 'no hope of return' (DCCEEW, 2025f). Convicts were subjected to hard labour such as land clearance, farming, logging and construction of roads and buildings. The punishment, living and working conditions were extremely harsh and brutal. Many convicts endured excessive floggings and several major convict rebellions broke out on the island (DCCEEW, 2025f).

The site includes more than 40 buildings, groups of buildings, ruins and archaeological remains within 225 hectares of relatively undisturbed land. All structures were built by convicts from limestone quarried on the island or with local timber (DCCEEW, 2025f).

4.1.1.4 Port Arthur Historic Site – Port Arthur

Established in the 1830s as a penal settlement. It remains a physical chronicle of a dramatic part of Australia's history. Port Arthur is made up of more than 30 buildings, ruins and homes set in 40 hectares of landscaped grounds (DCCEEW, 2025f). Buildings and structures that remain standing or as ruins include the penitentiary, separate prison, commandant's house, hospital, officers row, dockyards, church, hospital and a cemetery on the Isle of the Dead. The site provides valuable and tangible evidence of the physical form of the penal system in Australia as well as an extensive body of documentary sources and archaeological materials. The gardens, grounds and the waterfront provide a picturesque setting for the buildings and ruins of the penal settlement, contrasting to the alien and inhospitable reality of the convict era (DCCEEW, 2025f).

4.1.2 Budj Bim Cultural Landscape

The Budj Bim Cultural Landscape is located in southern-eastern Australia on the Traditional Country of the Gunditjmara people. The landscape has three main areas, Tae Rak (Lake Condah), Tyrendarra, and Kurtonitj. These areas are physically and culturally connected through the Budj Bim lava flows, which form the foundation of the landscape and its aquaculture system. The site includes a network of channels, weirds, dams, ponds, and sinkholes constructed from volcanic rock (UNESCO, 2023).

The Budj Bim Cultural landscape is globally significant for its demonstration of sustained human ingenuity and environmental management. Over at least 6,600 years, the Gunditjmara people developed and maintained a complex aquaculture systems to trap, store, and harvest kooyang (short-finned eel), which provided a stable economic and social base (UNESCO, 2023). The site reflects a deep time cultural narrative, which archaeological evidence reflection more than 32,000 years of occupation. It is recognised under UNESCO World Heritage criteria (iii) and (v) for it cultural traditions and human-environment relationships (UNESCO, 2023).

The landscape is shaped by ancient volcanic activity, with rugged terrain, intact vegetation, and minimal modern development preserving its natural and cultural integrity. The Budj Bim lava flows created a patchwork of wetlands that were deliberately modified by the Gunditjmara people to support their aquaculture systems (UNESCO, 2023). The reinstatement of traditional water flows into Tae Rak through a cultural weir in 2010 has enhanced the visibility and functionality of the aquaculture system. The Budj Bim volcano is central to the landscape's formation, having produced the lava flows that shaped the terrain and provided the raw materials for aquacultural infrastructure (UNESCO, 2023).

The Gunditjmara people used that volcanic rock to construct hydrological systems that manipulated water flow and supported eel migration. The aquaculture system reflects a sophisticated understanding of ecological processes, particularly the life cycle of kooyang. The Gunditjmara people manipulated seasonal water flows to support eel harvesting and enhance other food resources. The wetlands and surrounding ecosystems support a verity of native species and demonstrate ecological succession (UNESCO, 2023). Practices, such as, basket weaving, and stone weir construction are tied to ecological knowledge and continue to be passed down through generations. The landscape exemplified a living cultural system where biodiversity and cultural heritage are intertwined (UNESCO, 2023).

4.1.3 Gondwana Rainforests of Australia

The Gondwana Rainforests of Australia is a serial property comprising the major remaining areas of rainforest in southeast Queensland and northeast New South Wales. It represents outstanding

examples of major stages of the Earth's evolutionary history, ongoing geological and biological processes, and exceptional biological diversity (UNESCO, 2023a). A wide range of plant and animal lineages and communities with ancient origins in Gondwana, many of which are restricted largely or entirely to the Gondwana Rainforests, survive in this collection of reserves. The Gondwana Rainforests also provides the principal habitat for many threatened species of plants and animals (UNESCO, 2023a).

Gondwana is listed for three of the ten World Heritage criteria (UNESCO, 2023a):

- Outstanding examples representing major stages of earth's history
- Outstanding examples representing significant on-going geological and biological processes
- Containing the most important and significant natural habitats for in-situ conservation of biological diversity.

4.1.4 Great Barrier Reef Marine Park

The Great Barrier Reef was World Heritage listed in 1981 on the basis of its outstanding universal value (GBRMPA, 2014). It is the largest coral reef system in the world, stretching over 2,300 km and containing coral reefs, islands and other habitats (e.g. mangroves, seagrass, algal and sponge gardens, open water) (GBRMPA, 2014). These habitats support many threatened or migratory species listed under the EPBC Act (GBRMPA, 2014). The variety of marine species in the area includes 600 types of hard and soft corals, over 100 species of jellyfish, 3,000 varieties of molluscs, 500 species of worms, 1,625 types of fish, 133 varieties of sharks and rays, and more than 30 species of whales and dolphins (GBRMPA, 2017). The Great Barrier Marine Park was declared in sections between 1979 and 2001; and amalgamated in 2003. The Marine Park includes all waters seaward of low water mark (excluding internal waters), and approximately 70 Commonwealth Islands.

The Great Barrier Reef Marine Park extends into the northern part of the 'SE Queensland' Environmental Sector (Figure 4 2). The following management zones are present within the Environmental Sectors (Figure 4 3):

- General Use – IUCN Category VI
- Habitat Protection – IUCN Category VI
- Conservation Park – IUCN Category IV
- Buffer – IUCN Category IV
- Scientific Research – IUCN Category IA
- Marine National Park – IUCN Category II
- Preservation – IUCN Category IA.

One Commonwealth island: Lady Elliot Island (IUCN Category II) is also present within the Environmental Sectors.

Aboriginal and Torres Strait Islander peoples are the Traditional Owners of the Great Barrier Reef area, and they maintain a continuing connection to the Reef and adjacent coastal areas (GBRMPA, 2014). There are approximately 70 Aboriginal and Torres Strait Islander Traditional Owner clan groups whose customary estates include land and sea country within the Great Barrier Reef (GBRMPA, 2014).

4.1.5 K'gari (Fraser Island)

Fraser Island, also known by its Aboriginal name of K'gari, lies along the eastern coast of Australia. The property covers 181,851 hectares and includes all of K'gari and several small islands off the island's west coast. It is the world's largest sand island, offering an outstanding example of ongoing biological, hydrological and geomorphological processes (UNESCO, 2021).

K'gari, the world's largest sand island, boasts exceptional natural beauty with over 250 km of pristine beaches, vividly coloured sand cliffs, and unique rainforest growing on tall sand dunes. It also features half of the world's perched freshwater dune lakes and the largest unconfined aquifer found on a sand island, creating a spectacular and diverse landscape (UNESCO, 2021).

K'gari showcases remarkable geological processes, including longshore drift and the world's most complete sequence of evolving coastal dune systems, with unique parabolic dunes stabilized by towering rainforests. It features an exceptional variety of freshwater dune lakes shaped by the dynamic interaction between sand dunes, aquifer hydrology, and lake formation over time. The island's soil development is globally unique, with podzol profiles reaching over 25 metres deep, influencing plant succession and leading to retrogressive changes in older dune systems (UNESCO, 2021).

K'gari exemplifies remarkable biological processes on a sand medium, including unique rainforest succession and the evolution of rare plant and animal species adapted to low fertility, fire, and waterlogging (UNESCO, 2021). The island's vegetation shows complex zonation and rapid changes in composition, with heathlands and forests serving as refuges for relict populations and supporting ongoing speciation. Notably, the discovery of sub-tropical patterned fens and the presence of tall rainforest trees on coastal dunes highlight the island's unparalleled ecological diversity and evolutionary significance (UNESCO, 2021).

4.1.6 Lord Howe Island Group

The Lord Howe Island Group is located 700km northeast of Sydney and covers an area of 1,463km^2 , the Lord Howe Island Group comprises Lord Howe Island, Admiralty Islands, Mutton Bird Islands, Ball's Pyramid, and associated coral reefs and marine environments. The Lord Howe Island Group was inscribed on the World Heritage List in 1982 (DCCEEW, 2022g).

The justification criteria for its World Heritage listing are its exceptional diversity of spectacular and scenic landscapes within a small area, including sheer mountain slopes, a broad arc of hills enclosing the lagoon and Balls Pyramid rising abruptly from the ocean. It is considered to be an outstanding example of an island system developed from submarine volcanic activity and demonstrates the nearly complete stage in the destruction of a large shield volcano. Having the most southerly coral reef in the world, it demonstrates a rare example of a zone of transition between algal and coral reefs. Many species are at their ecological limits, endemism is high, and unique assemblages of temperate and tropical forms cohabit (DCCEEW, 2022g).

The second criteria for the World Heritage listing is that it is an outstanding example of the development of a characteristic insular biota that has adapted to the island environment through speciation. A significant number of endemic species or subspecies of plants and animals have evolved in a very limited area. The diversity of landscapes and biota and the high number of threatened and endemic species make these islands an outstanding example of independent evolutionary processes (DCCEEW, 2022g). Endemic species occur in the flora and invertebrate fauna; 60% of invertebrate fauna are endemic with discovery of new species still occurring. Of the endemic flora, more is known about the vascular plants of which 113 of the 239 species are endemic. Whilst

less is known about the non-vascular plants, they are also thought to be highly diverse and include endemic species (DECC, 2007). Lord Howe Island Group is within the Lord Howe Marine Park.

4.1.7 Sydney Opera House and Buffer Zone

The Sydney Opera House, inaugurated in 1973, is located at Bennelong Point on the edge of Sydney Harbour in New South Wales, Australia. Positioned at the tip of a peninsula that projected into the harbour, the building is surrounded by water and integrated into the urban and natural setting. It comprises of three groups of interlocking vaulted 'shells' that house two main performance halls and a restaurant, all set upon a platform with surrounding terrace areas (UNESCO, 2023b). The Sydney Opera House is recognized globally as a masterpiece of 20th-century architecture. Designed by Danish architect Jørn Utzon, whose concept was selected in 1957 through an international competition. It is inscribed on the World Heritage List under Criterion (i) for its outstanding universal value as an iconic artistic and architectural achievement. Although primarily a cultural and architectural site, the Opera House's location within a marine environment necessitates careful environmental management (UNESCO, 2023b). Conservation efforts ensure that the building's presence does not negatively impact the surrounding harbour ecosystem (UNESCO, 2023b).

4.1.8 Tasmanian Wilderness

The Tasmanian Wilderness is one of the largest temperate wilderness areas in the world encompassing more than 1,580,000 hectares and covering almost a quarter of the island state of Tasmania (DCCEEW, 2023m). The place is a stronghold for several animals that are either extinct or threatened on mainland Australia and is recognised as an International Centre for Plant Diversity by the IUCN. Additionally, it is an important cultural landscape for Tasmanian Aboriginal people, who have lived there for at least 35,000 years (DCCEEW, 2023u).

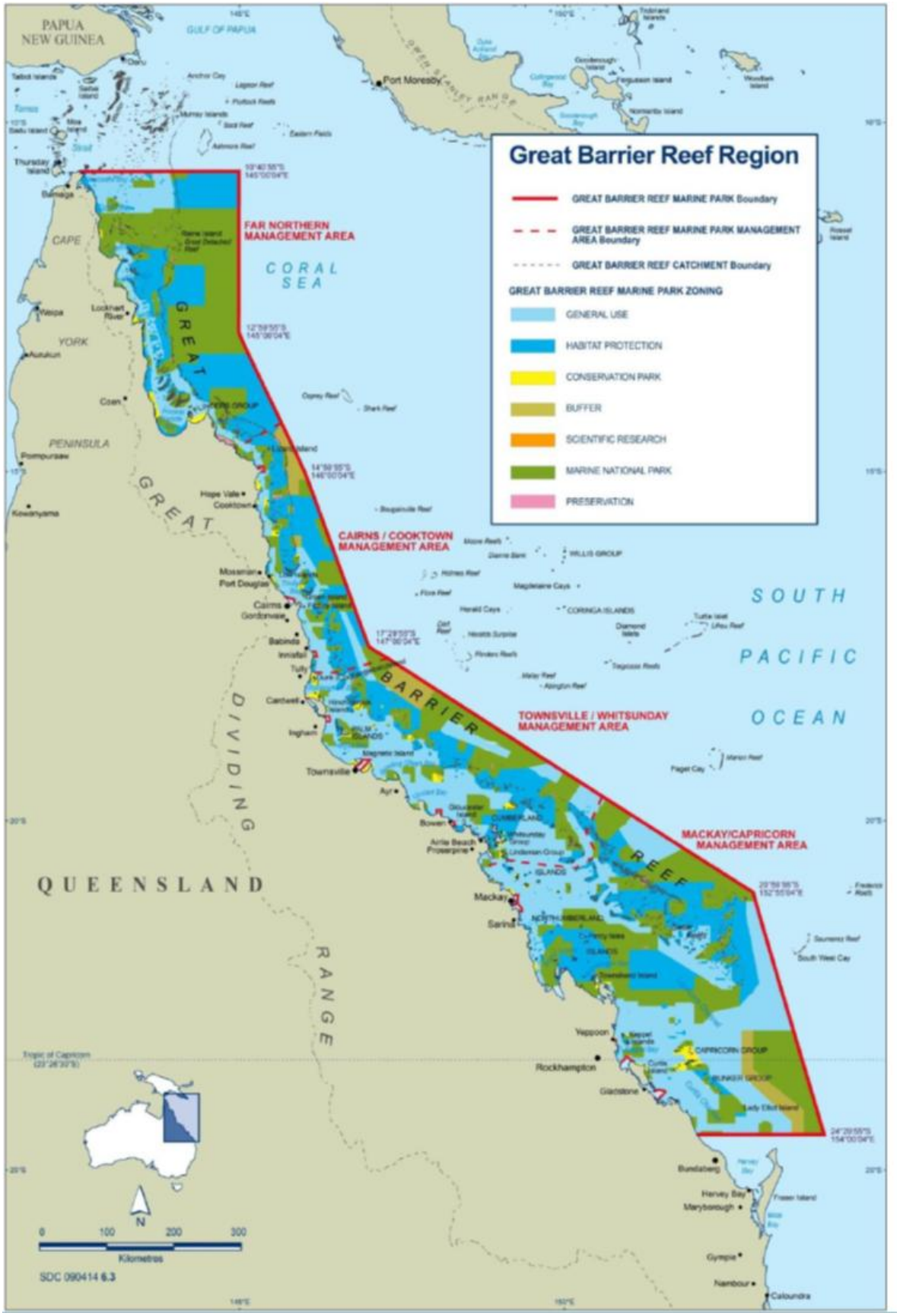


Figure 4-1: Great Barrier Reef Zoning Plan (Source: GBRMPA, 2014)

4.2 National Heritage Places

Listed National Heritage Places within the Environmental Sectors are mostly onshore / coastal sites. Table 5-9 lists all coastal interfacing Heritage Places identified within the Environmental Sectors. The Great Ocean Road and Scenic Environs is the only coastal interfacing National Heritage Place that intersects the Otway Environmental Sector. No National Heritage Places with coastal interface intersect the Gippsland Environmental Sector.

4.3 Commonwealth Protected Areas

Six marine regions have been identified in Commonwealth waters around Australia (Figure 4-2). Three of these regions (South-east, Temperate East and Coral Sea), as well as the Great Barrier Reef Marine Park, intersect with the Environmental Sectors. Key conservation values for each of the marine regions are listed in Table 4-2.

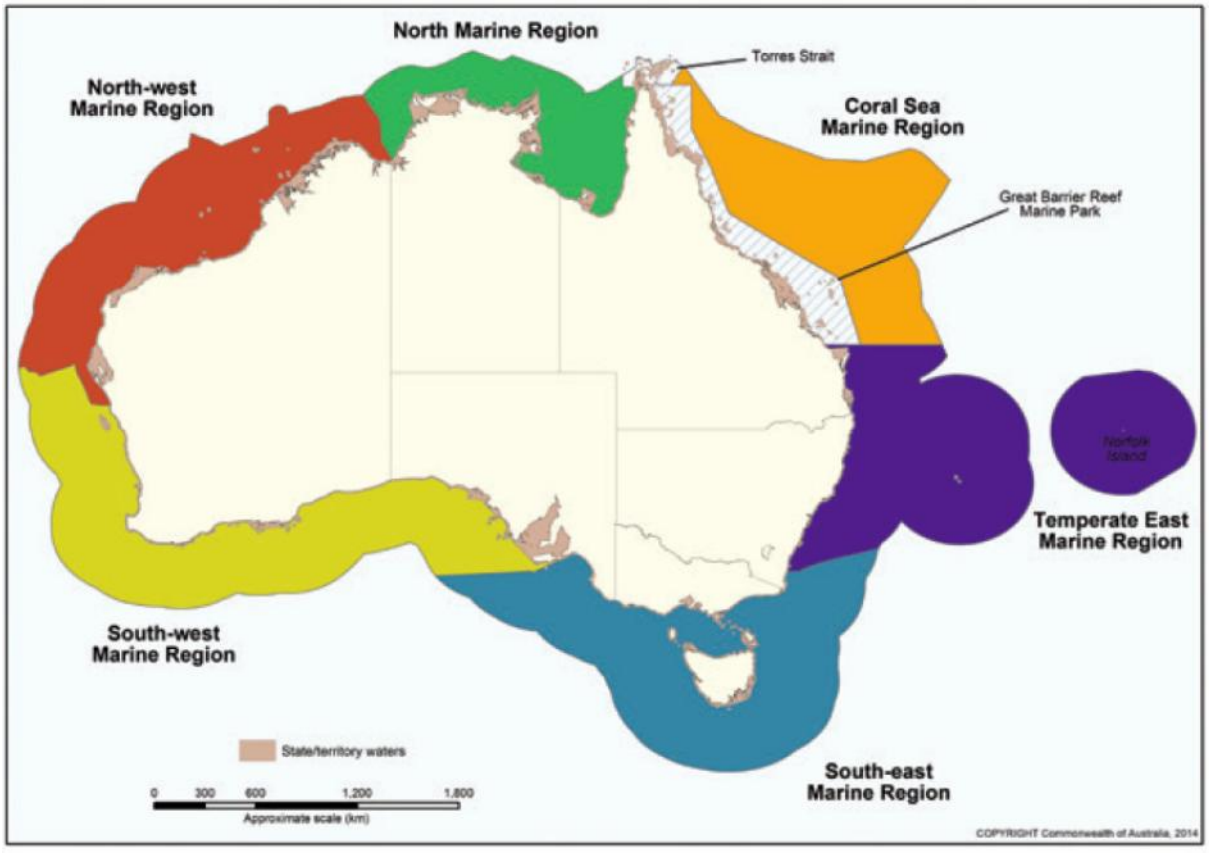


Figure 4-2: Australia's Commonwealth Marine Regions (Source: DoE, 2015a)

Table 4-2: Key Conservation Values for the South-east, Temperate East and Coral Sea Marine Regions

Region	Key Conservation Values
South East Marine Region (SEMR) (DNP, 2013)	• Features with high biodiversity and productivity, such as the east Tasmania subtropical convergence zone, Bass Cascade, Upwelling east of Eden, Seamounts south and east of Tasmania, Bonney coast upwelling. • Breeding and resting areas for Southern Right Whale. • Migration areas for Blue, Fin, Sei, Southern Right and Humpback whales.

Region	Key Conservation Values
	• Foraging areas for Australian Sea-lion, White Shark, Harrison's dogfish, Killer and Sei whales, Australasian Gannet, Fairy Prion, Black-faced Cormorant, Little Penguin, Crested Tern, and several species of seal, penguin, albatross, petrel, shearwater and gulls. • Wrecks of MV City of Rayville, SS Cambridge and ketch Eliza Davies. • 10 provincial bioregions and 17 seafloor types are represented in the network.
Temperate East Marine Region (TEMR) (DNP, 2018a)	• Important habitat for the critically endangered Grey Nurse Shark (east coast population). • Important offshore reef habitat at Elizabeth and Middleton Reefs, Lord Howe Island and Norfolk Island that support the threatened black cod. • Significant seamount ridges that run parallel to the coast and support hundreds of species, including some previously unknown to science. The seamounts rise from seafloor depths of approximately 4800 metres to up to 130 metres from the surface—more than twice the height of Mt Kosciuszko—and are home to deepwater shark species that are only found in Australia. • The Temperate East network provides additional protection to a number of species listed as endangered or vulnerable under Commonwealth legislation or international agreements, including the White Shark, Bleekers devil fish, the Little Tern and other seabirds. • Unique subtropical corals considered the southernmost coral reefs in the world. • Seven Key Ecological Features including shelf rocky reefs, Tasmantid and Lord Howe seamount chains, Elizabeth and Middleton Reefs, Norfolk Ridge, Canyons on the eastern continental slope, and the Tasman Front. • Seven provincial bioregions, three meso-scale bioregions, 73 depth ranges within provincial bioregions, and 15 seafloor types are represented in the network.
Coral Sea Marine Region (CSMR) (DNP, 2018b)	• Habitat and important areas for a range of species have been identified in the region, including for: – Humpback whales during their annual migration along the east coast of Australia. – Nesting and inter-nesting sites for Green Turtles. – Breeding and foraging areas for multiple seabird species including noddies, terns, boobies, frigatebirds, and tropic birds. – White Shark distribution and Whale Shark aggregation. • Transient populations of highly migratory pelagic species, including small fish schools, billfish, tuna and sharks. • The East Australian Current forms in the region and is considered a major pathway for mobile predators such as billfish and tunas. Black marlin undergoes seasonal movements into the Queensland Plateau area. • Includes three Key Ecological Features: the reefs, cays and herbivorous fish of the Queensland Plateau and the Marion Plateau, and the northern extent of the Tasmantid seamount chain. • Heritage values include several historic shipwrecks including three World War II shipwrecks from the Battle of the Coral Sea. • The reserve represents the full range of seafloor features found in the region, including numerous reefs ranging from Ashmore and Boot Reefs in the north of the region to Cato Island and surrounding reefs in the south. The reserve includes canyons, troughs and plateaux, including Bligh Canyon

Region	Key Conservation Values
	approximately 200 kilometres off the coast from Lockhart River and the Townsville Trough, which separates the Queensland and Marion Plateaux. The reserve extends into the deeper waters of the Coral Sea Basin in the north and provides protection for the pinnacles of the northern extent of the Tasmantid seamount chain. • Six provincial bioregions, 94 depth ranges, and 16 seafloor types are represented.

4.3.1 Australian Marine Parks

Australian Marine Parks (AMPs) are located in Commonwealth waters that start at the outer edge of State and Territory waters, generally 3 nm from the shore, and extend to the outer boundary of Australia's EEZ, located 200 m, from the shore. PMST reports show that 22 AMPs (Table 4-3) intersect the Environmental Sectors which span across the South-east Marine Region, the Temperate East Marine Region, and Coral Sea Marine Region (Figure 4-3).

Within each region is a series of Australian Marine Parks (AMP) which are managed for the primary purpose of conserving the biodiversity found in them, while also allowing for sustainable use of natural resources. Under the EPBC Act, once a marine park has been proclaimed, a management plan must be developed by the Director of National Parks. The management plans describe the activities allowed within the park and must be consistent with the relevant Australian IUCN Reserve Management Principles. Management plans are in place for each marine region.

AMPs which intersect with the Environmental Sectors and shown in Figure 4-3 and described in Table 4-3.

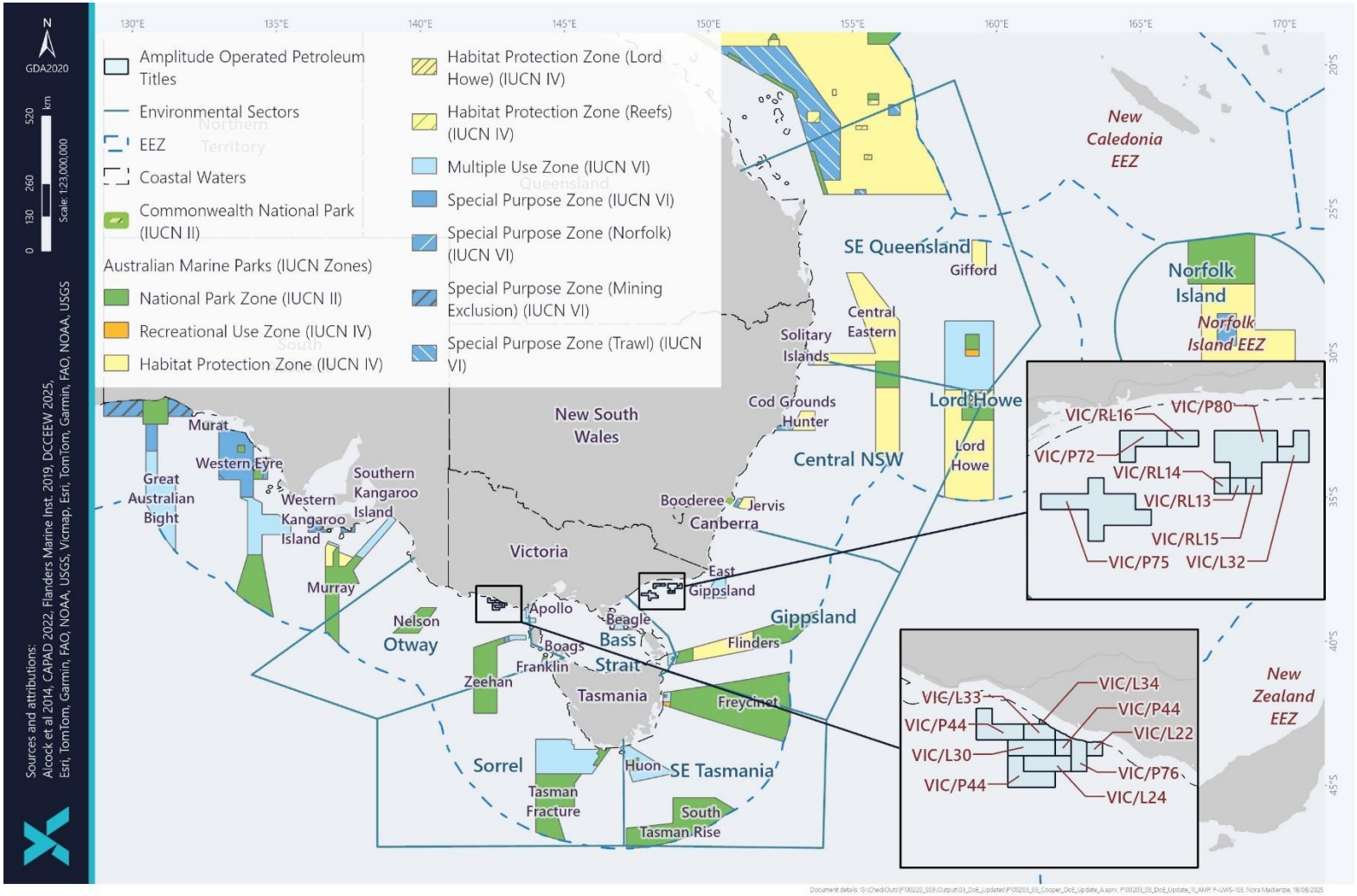


Figure 4-3: Commonwealth Protected Areas Present within the Environmental Sectors

Table 4-3: Australian Marine Parks within the Environmental Sectors

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Apollo	Multiple Use Zone - IUCN Category VI	• Ecosystems, habitats and communities associated with the Western Bass Strait Shelf Transition and the Bass Strait Shelf Province and associated with the sea-floor features: deep/hole/valley and shelf. • Important migration area for: Blue, Fin, Sei and humpback whales. • Important foraging area for: Black-browed and Shy albatross, Australasian Gannet, Short-tailed Shearwater, and Crested tern. • Cultural and heritage site: wreck of the MV City of Rayville.	✓	✓							
Beagle	Multiple Use Zone - IUCN Category VI	• Ecosystems, habitats and communities associated with the Southeast Shelf Transition and associated with the sea-floor features: basin, plateau, shelf and sill. • Important migration and resting on migration area for: southern right whale. • Important foraging area for: Australian fur seal, killer whale, white shark, shy albatross, Australasian gannet, short-tailed shearwater, pacific and silver gulls, crested tern, common diving petrel, fairy prion, black-faced cormorant and little penguin. • Cultural and heritage sites: the wreck of the steamship SS Cambridge and the wreck of the ketch Eliza Davies.		✓							
Boags	Multiple Use Zone - IUCN Category VI	• Ecosystems, habitats and communities associated with the Bass Strait Shelf Province and associated with the sea-floor features: plateau and tidal sandwave/sandbank. • Important foraging area for: shy albatross, Australasian gannet, short-tailed shearwater, fairy prion, black-faced cormorant, common diving petrel and little penguin.		✓							

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Central Eastern	Marine National Park - IUCN Category II Habitat Protection Zone - IUCN Category IV Multiple Use Zone - IUCN Category VI	• Biologically important areas for the protected humpback whale, vulnerable white shark and a number of migratory seabirds. • Examples of the ecosystems of the Central Eastern Province, Central Eastern Shelf Transition, and Tasman Basin Province provincial bioregions and the Tweed-Moreton meso-scale bioregion. • Represents seafloor features including abyssal-plain/deep ocean floor, canyon, pinnacle, slope, knoll/abyssal-hills/hills/mountains/peak, and seamount/guyot. • Includes two key ecological features: • Canyons on the eastern continental slope (part of one of three shelf-incising canyons occurring in the region is represented) interact with currents and ocean gyres resulting in upwellings that influence biological productivity. • Upwellings attract aggregations of tune, whales, albatrosses and support over 50 fish species endemic to the area. • Tasmantid seamount chain (known breeding and feeding areas for a number of open ocean species such as billfish and marine mammals).						✓	✓		
Cod Grounds	Marine National Park Zone - IUCN Category II	• Established in May 2007 in Commonwealth waters just south of Port Macquarie in NSW, to protect a significant aggregation site for the critically endangered east coast population of grey nurse sharks. • Biologically important areas for the protected humpback whale, vulnerable white shark and a number of migratory seabirds. • Examples of the ecosystems of the Central Eastern Shelf Transition provincial bioregion and the Manning Shelf meso-scale bioregion. • The area is a series of underwater pinnacles, which is a significant						✓			

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
		aggregation site for the critically endangered east coast population of grey nurse sharks. • Representation of the shelf seafloor feature.									
Coral Sea	Marine National Park Zone - IUCN Category II Habitat Protection Zone - IUCN Category IV Habitat Protection Zone (Reefs) – IUCN Category IV Special Purpose Zone (Trawl) – IUCN Category VI	• Habitat and important areas for a range of species have been identified in the region, including for: – Humpback whales during their annual migration along the east coast of Australia. – Nesting and inter-nesting sites for green turtles. – Breeding and foraging areas for multiple seabird species including noddies, terns, boobies, frigatebirds, and tropic birds. – White shark distribution and whale shark aggregation. • Transient populations of highly migratory pelagic species, including small fish schools, billfish, tuna and sharks. • The East Australian Current forms in the region and is considered a major pathway for mobile predators such as billfish and tunas. Black marlin undergo seasonal movements into the Queensland Plateau area. • South Equatorial Current, Hiri Current and East Australian current form a barrier to reduce mixing of species between the north and south, forming distinct ecological communities. • Includes three Key Ecological Features: the reefs, cays and herbivorous fish of the Queensland Plateau and the Marion Plateau and the northern extent of the Tasmantid seamount chain. • Heritage values include several historic shipwrecks including three World War II shipwrecks from the Battle of the Coral Sea.							✓		

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
		• The park represents the full range of seafloor features found in the region, including numerous reefs ranging from Ashmore and Boot Reefs in the north of the region to Cato Island and surrounding reefs in the south. The park includes canyons, troughs and plateaux, including Bligh Canyon approximately 200 kilometres off the coast from Lockhart River and the Townsville Trough, which separates the Queensland and Marion Plateaux. The reserve extends into the deeper waters of the Coral Sea Basin in the north and provides protection for the pinnacles of the northern extent of the Tasmantid seamount chain. • Six provincial bioregions, 94 depth ranges, and 16 seafloor types are represented in the park.									
East Gippsland	Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Southeast Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, escarpment and knoll/abyssal hillslope. • Features with high biodiversity and productivity: Bass Cascade; upwelling east of Eden. • Important foraging area for: wandering, black-browed, yellow-nosed and shy albatrosses; great-winged petrel; wedge-tailed shearwater; and cape petrel. • Important migration area for: humpback whale.			✓						
Flinders	Marine National Park Zone - IUCN Category II Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Tasmania Province, the Tasmanian Shelf Province, the Southeast Transition and the Southeast Shelf Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, plateau, seamount/guyot, shelf and slope.		✓	✓						

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
		• Features with high biodiversity and productivity: east Tasmania subtropical convergence zone. • Important foraging area for: wandering, black-browed, yellow-nosed and shy albatrosses, northern giant petrel, Gould's petrel and cape petrel, killer whale, white shark and Harrison's dogfish. • Important migration area for: humpback whale.									
Franklin	Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Tasmanian Shelf Province and the Western Bass Strait Shelf Transition and associated with the sea-floor features: shelf, deep/hole/valley, escarpment and plateau. • Important foraging area for: shy albatross, short-tailed shearwater, Australasian gannet, fairy prion, little penguin, common diving petrel, black-faced cormorant and silver gull.	✓			✓					
Freycinet	Marine National Park Zone - IUCN Category II Recreational Use Zone - IUCN Category IV Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Tasmania Province, the Tasmanian Shelf Province and the Southeast Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, escarpment, knoll/abyssal hill, saddle, seamount/guyot, shelf and terrace. • Features with high biodiversity and productivity: east Tasmania subtropical convergence zone. • Important foraging area for: wandering, black-browed and shy albatross, cape petrel and fairy prion, sei whales and killer whales. • Important migration and resting on migration area for: southern right whale. • Important migration area for: humpback whale.			✓		✓				

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Gifford	Habitat Protection Zone - IUCN Category IV	• Biologically important areas for protected humpback whales and a number of migratory seabirds. • Examples of the ecosystems of the Lord Howe Province. • Represents seafloor features including basin, plateau and seamount/guyot (Gifford Tablemount).							✓		
Hunter	Multiple Use Zone - IUCN Category VI Special Purpose Zone (Trawl) - IUCN Category VI	• Important habitat for the critically endangered east coast population of grey nurse sharks. • Biologically important areas for the protected humpback whale, vulnerable white sharks and a number of migratory seabirds. • Examples of the ecosystems of the Central Eastern Province and the Central Eastern Shelf Province provincial bioregions and the Manning Shelf meso-scale bioregion • A range of seafloor features including abyssal-plain/deep ocean floor, canyons, shelf, slope, and terrace geomorphic features • Includes one key ecological feature: • Shelf rocky reefs (unique sea-floor feature with ecological properties of regional significance)						✓			
Huon	Habitat Protection Zone - IUCN Category IV Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Tasmanian Shelf Province and the Tasmania Province and associated with the sea-floor features: canyon, knoll/abyssal hill (seamount), pinnacle, saddle, shelf and terrace • Features with high biodiversity and productivity: seamounts south and east of Tasmania • Important foraging area for: black-browed, Buller's and shy albatrosses, great-winged petrel, short-tailed shearwater, fairy prion, Australian fur seal and killer whale • Important migration area for: humpback whale.				✓	✓				

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Jervis	Multiple Use Zone - IUCN Category VI Special Purpose Zone (Trawl) - IUCN Category VI	• Biologically important areas for protected humpback whales, grey nurse sharks and a number of migratory seabirds • Some canyons incise the mid-slope at depths of 1500-3500 metres, and some extend to a depth of 5000 metres • Seafloor features represented in the park include abyssal-plain/deep ocean floor, canyons, shelf, and slope • Examples of the ecosystems of the Central Eastern Province, the Southeast Shelf Transition and the Batemans Shelf meso-scale bioregion • Includes two key ecological features: – one of three shelf-incising canyons occurring in the region (unique sea-floor feature with ecological properties of regional significance) • shelf rocky reefs (unique sea-floor feature with ecological properties of regional significance						✓			
Lord Howe	Marine National Park Zone - IUCN Category II Recreational Use Zone - IUCN Category IV Habitat Protection Zone (Lord Howe) - IUCN Category IV Habitat Protection Zone - IUCN Category IV Multiple Use Zone - IUCN Category VI	• Biologically important areas for protected humpback whales and a number of migratory seabirds • A major seabird breeding area, with 14 species found on the islands including masked boobys, grey ternlets, red-tailed tropic birds, black-winged petrels and Kermadec petrels • Key location for the black cod and the Galapagos shark • Due to the convergence of warmer tropical and cooler temperate waters in the area of the park, many species found there are at the northern or southern extent of their range • Examples of the ecosystems of the Lord Howe Province and the Tasman Basin Province provincial bioregions • Represents seafloor features including: basin, plateau, saddle, seamount/guyot and deep ocean valley • Includes three key ecological features:						✓	✓	✓	

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
		– the Lord Howe seamount chain (high productivity; aggregations of marine life; biodiversity and endemism). – Elizabeth and Middleton reefs (aggregations of marine life; biodiversity and endemism). • Tasman Front and eddy field (high productivity; aggregations of marine life; biodiversity and endemism)									
Murray	Marine National Park Zone - IUCN Category II Special Purpose Zone - IUCN Category VI Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Spencer Gulf Shelf Province, the Southern Province and the West Tasmanian Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, escarpment, knoll/abyssal hill, shelf, slope and terrace • Features with high biodiversity and productivity: Bonney coast upwelling, shelf rocky reefs and hard substrate • Important foraging areas for: blue, sei and fin whales, Australian sea lion, wandering, black-browed, yellow-nosed and shy albatrosses, great-winged petrels, flesh-footed and short-tailed shearwaters, and white-faced storm petrel. • Important breeding area for: southern right whale. • Important migration area for: humpback whale.	✓								
Nelson	Special Purpose Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the West Tasmanian Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, knoll/abyssal hill, plateau and slope. • Important migration area for: humpback whale, blue, fin and sei whales (likely migration).	✓								
Norfolk Marine Park	Marine National Park	• Significant because it contains habitats, species and ecological communities									✓

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Zone - IUCN Category II Habitat Protection Zone - IUCN Category IV Special Purpose Zone (Norfolk) - IUCN Category VI	associated with the Norfolk Island Province. • Breeding and foraging habitat for seabirds. • Migratory pathway for humpback whales. • Includes two key ecological features: – the Norfolk Ridge (support relatively productive and diverse benthic habitats and are thought to act as steppingstones for faunal dispersal, connecting deep-water fauna from New Caledonia to New Zealand). • Tasman Front and Eddy Field (increased nutrients and plankton aggregations, and enhanced productivity that attracts mobile species such as turtles, cetaceans, tuna and billfish.)									
Solitary Islands	Marine National Park Zone - IUCN Category II Multiple Use Zone - IUCN Category VI Special Purpose Zone (Trawl) - IUCN Category VI	• Important habitat for the critically endangered east coast population of vulnerable grey nurse sharks. • Biologically important areas for the protected humpback whale, vulnerable white shark, number of migratory seabirds and the Indo-Pacific (spotted) dolphin. • Many species found are at, or close to, their southern or northern geographical limits. • Examples of the ecosystems of the Central Eastern Shelf Transition and the Tweed-Moreton meso-scale bioregion. • Representation of the shelf seafloor feature.						✓	✓		
South Tasman Rise	Special Purpose Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Tasmanian Province and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, plateau, seamount/guyot and slope. • Important foraging areas for: wandering and black-browed albatross,					✓				

Marine Park	Zoning	Major Conservation Values (DNP, 2013; DNP, 2018a; DNP, 2018b)	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
		short-tailed shearwater, white-headed and white-chinned petrels.									
Tasman Fracture	Marine National Park Zone - IUCN Category II Special Purpose Zone - IUCN Category VI Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Tasmania Province, the Tasmanian Shelf Province and the West Tasmania Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, basin, canyon, knoll/abyssal hill, pinnacle, plateau, ridge, saddle, shelf, slope, terrace and trench/trough. • Important migration area for: humpback whale. • Important foraging areas for: white shark, New Zealand fur seal, wandering, black-browed and shy albatross, white-chinned petrel, common diving petrel, short-tailed shearwater and fairy prion.				✓					
Zeehan	Special Purpose Zone - IUCN Category VI Multiple Use Zone - IUCN Category VI	• Examples of ecosystems, habitats and communities associated with the Tasmania Province, the West Tasmania Transition and the Western Bass Strait Shelf Transition and associated with the sea-floor features: abyssal plain/deep ocean floor, canyon, deep/hole/valley, knoll/abyssal hill, shelf and slope. • Important migration area for: blue and humpback whales. • Important foraging areas for: black-browed, wandering and shy albatrosses, and great-winged and cape petrels.	✓	✓		✓					

4.3.2 Commonwealth Terrestrial Reserves

The Booderee National park is the only Commonwealth National Park located within the Environmental Sectors (Figure 4-3; Figure 4-4). Located within the Central NSW Environmental Sector, the Booderee National Park was established in 1992 and is jointly managed by Parks Australia and Wreck Bay Aboriginal Community Council (DNP, 2015). The Park stretches across 6,379 ha at Jervis Bay, and includes 875 ha of marine environment, and 80 ha of Botanic Garden (Australia's only Aboriginal-owned and managed Botanic Gardens). Booderee National Park is considered both

nationally and regional significant for its natural and cultural values; and the Park contains many species that are at the limits of their bio-geographical range (DEE, 2017w).

The marine environment of Booderee National Park is characterised by a wide range of tidal and subtidal habitats including shallow rock reefs and sand zones, seagrass meadows, deeper silty sand flats and deep-water rocky reefs, cliffs, platforms, blocks, boulders and caves (DEE, 2017w). The intertidal rock platforms of Bowen Island host a variety of intertidal species including large numbers and varieties of sea urchins, crabs, abalone, and oysters (DEE, 2017w). Bowen Island also supports a colony of Little Penguin, and breeding colonies of three species of shearwater; making it of high conservation significance. The Park area also includes the largest seagrass meadows in New South Wales; Posidionia species are dominant, but Zostera and Halophila sp. are also present. These areas provide habitat for a diversity and abundance of fish and macroinvertebrates. Subtidal and intertidal platforms support a diversity of rocky reef algae with Hormosira, Ecklonia, Sargassum, Phyllospora and Cystophora being the dominant genera. The littoral communities of the National Park are of both local and state-wide significance and include: mangrove communities along Sussex Inlet and south of Whiting Beach; saltmarsh communities at Flat Rock Creek and on the southern section of Bowen Island; and intertidal rocky platforms (DEE, 2017w). The mangrove communities provide habitat for a number of intertidal estuarine organisms, fish and terrestrial species. Saltmarsh communities are of high conservation value as bird feeding areas. The area also supports a population of bottlenose dolphins (DEE, 2017w). The Park protects coastal dune systems and their associated habitats, which are otherwise disturbed or potentially threatened in the region; the preservation as a southern representative of the sandstone ecosystems is highly important (DEE, 2017w).

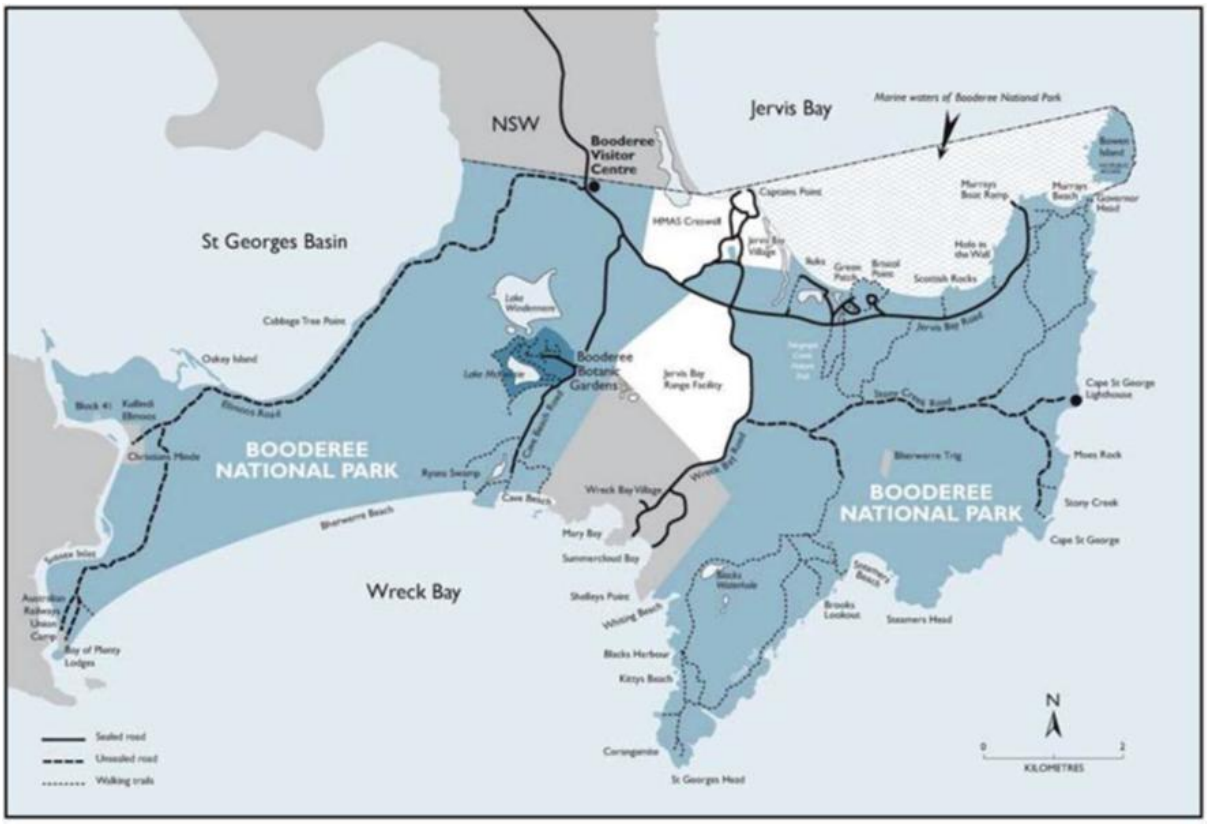


Figure 4-4: Location of Booderee National Park (Source: DNP, 2015)

4.4 Wetlands

4.4.1 Wetlands of International Importance

Under the Ramsar Convention, wetland types have been defined to identify the main wetland habitats represented at each site. The classification system uses three categories (with a number of wetland types within each): (i) Marine/Coastal Wetlands; (ii) Inland Wetlands; and (iii) Human-made Wetlands. The classification of a marine/coastal wetland is extensive and includes those wetlands that while predominantly based inland have some form of connection with the coast and/or marine waters.

Marine and coastal Wetlands of International Importance that have the potential to be contacted by hydrocarbons in a loss of containment event and intersect the Environmental Sectors are listed in Table 4-4 and displayed in Figure 4-5. A summary of key features of the wetlands is provided in Appendix 1 - .

Table 4-4: Marine/Coastal Zone Wetlands of International Importance within the Environmental Sectors[1]

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Corio Bay		✓							
Corner Inlet		✓							
East Coast Cape Barren Island Lagoons		✓							
Elizabeth and Middleton Reefs Marine National Nature Reserve							✓		
Flood Plain Lower Ringarooma River		✓							
Gippsland Lakes			✓						
Glenelg Estuary and Discovery Bay	✓								
Great Sandy Strait							✓		
Hunter Estuary Wetlands						✓			
Lavinia		✓							
Logan Lagoon		✓							
Moreton Bay							✓		
Mud Island		✓							
Myall Lakes						✓			
Piccaninnie Ponds Karst Wetlands	✓								

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Pitt Water-Orielton Lagoon					✓				
Point Cook		✓							
Port Phillip Bay (Western Shoreline) and Bellarine Peninsula		✓							
Swan Bay		✓							
Towra Point Nature Reserve						✓			
Werribee River		✓							
Western Port		✓							

Notes: No Wetlands of International Importance are present within Sorrell, Lord Howe or Norfolk zones.

4.4.2 Wetlands of National Importance

A classification system based on that used by the Ramsar Convention, but modified to suit Australia, has been used to classify Wetlands of National Importance. The classification system uses three categories (with a number of wetland types within each): (i) Marine and Coastal Zone wetlands; (ii) Inland wetlands; and (iii) Human-made wetlands. The classification of a marine and coastal zone wetland is extensive and includes those wetlands that while predominantly based inland have some form of connection with the coast and/or marine waters.

Marine and coastal zone Wetlands of National Importance have been identified within the Environmental Sectors and are listed in Table 4-5 and displayed in Figure 4-5. A summary of key ecological and social features is provided in Appendix 2 - .

Table 4-5: Marine and Coastal Zone Wetlands of National Importance within the Environmental Sectors

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
South Australia									
Piccaninnie Ponds	✓								
South East Coastal Salt Lakes	✓								
Victoria									

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Anderson Inlet		✓							
Corner Inlet		✓	✓						
Glenelg Estuary	✓								
Lake Bunga			✓						
Lake Connewarre State Wildlife Reserve		✓							
Lake King Wetlands			✓						
Lake Tyers			✓						
Lake Victoria Wetlands			✓						
Lower Aire River Wetlands	✓								
Lower Merri River Wetlands	✓								
Lower Snowy River Wetlands System			✓						
Mallacoota Inlet Wetlands			✓						
Mud Islands		✓							
Point Cook & Laverton Saltworks		✓							
Powlett River Mouth		✓							
Princetown Wetlands	✓								
Shallow Inlet Marine & Coastal Park		✓							
Sydenham Inlet Wetlands			✓						
Swan Bay & Swan Island		✓							
Tamboon Inlet Wetlands			✓						
Werribee-Avalon Area		✓							
Western Port		✓							
Yambuk Wetlands	✓								

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Tasmania									
Boullanger Bay – Robbins Passage		✓							
Earlham Lagoon					✓				
Flyover Lagoon 1		✓							
Flyover Lagoon 2		✓							
Freshwater Lagoon					✓				
Lavinia Nature Reserve		✓							
Little Thirsty Lagoon		✓							
Logan Lagoon		✓							
Maria Island Marine Reserve					✓				
Moulting Lagoon					✓				
Orielton Lagoon					✓				
Pearshape Lagoon 1		✓							
Pearshape Lagoon 2		✓							
Pearshape Lagoon 3		✓							
Pearshape Lagoon 4		✓							
Rocky Cape Marine Area		✓							
Syndicate Lagoon		✓							
The Chimneys		✓							
Tregaron Lagoons 1		✓							
Tregaron Lagoons 2		✓							
Unnamed Wetland TAS010		✓							
Unnamed Wetland TAS051		✓							

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Unnamed Wetland TAS052		✓							
Unnamed Wetland TAS081				✓					
New South Wales									
Avoca Lagoon						✓			
Beecroft Peninsula						✓			
Bondi Lake			✓						
Brisbane Water Estuary						✓			
Bundjalung National Park							✓		
Clarence River Estuary							✓		
Clybucca Creek Estuary						✓			
Clyde River Estuary			✓			✓			
Cockrone Lagoon						✓			
Coila Creek Delta			✓						
Coomonderry Swamp						✓			
Cormorant Beach						✓			
Crowdy Bay National Park						✓			
Cudgen Nature Reserve							✓		
Cullendulla Creek and Embayment						✓			
Durras Lake						✓			
Eve St. Marsh, Arncliffe						✓			
Five Islands Nature Reserve						✓			
Jervis Bay						✓			
Jervis Bay Sea Cliffs						✓			

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Killalea Lagoon						✓			
Kooragang Nature Reserve						✓			
Lagoon Head						✓			
Lake Illawarra						✓			
Lake Hiawatha and Minnie Water							✓		
Limeburners Creek Nature Reserve						✓			
Merimbula Lake			✓						
Meroo Lake Wetland Complex						✓			
Minnamurra River Estuary						✓			
Moruya River Estuary Saltmarshes			✓						
Myall Lakes						✓			
Nadgee Lake and tributary wetlands			✓						
Nargal Lake			✓						
Nelson Lagoon			✓						
Pambula Estuarine Wetlands			✓						
Port Stephens Estuary						✓			
Shoalhaven/Crookhaven Estuary						✓			
Solitary Islands Marine Park							✓		
St Georges Basin						✓			
Swan Lagoon						✓			
Swan Pool/Belmore Swamp						✓			
Tabourie Lake						✓			
Termeil Lake Wetland Complex NSW						✓			

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Terrigal Lagoon						✓			
Towra Point Estuarine Wetlands						✓			
Tuggerah Lake						✓			
Tuross River Estuary			✓						
Twofold Bay			✓						
Ukerebagh Nature Reserve							✓		
Waldrons Swamp			✓						
Wallaga Lake			✓						
Wallagoot Lagoon			✓						
Wallis Lake and adjacent estuarine islands						✓			
Wamberal Lagoon						✓			
Wollumboola Lake						✓			
Wooloweyah Lagoon							✓		
Queensland									
Bribie Island							✓		
Burrum Coast							✓		
Bustard Bay Wetlands							✓		
Colosseum Inlet – Rodds Bay							✓		
Deepwater Creek							✓		
Fraser Island							✓		
Great Barrier Reef Marine Park							✓		
Great Sandy Strait							✓		
Lake Coombabah							✓		

Wetland	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Lake Weyba							✓		
Lower Mooloolah River							✓		
Moreton Bay Aggregation							✓		
Noosa River Wetlands							✓		
North Stradbroke Island							✓		
Northeast Curtis Island							✓		
Pine River and Hays Inlet							✓		
Port Curtis							✓		
Pumicestone Passage							✓		
The Narrows							✓		
Upper Pumicestone Coastal Plain							✓		

Notes: No Wetlands of National Importance are present within the Lord Howe or Norfolk Island sectors.

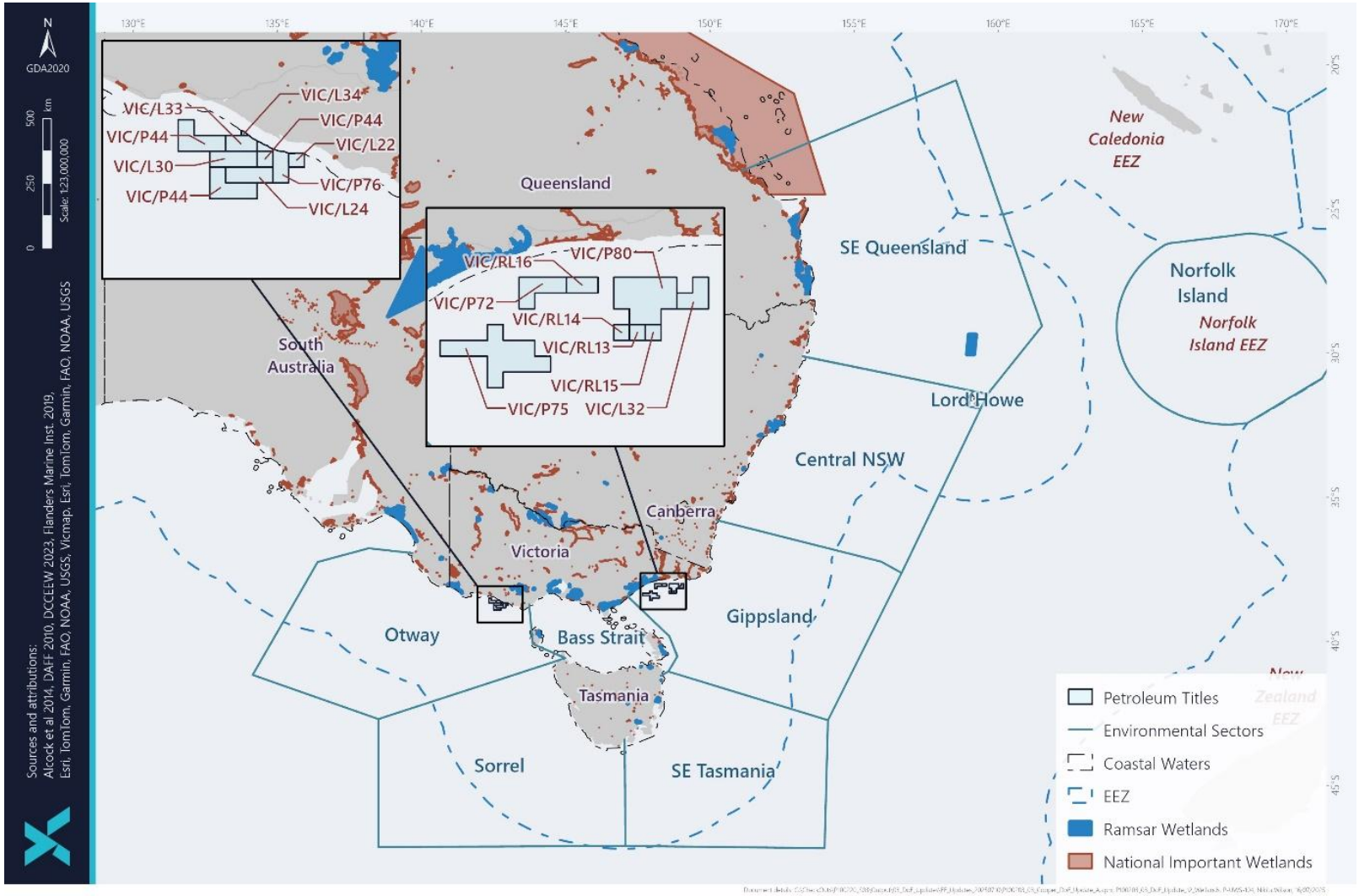


Figure 4-5: Wetlands of International (Ramsar) and National Importance within the Environmental Sectors

4.5 State Parks and Reserves

4.5.1 Marine Protected Areas

State marine protected areas are declared under each individual state's legislation and are managed by state authorities. State marine protected areas within the Environmental Sectors are listed in Table 4-6 and displayed in Figure 4-6 and Figure 4-7.

Table 4-6: State Marine Protected Areas within the Environmental Sectors

Marine Protected Area	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
South Australia									
Upper South East Marine Park	✓								
Lower South East Marine Park	✓								
Victoria									
Barwon Bluff Marine Sanctuary		✓							
Beware Reef Marine Sanctuary			✓						
Bunurong Marine National Park		✓							
Cape Howe Marine National Park			✓						
Churchill Island Marine National Park		✓							
Corner Inlet Marine & Coastal Park		✓							
Corner Inlet Marine National Park		✓							
Discovery Bay Marine National Park	✓								
Eagle Rock Marine Sanctuary		✓							
French Island Marine National Park		✓							
Jawbone Marine Sanctuary		✓							
Marengo Reefs Marine Sanctuary		✓							
Merri Marine Sanctuary	✓								
Mushroom Reef Marine Sanctuary		✓							

Marine Protected Area	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Ninety Mile Beach Marine National Park			✓						
Nooramunga Marine & Coastal Park		✓							
Point Addis Marine National Park		✓							
Point Cooke Marine Sanctuary		✓							
Point Danger Marine Sanctuary		✓							
Point Hicks Marine National Park			✓						
Port Phillip Heads Marine National Park		✓							
Ricketts Point Marine Sanctuary		✓							
Shallow Inlet Marine & Coastal Park		✓							
The Arches Marine Sanctuary	✓								
Twelve Apostles Marine National Park	✓								
Wilsons Promontory Marine National Park		✓							
Wilsons Promontory Marine Park		✓							
Wilsons Promontory Marine Park		✓							
Yaringa Marine National Park		✓							
Tasmania									
Blackman Rivulet Marine Conservation Area					✓				
Central Channel Marine Conservation Area					✓				
Cloudy Bay Marine Conservation Area					✓				
Governor Island Marine Park					✓				
Hippolyte Rocks Marine Conservation Area					✓				
Huon Estuary Marine Conservation Area					✓				
Kent Group Marine Park		✓							

Marine Protected Area	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Maria Island Marine Park					✓				
Monk Bay Marine Conservation Area					✓				
Ninepin Point Marine Park					✓				
Opossum Bay Marine Conservation Area					✓				
Port Cygnet Marine Conservation Area					✓				
Port Davey Marine Park				✓					
River Derwent Marine Conservation Area					✓				
Roberts Point Marine Conservation Area					✓				
Simpsons Point Marine Conservation Area					✓				
Sloping Island Marine Conservation Area					✓				
South Arm Marine Conservation Area					✓				
Tinderbox Marine Park					✓				
Waterfall–Fortescue Marine Conservation Area					✓				
New South Wales									
Barrenjoey Head Aquatic Reserve						✓			
Batemans Marine Park			✓			✓			
Boat Harbour Aquatic Reserve						✓			
Bronte-Coogee Aquatic Reserve						✓			
Bushranger's Bay Aquatic Reserve						✓			
Cabbage Tree Bay Aquatic Reserve						✓			
Cape Banks Aquatic Reserve						✓			
Cape Byron Marine Park							✓		
Cook Island Aquatic Reserve							✓		

Marine Protected Area	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Jervis Bay Marine Park						✓			
Long Reef Aquatic Reserve						✓			
Lord Howe Island Marine Park								✓	
Narrabeen Head Aquatic Reserve						✓			
North (Sydney) Harbour Aquatic Reserve						✓			
Port Stephens Great Lakes Marine Park						✓			
Shiprock Aquatic Reserve						✓			
Solitary Islands Marine Park						✓	✓		
Towra Point Aquatic Reserve						✓			
Queensland									
Great Barrier Reef Coast Marine Park							✓		
Great Sandy Marine Park							✓		
Moreton Bay Marine Park							✓		
External Territories									
Norfolk Marine Park									✓

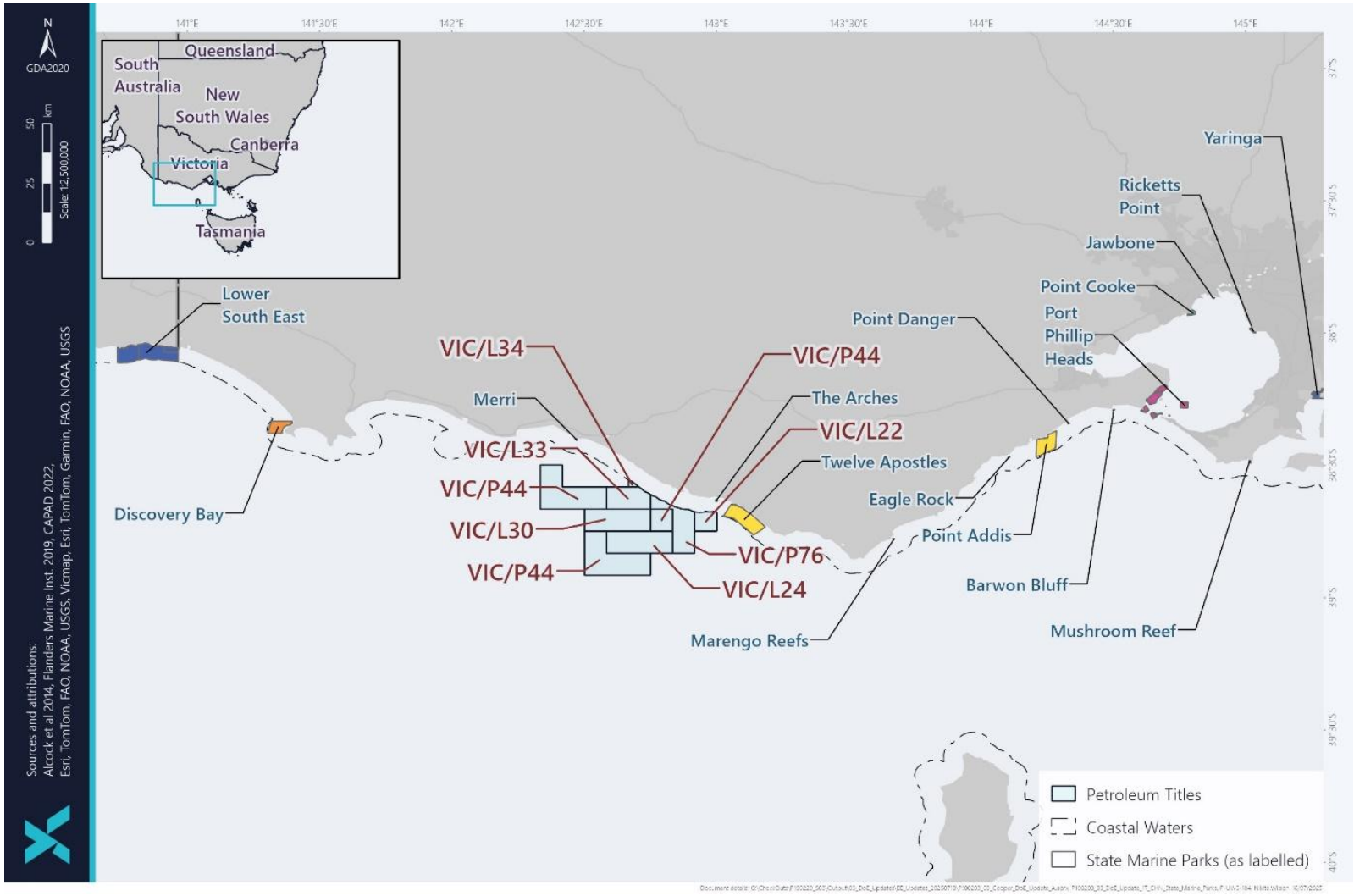


Figure 4-6: State Marine Parks within the Vicinity of the Otway Basin

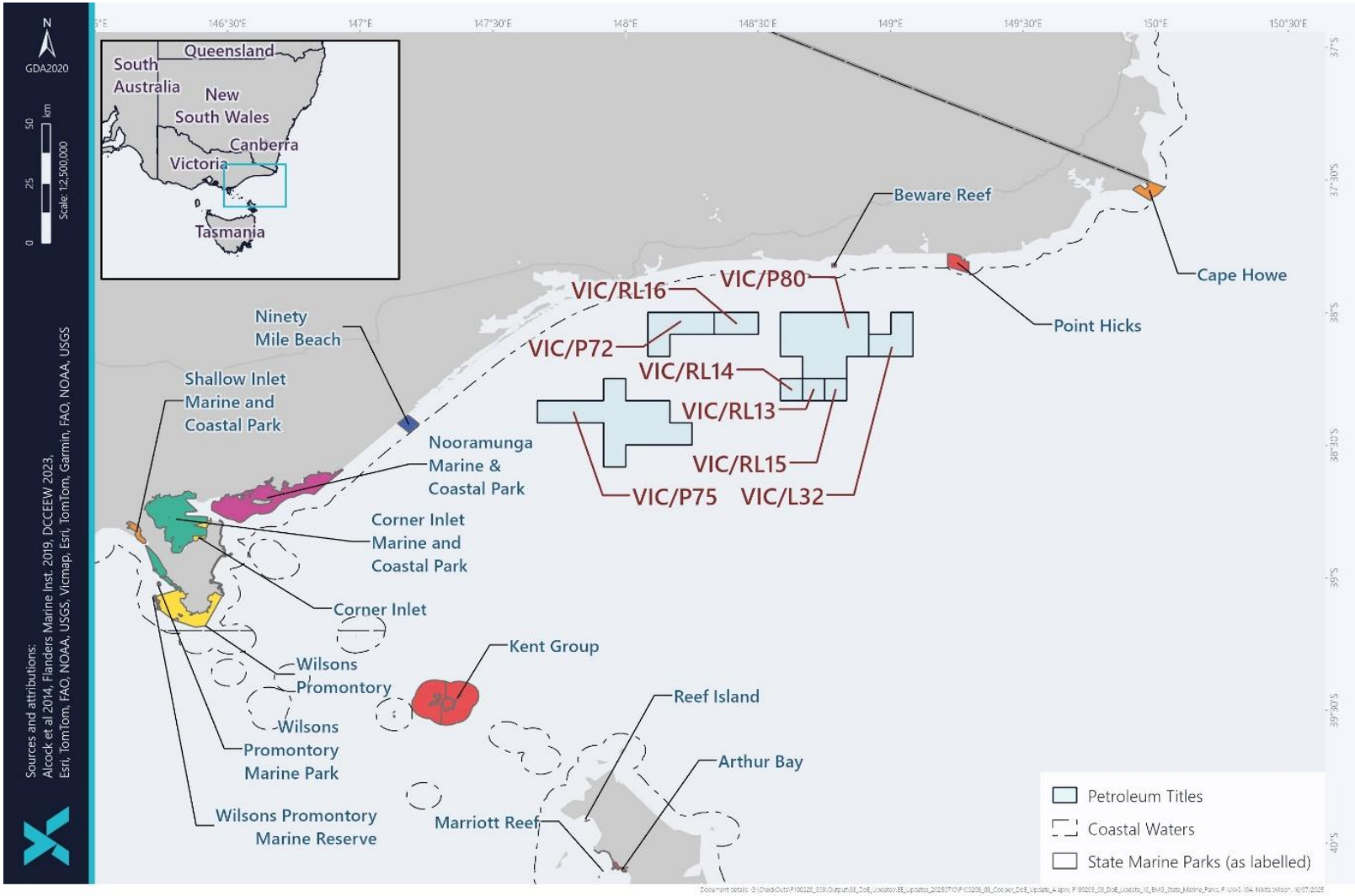


Figure 4-7: State Marine Parks within the Vicinity of the Gippsland Basin

4.5.2 Terrestrial Protected Areas

State terrestrial protected areas are declared under each individual state's legislation and are managed by state authorities. State terrestrial protected areas within the Environmental Sectors are listed in Table 4-7.

Table 4-7: State Terrestrial Protected Areas within the Environmental Sectors

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
South Australia									
Beachport Conservation Park	✓								
Bernouilli Conservation Park	✓								
Canunda National Park	✓								
Douglas Point Conservation Park	✓								
Guichen Bay Conservation Park	✓								
Little Dip Conservation Park	✓								
Penguin Island Conservation Park	✓								
Piccaninnie Ponds Conservation Park	✓								
Victoria									
Aire River Heritage River	✓								
Anser Island Reference Area		✓							
Bay of Islands Coastal Park	✓								
Bemm, Goolengook, Arte and Errinundra Rivers Heritage River			✓						
Cape Conran Coastal Park			✓						
Cape Howe Wilderness Zone			✓						
Cape Liptrap Coastal Park		✓							
Cape Nelson State Park	✓								
Croajingolong National Park			✓						

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Deen Maar (Lady Julia Percy Island) W.R. Nature Conservation Reserve	✓								
Discovery Bay Coastal Park	✓								
East Gippsland Coastal streams Natural Catchment Area			✓						
Entrance Point Reference Area		✓							
Ewing Morass W.R Natural Feature Reserve			✓						
Fossil Beach G.R. Natural Features Reserve		✓							
French Island National Park		✓							
Gippsland Lakes Coastal Park			✓						
Glenelg River Heritage River	✓								
Great Otway National Park	✓	✓							
Jawbone F.F.R. Nature Conservation Reserve		✓							
Lake Tyres State Park			✓						
Lawrence Rocks W.R. Nature Conservation Reserve	✓								
Limeburners Lagoon (Hovells Creek) F.F.R Nature Conservation Reserve		✓							
Mornington Peninsula National Park		✓							
Mount Vereker Creek Natural Catchment Area		✓							
North Western Port N.C.R. Natural Features Reserve		✓							
Phillip Island Nature Park		✓							
Point Nepean National Park		✓							
Port Campbell National Park	✓								
Rame Head Remote and Natural Area			✓						

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Reef Island and Bass River Mouth N.C.R Natural Features Reserve		✓							
Sandpatch Wilderness Zone			✓						
Seal Islands W.R. Nature Conservation Reserve		✓							
Southern Wilsons Promontory Remote and Natural Area		✓							
Swan Bay - Edwards Point W.R Nature Conservation Reserve		✓							
The Spit W.R. Nature Conservation Reserve		✓							
Vereker Creek Reference Area		✓							
Wilsons Promontory Islands Remote and Natural Area		✓							
Wilsons Promontory National Park		✓							
Wilsons Promontory Wilderness Zone		✓							
Yambuk F.F.R. Nature Conservation Reserve	✓								
Tasmania									
Actaeon Island Game Reserve				✓					
Albatross Island Nature Reserve	✓								
Anderson Islands Conservation Area		✓							
Apex Point Conservation Area					✓				
Bass Pyramid Nature Reserve		✓							
Battery Island Conservation Area		✓							
Bay of Fires Conservation Area		✓			✓				
Baynes Island Nature Reserve		✓							
Bellettes Bay Conservation Area					✓				
Betsey Island Nature Reserve					✓				

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Big Bay Conservation Area		✓							
Big Green Island Nature Reserve		✓							
Bird Island Game Reserve	✓								
Bligh Point Conservation Area					✓				
Blyth Point Conservation Area		✓							
Boltons Beach Conservation Area					✓				
Boobyalla Conservation Area		✓							
Boot Bay Conservation Area					✓				
Boxen Island Conservation Area		✓							
Brick Islands Conservation Area		✓							
Briggs Islet Conservation Area		✓							
Brother and Sister Conservation Area					✓				
Bruny Island Neck Game Reserve					✓				
Bull Rock Conservation Area		✓							
Bun Beetons Point Conservation Area		✓							
Burnett Point Conservation Area					✓				
Calm Bay State Reserve				✓					
Cape Bernier Nature Reserve					✓				
Cape Contrariety Private Sanctuary					✓				
Cape de la Sortie Conservation Area					✓				
Cape Deslacs Nature Reserve					✓				
Cape Portland Conservation Area		✓							
Cape Portland Private Sanctuary		✓							

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Cape Wickham Conservation Area	✓								
Cat Island Conservation Area		✓							
Cataraqui Point Conservation Area	✓								
Chalky Island Conservation Area		✓							
Christmas Island Nature Reserve	✓								
Chronicle Point Conservation Area					✓				
Chuckle Head Conservation Area					✓				
City of Melbourne Bay Conservation Area	✓								
Clifton Beach Conservation Area					✓				
Coal Point Conservation Area					✓				
Coles Bay Conservation Area					✓				
Cone Islet Conservation Area		✓							
Coningham Nature Recreation Area					✓				
Coswell Beach Conservation Area					✓				
Cressy Beach Conservation Area					✓				
Councillor Island Nature Reserve	✓								
Craggy Island Conservation Area		✓							
Crooked Billet Bay Conservation Area					✓				
Curtis Island Nature Reserve		✓							
Dart Island State Reserve					✓				
Denison Rivulet Conservation Area					✓				
Devils Tower Nature Reserve		✓							
Diamond Island Nature Reserve					✓				

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Doctors Rocks Conservation Area		✓							
Don Heads Conservation Area		✓							
Double Sandy Point Conservation Area		✓							
Doughboy Island Conservation Area		✓							
Disappointment Bay State Reserve	✓								
Eaglehawk Bay State Reserve					✓				
Eaglehawk Bay-Flinders Bay Conservation Area					✓				
East Kangaroo Island Nature Reserve		✓							
East Moncoeur Island Conservation Area		✓							
East Risdon State Reserve					✓				
Echo Sugarloaf State Reserve					✓				
Edgcumbe Beach Conservation Area		✓							
Egg Beach Egg Beach		✓							
Emita Nature Recreation Area		✓							
Esperance Point Conservation Area					✓				
Fannys Bay Conservation Area		✓							
Five Mile Bluff Conservation Area		✓							
Foochow Conservation Area		✓							
Forsyth Island Conservation Area		✓							
Forwards Beach Conservation Area		✓							
Fossil Bluff Conservation Area		✓							
Fossil Cove Conservation Area					✓				
Foster Island Nature Reserve		✓							

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Fotheringate Bay Conservation Area		✓							
Four Mile Beach Regional Reserve				✓					
Four Mile Creek Conservation Area					✓				
Freycinet National Park					✓				
Gellibrand Point Nature Recreation Area					✓				
George Rocks Nature Reserve		✓							
Goose Island Conservation Area		✓							
Granite Point Conservation Area		✓							
Green Island Nature Reserve					✓				
Greens Beach Conservation Area		✓							
Gull Island Conservation Area		✓							
Harbour Islets Conservation Area	✓								
Harcus Island Conservation Area		✓							
Henderson Islets Conservation Area	✓								
Hogan Group Conservation Area		✓							
Holts Point Conservation Area		✓							
Hope Island Nature Recreation Area					✓				
Humbug Point Nature Recreation Area					✓				
Hunter Island Conservation Area	✓								
Ile des Phoques Nature Reserve					✓				
Iron Pot State Reserve					✓				
Isabella Island Nature Reserve		✓							
Jacksons Cove Conservation Area		✓							

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Kangaroo Island Conservation Area		✓							
Kelvedon Beach Conservation Area					✓				
Killiecrankie Nature Recreation Area		✓							
Lachlan Island Nature Reserve					✓				
Lagoons Beach Conservation Area					✓				
Lavinia State Reserve	✓								
Little Chalky Island Conservation Area		✓							
Little Dog Island Game Reserve		✓							
Little Green Island Conservation Area		✓							
Little Island Conservation Area		✓							
Little Peggs Beach State Reserve		✓							
Little Swan Island Nature Reserve		✓							
Little Trefoil Conservation Area	✓								
Little Waterhouse Island Nature Reserve		✓							
Lime Bay State Reserve					✓				
Little Beach Conservation Area					✓				
Little Christmas Island Nature Reserve					✓				
Little Swanport Conservation Area					✓				
Logan Lagoon Conservation Area		✓							
Long Bay Conservation Area					✓				
Long Island Conservation Area		✓							
Long Spit Private Nature Reserve					✓				
Low Head Conservation Area		✓							

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Low Islets Nature Reserve		✓							
Low Point Conservation Area		✓							
Maria Island National Park					✓				
Marion Beach Conservation Area					✓				
Marks Point Conservation Area					✓				
Marshall Beach Conservation Area		✓							
Mayfield Bay Conservation Area					✓				
Mile Island Conservation Area		✓							
Millingtons Beach Conservation Area					✓				
Montagu Island Conservation Area		✓							
Mount Heemskirk Regional Reserve				✓					
Mount Tanner Nature Recreation Area		✓							
Mount William National Park		✓			✓				
Musselroe Bay Conservation Area		✓							
Narawntapu National Park		✓							
Nares Rocks Conservation Area	✓								
Neds Reef Conservation Area		✓							
New Year Island Game Reserve	✓								
Night Island Conservation Area		✓							
Ninth Island Conservation Area		✓							
Norfolk Bay Conservation Area					✓				
North East Islet Nature Reserve		✓							
North East River Game Reserve		✓							

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
North Passage Point Conservation Area					✓				
North West Head Conservation Area					✓				
Ocean Beach Conservation Area				✓					
Outer North Head Conservation Area					✓				
Oyster Rocks Conservation Area		✓							
Palana Beach Nature Recreation Area		✓							
Passage Island Conservation Area		✓							
Pasco Group Conservation Area		✓							
Patriarchs Conservation Area		✓							
Peggs Beach Conservation Area		✓							
Pelican Island Conservation Area				✓					
Penguin Islet Nature Reserve		✓							
Perkins Island Conservation Area		✓							
Petrel Islands Game Reserve		✓							
Pitt Water Nature Reserve					✓				
Porky Beach Conservation Area	✓								
Prime Seal Island Conservation Area		✓							
Ram Island Conservation Area		✓							
Recherche Bay Nature Recreation Area				✓					
Red Hut Point Conservation Area	✓								
Rocky Cape National Park		✓							
Rodondo Island Nature Reserve		✓							
Roydon Island Conservation Area		✓							

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Sea Elephant Conservation Area	✓								
Seal Rocks State Reserve	✓								
Seacrow Islet Conservation Area	✓								
Sellars Lagoon Game Reserve		✓							
Sentinel Island Conservation Area		✓							
Settlement Point Conservation Area		✓							
Seymour Conservation Area					✓				
Single Tree Plain Conservation Area		✓							
Sisters Island Conservation Area		✓							
Slaves Bay Conservation Area				✓					
Snake Bay Conservation Area					✓				
South Bruny National Park					✓				
Southport Lagoon Conservation Area				✓					
Southwest National Park				✓					
Spike Island Conservation Area		✓							
Stack Island Game Reserve	✓								
Stanley Conservation Area		✓							
Stokes Point Conservation Area	✓								
Storehouse Island Conservation Area		✓							
Strzelecki National Park		✓							
Sugarloaf Rock Conservation Area		✓							
Sundown Point State Reserve				✓					
Table Cape Conservation Area		✓							

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Table Cape State Reserve		✓							
Tasman National Park					✓				
Tatlows Beach Conservation Area		✓							
Tenth Island Nature Reserve		✓							
The Doughboys Nature Reserve	✓								
The Nut State Reserve		✓							
Three Hummock Island State Reserve		✓							
Three Sisters-Goat Island Nature Reserve		✓							
Trial Harbour State Reserve				✓					
Trousers Point Beach Conservation Area		✓							
Vansittart Island Conservation Area		✓							
Wallaby Islands Conservation Area		✓							
Waterhouse Conservation Area		✓							
Waterhouse Island Conservation Area		✓							
Wedge Island Conservation Area					✓				
West Coast Range Regional Reserve				✓					
West Moncoeur Island Nature Reserve		✓							
West Point State Reserve				✓					
White Beach Conservation Area		✓							
Wright Rock Nature Reserve		✓							
Wybalenna Island Conservation Area		✓							
New South Wales									
Arakoon National Park						✓			

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Arakwal National Park							✓		
Awabakal Nature Reserve						✓			
Belowla Nature Reserve						✓			
Ben Boyd National Park			✓						
Biamanga National Park			✓						
Billinudgel Nature Reserve							✓		
Bird Island Nature Reserve						✓			
Bongil Bongil National Park						✓			
Booderee National Park (Commonwealth)[6]						✓			
Boondelbah Nature Reserve						✓			
Booti Booti National Park						✓			
Bouddi National Park						✓			
Bournda National Park			✓						
Brisbane Water National Park						✓			
Broken Head Nature Reserve							✓		
Broulee Island Nature Reserve			✓						
Brush Island Nature Reserve						✓			
Bundjalung National Park							✓		
Bushy Island Nature Reserve						✓			
Cape Byron State Conservation Area							✓		
Coffs Coast Regional Park						✓	✓		
Comerong Island Nature Reserve						✓			

[6] Booderee National Park is located in NSW; however, it is under DCCEEW (Commonwealth) authority.

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Conjola National Park						✓			
Cook Island Nature Reserve							✓		
Corrie Island Nature Reserve						✓			
Crowdy Bay National Park						✓			
Cudgen Nature Reserve							✓		
Cullendulla Creek Nature Reserve			✓			✓			
Darawank Nature Reserve						✓			
Eagles Claw Nature Reserve			✓						
Eurobodalla National Park			✓						
Five Islands Nature Reserve						✓			
Gaagal Wanggaan (South Beach) National Park						✓			
Gir-um-bit National Park						✓			
Gir-um-bit State Conservation Area						✓			
Glenrock State Conservation Area						✓			
Goolawah National Park						✓			
Goolawah Regional Park						✓			
Hat Head National Park						✓			
Jagun Nature Reserve						✓			
Jervis Bay National Park						✓			
John Gould Nature Reserve						✓			
Julian Rocks Nguthungulli Nature Reserve							✓		
Kamay Botany Bay National Park						✓			
Kattang Nature Reserve						✓			

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Karuah Nature Reserve						✓			
Khappinghat Nature Reserve						✓			
Ku-ring-gai Chase National Park						✓			
Limeburners Creek National Park						✓			
Lion Island Nature Reserve						✓			
Little Broughton Island Nature Reserve						✓			
Long Island Nature Reserve						✓			
Lord Howe Island Permanent Park Preserve								✓	
Malabar Headland National Park						✓			
Marramarra National Park						✓			
Meroo National Park						✓			
Mimosa Rocks National Park			✓						
Montague Island Nature Reserve			✓						
Moon Island Nature Reserve						✓			
Moonee Beach Nature Reserve						✓			
Munmorah State Conservation Area						✓			
Muogamarra Nature Reserve						✓			
Murramarang National Park						✓			
Muttonbird Island Natures Reserve						✓			
Myall Lakes National Park						✓			
Nadgee Nature Reserve			✓						
Narrawallee Creek Nature Reserve						✓			
North Rock Nature Reserve							✓		

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
North Solitary Island Nature Reserve							✓		
North West Solitary Island Nature Reserve							✓		
One Tree Island Nature Reserve						✓			
Richmond River Nature Reserve							✓		
Royal National Park						✓			
Saltwater National Park						✓			
Sea Acres National Park						✓			
Seal Rocks Nature Reserve						✓			
Shark Island Nature Reserve						✓			
Snapper Island Nature Reserve						✓			
South West Solitary Island Nature Reserve							✓		
Spectacle Island Nature Reserve						✓			
Split Solitary Island Nature Reserve						✓			
Stormpetrel Nature Reserve						✓			
Sydney Harbour National Park						✓			
Tilligerry Nature Reserve						✓			
Tollgate Islands Nature Reserve			✓						
Tomaree National Park						✓			
Towra Point Nature Reserve						✓			
Tyagarah Nature Reserve							✓		
Wallarah National Park						✓			
Wamberal Lagoon Nature Reserve						✓			
Wooyung Nature Reserve							✓		

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Worimi Regional Park						✓			
Wyrrabalong National Park						✓			
Yuragir National Park							✓		
Queensland									
Beachmere Conservation Park							✓		
Bird Island Conservation Park							✓		
Bribie Island National Park							✓		
Broadwater Conservation Park							✓		
Buckleys Hole							✓		
Burleigh Head National Park							✓		
Burrum Coast National Park							✓		
Cabbage Tree Point Conservation Park							✓		
Capricornia Cays National Park							✓		
Curtis Island National Park							✓		
Deepwater National Park							✓		
Eurimbula National Park							✓		
Eurimbula Resources Reserve							?		
Ex-HMAS Brisbane Regional Park							✓		
Fort Lytton National Park							✓		
Goat Island Conservation Park							✓		
Great Sandy Conservation Park							✓		
Great Sandy National Park							✓		
Joseph Banks Conservation Park							✓		

Terrestrial Protected Areas	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Main Beach Conservation Park							✓		
Maroochy River Conservation Park							✓		
Mon Repos Regional Park							✓		
Moreton Island							✓		
Mouth of Baffle Creek							✓		
Mouth of Kolan River Conservation Park							✓		
Mud Island Conservation Park							✓		
Naree Budjong Djara National Park							✓		
Noosa National Park							✓		
South Stradbroke Island Conservation Park							✓		
Southern Moreton Bay Islands National Park							✓		
St Helena Island National Park							✓		
Teerk Roo Ra Conservation Park							✓		
Teerk Roo Ra National Park Aboriginal							✓		
Wild Cattle Island National Park							✓		
External Territories									
Norfolk Island Botanic Gardens									✓
Norfolk Island National Park									✓

4.6 Key Ecological Features

Key Ecological Features (KEF) are elements of the Commonwealth marine environment that are considered to be of regional importance for either a region's biodiversity or its ecosystem function and integrity. Seventeen KEFs occur within the Environmental Sectors (Figure 4-8; Table 4-8).

Table 4-8: Key Ecological Features present within the Environmental Sectors

Key Ecological Features	Values and Description[1, 2, 3]	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Big Horseshoe Canyon	High productivity, aggregations of marine life The Big Horseshoe Canyon is the easternmost arm of the Bass Canyon systems. The steep, rocky slopes provide hard substrate habitat for attached large megafauna. Sponges and other habitat forming species provide structural refuges for benthic fishes, including the commercially important pink ling. It is the only known temperate location of the stalked crinoid Metacrinus cyaneu.			✓						
Bonney Coast Upwelling	High productivity, aggregations of marine life The Bonney Coast Upwelling is a predictable, seasonal upwelling bringing cold nutrient rich water to the sea surface and supporting regionally high productivity and high species diversity in an area where such sites are relatively rare and mostly of smaller scale. It is one of 12 widely recognised and well-known areas worldwide where blue whales are known to feed in relatively high numbers. The area is significant as one of the largest and most predictable upwellings in south-eastern Australia. This is not the only upwelling in southeast Australia driven by the prevailing south-easterly winds, but it is the most prominent. In addition to whales, many endangered and listed species frequent the area, possibly also relying on the abundance of krill that provide a food source to many seabirds and fish. The high productivity of the Bonney Upwelling is also capitalised on by other higher predator species such as little penguins and Australian fur seals feeding on baitfish.	✓								
Canyons on the Eastern Continental Slope	Unique sea-floor feature with ecological properties of regional significance Canyon systems have a marked influence on the diversity and abundance of species, driven by the combined effects of steep and rugged topography, ocean currents, sea-floor types and nutrient availability. They significantly contribute to the overall habitat diversity of the			✓			✓	✓		

Key Ecological Features	Values and Description[1, 2, 3]	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	sea floor, by providing hard surfaces in depth zones where soft sediment habitats prevail. Large benthic animals such as sponges and feather stars are abundant, with particularly high diversity found in the upper slope regions (150–700 m). Canyons also create localised changes in productivity in the water column above them, providing feeding opportunities for a range of species, many of which are commercially important or threatened.									
East Tasmania Subtropical Convergence Zone	High productivity, aggregations of marine life This zone of enhanced pelagic productivity occurs where eddies of the East Australian Current interact with subantarctic waters driven by westerly winds. The northern and southern extent of the feature are approximately level with the north-east tip of Tasmania and the Tasman Peninsula. This is a complex feature that is characterised by autumn and spring phytoplankton blooms that form the basis of a productive food chain which supports cetaceans, seals, sharks and seabirds. The phytoplankton blooms also attract migratory commercial fish stocks such as Southern bluefin tuna, barracouta, and jack mackerel. Phytoplankton blooms are important for krill, which in turn form an important component of the diet of many pelagic species. *This KEF has not yet been spatially defined.					✓				
Elizabeth and Middleton Reefs	Aggregations of marine life; biodiversity and endemism Elizabeth and Middleton reefs are small, isolated, oceanic platform reefs that occur on top of the volcanic seamounts of the Lord Howe seamount chain. The reefs are impacted by the East Australian Current, exposing the area to its warm waters as well as the surrounding cooler ocean. This key ecological feature supports tropical and temperate marine life, including both warm and cold-water corals and over 300 fish species. The lagoons of both reefs are important areas for populations of black cod and the Galapagos shark.							✓		

Key Ecological Features	Values and Description[1, 2, 3]	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Lord Howe Seamount Chain	High productivity; aggregations of marine life; biodiversity and endemism. The Lord Howe seamount chain runs for approximately 1000 km along the western margin of the Lord Howe Rise, extending from Lord Howe Island in the south to Nova Bank in the north. It supports tropical shallow coral reefs and deep cold-water corals.						✓	✓	✓	
Norfolk Ridge	Enhanced ecological functioning and integrity, and biodiversity, which apply to both its benthic and pelagic habitats. Stretching across the Temperate East Marine Region, the Norfolk Ridge provides a rich biological source of benthic biodiversity and endemism. Similarly, to the Lord Howe chain, the ridge also generates localised oceanographic changes which create sites of enhanced productivity and aggregate marine species.									✓
Seamounts South and East of Tasmania	High productivity, aggregations of marine life. These seamounts are a chain or cluster of seamounts rising from the abyssal plain, continental rise or plateau situated 200 km or more from shore (east of Flinders Island to south east of southern Tasmania). Seamounts can sometimes influence and intensify currents, creating localised upwelling and turbulent mixing. Accelerated water flows are thought to create upwellings of nutrient rich waters from the seafloor. Seamounts with hard substrate summits and slopes provide attachment points for sessile invertebrates, while the soft sediments can be habitat for species that burrow into the sediments.			✓	✓	✓				
Shelf Rocky Reefs	Unique sea-floor feature with ecological properties of regional significance. Along the continental shelf south of the Great Barrier Reef, communities associated with the shift from algae-dominated sea-floor communities to those dominated by attached invertebrates (including large sponges, moss animals and soft corals). This shift generally occurs at a depth of 45 m. These invertebrates create a complex habitat that supports a			✓			✓	✓		

Key Ecological Features	Values and Description[1, 2, 3]	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	multitude of animals including crabs, snails, worms and starfish. The habitats also contain a diverse assemblage of bottom-dwelling fishes that show distinct patterns of association with shelf-reef habitats.									
Shelf Rocky Reefs and Hard Substrates	High productivity, aggregations of marine life. Rocky reefs and hard grounds are located in all areas of the South-east Marine Region continental shelf including Bass Strait, from the sub-tidal zone shore to the continental shelf break. The continental shelf break generally occurs in 50 m to 150–220 m water depth. The shallowest depth at which the rocky reefs occur in Commonwealth waters is approximately 50 m. On the continental shelf, rocky reefs and hard grounds provide attachment sites for macroalgae and sessile invertebrates, increasing the structural diversity of shelf ecosystems. The reefs provide habitat and shelter for fish and are important for aggregations of biodiversity and enhanced productivity. **Note This KEF has not yet been spatially defined.*	✓	✓	✓	✓	✓				
Tasman Front and Eddy Field	High productivity; aggregations of marine life; biodiversity and endemism The Tasman Front is a region of intermediate productivity that separates the warm, nutrient-poor waters of the Coral Sea from the cold, nutrient-rich waters of the Tasman Sea. The front is located between 27º S and 33º S, moving north during winter and south in summer. It is associated with warm-core eddies, a number of which are semipermanent features.						✓	✓	✓	✓
Tasmantid Seamount Chain	High productivity; aggregations of marine life; biodiversity and endemism The Tasmantid seamount chain is a prominent chain of underwater volcanic mountains, plateaux and terraces that runs north–south at approximately 155° E, extending into the Tasman Basin. At the deepest point of the chain, features rise to a depth of 1400–900 m below sea level. At the northernmost extent, features rise to a depth of 400–150 m below						✓	✓		

Key Ecological Features	Values and Description[1, 2, 3]	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	sea level, with some breaking the surface to form islands. The Tasmantid seamount chain contains a range of habitats, from deep sea sponge gardens to near-pristine tropical coral reef systems. Collectively, these are biological hotspots with high species diversity. They are also known feeding and breeding grounds for a number of open ocean species (e.g. billfish, marine turtles, marine mammals) and have high species endemism.									
Upwelling off Fraser Island	High productivity; aggregations of marine life In two areas near Fraser Island, upwellings of cold, deep waters mix with surface waters. Tides, wind and currents draw these nutrient-rich waters onto the shelf, where they generate blooms of phytoplankton that support animals higher in the food chain, including a number of commercially valuable and threatened species.							✓		
Upwelling East of Eden	High productivity, aggregations of marine life Dynamic eddies of the East Australian Current cause episodic productivity events when they interact with the continental shelf and headlands. The episodic mixing and nutrient enrichment events drive phytoplankton blooms that are the basis of productive food chains including zooplankton, copepods, krill and small pelagic fish. The upwelling supports regionally high primary productivity that supports fisheries and biodiversity, including top order predators, marine mammals and seabirds. This area is one of two feeding areas for blue whales and humpback whales, known to arrive when significant krill aggregations form. The area is also important for seals, other cetaceans, sharks and seabirds.			✓			✓			
West Tasmania Canyon	High productivity, aggregations of marine life The West Tasmania Canyons are located on the edge of the continental shelf offshore of the north-west corner of Tasmania and as far south as Macquarie Harbour. These canyons can influence currents, act as sinks for rich organic sediments and debris, and can trap waters or create upwellings that result in productivity and biodiversity hotspots. For example, plumes of	✓			✓					

Key Ecological Features	Values and Description[1, 2, 3]	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	sediment and nutrient-rich water can be seen at or near the heads of canyons. Sponges are concentrated near the canyon heads, with the greatest diversity between 200 m and 350 m depth. Sponges are associated with abundance of fishes, and the canyons support a diversity of sponges comparable to that of seamounts.									

Notes:

1.Values and Descriptions as provided in DoE, 2015a.

2.Values and Descriptions as provided in DSEWPaC, 2012e.

3.Values and Descriptions as provided in DNP, 2018b.

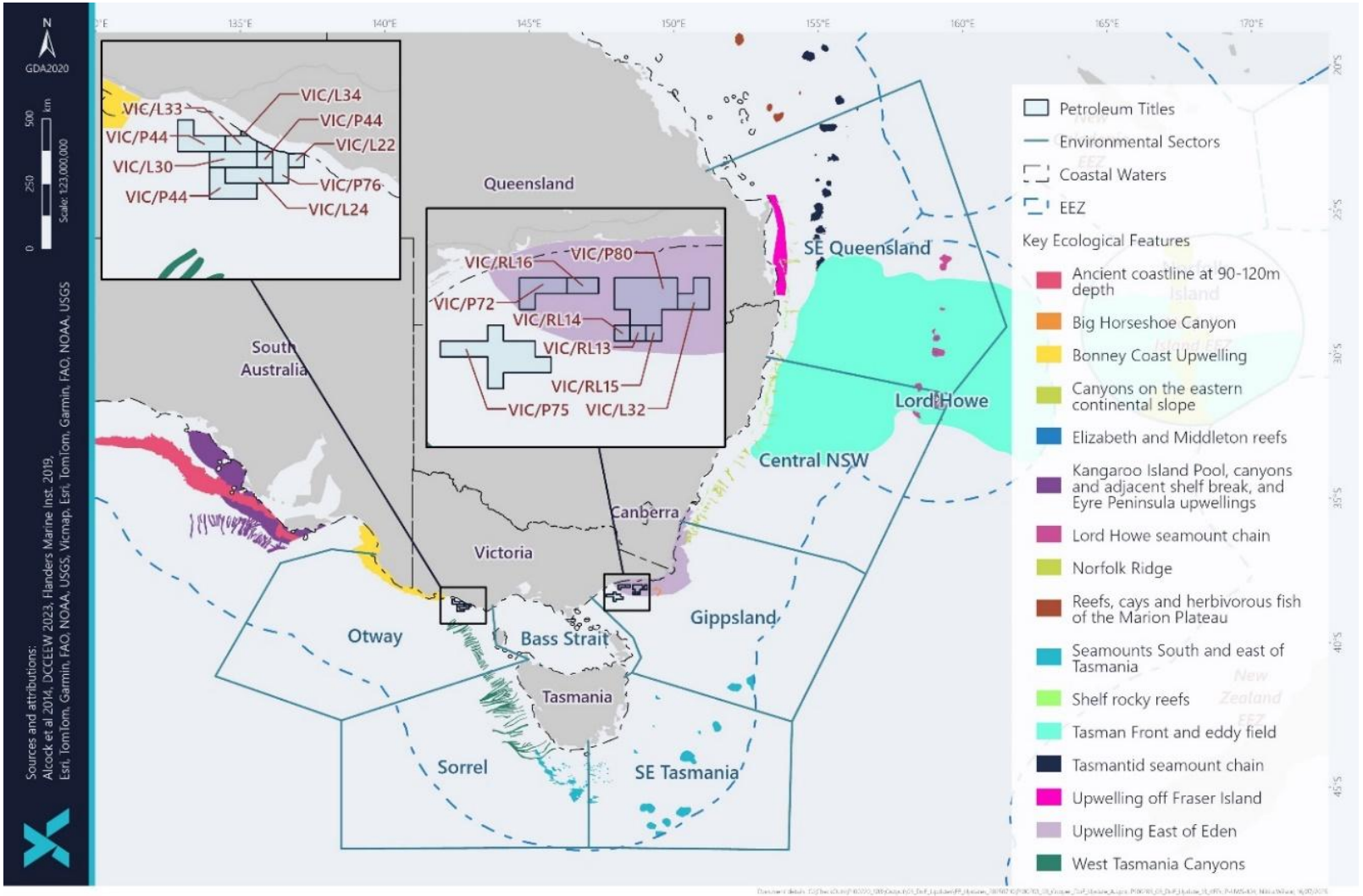


Figure 4-8: Key Ecological Features within the Environmental Sectors

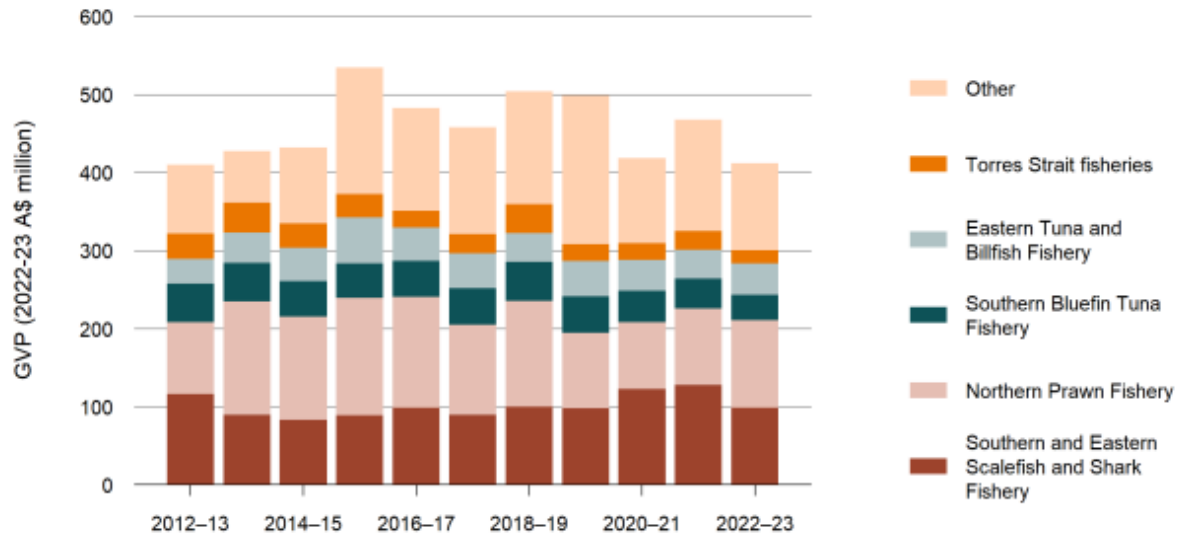
5.0 Social Environment

5.1 Commercial Fisheries

5.1.1 Commonwealth-Managed Fisheries

Commonwealth fisheries are managed by the Australian Fisheries Management Authority (AFMA) under the Fisheries Management Act 1991 (Cth), with the fisheries typically operating within 3 nm of the coast to 200 nm offshore (i.e. to the extent of the Australian Fishing Zone). Some Commonwealth managed fisheries extend into state waters through Offshore Constitutional Settlement (OCS) arrangements.

In 2021-22 the Gross Value of Production (GVP) from Commonwealth fisheries was estimated at $437 million; accounting for 29% of wild-catch fisheries GVP in Australia ($1.51 billion, Figure 5-1) (Butler, et al., 2024).



GVP Gross value of production.
Note: GVP figures are subject to revision and, consequently, may differ in past and future publications.

Figure 5-1: Ten-year Outlook from Gross Value of Production of Commonwealth Fisheries (Source: Butler, et al., 2024)

There are 7 commonwealth-managed commercial fisheries with management areas overlapping the Environmental Sectors (Table 5-1). Of these fisheries, 6 managed commercial fisheries had fishing efforts recorded within the 2016-2023 Catch and Effort System (CAES) reporting grids within the Otway and/or Bass Strait and/or Gippsland Environmental Sectors (Butler, et al., 2024) which include:

- Bass Strait Central Zone Scallop Fishery
- Eastern Tuna and Billfish Fishery
- Southern and Eastern Scalefish and Shark Fishery (SESSF) sectors and sub-sectors including:
  - SESSF Cth Trawl Sector (commonly referred to as the South East Trawl Fishery)
  - SESSF Scalefish Hook Sector
  - SESSF Shark Hook and Gillnet sector

  - SESSF Trap sector
- Southern Bluefin Tuna Fishery
- Small Pelagic Fishery
- Southern Squid Jig Fishery.

Amplitude Energy commissioned SETFIA (the South East Trawl Fishing Industry Association) to undertake a study into the commercial fishing effort (Commonwealth and State) within the BMG field area in 2020 (SETFIA, 2020) located within the Gippsland Environmental Sector. Results of this study are included in the sections below where relevant.

Table 5-1: Commonwealth-managed Commercial Fisheries with Management Areas the Environmental Sectors

Fishery	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Bass Strait Central Zone Scallop (BSCZSF)	✓	✓f	✓f						
Coral Sea Fishery (CSF)							✓f		
Eastern Skipjack Fishery (ESF)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Eastern Tuna and Billfish Fishery (ETBF)	✓	✓f	✓f	✓f	✓f	✓f	✓f	✓f	✓f
Norfolk Island Offshore Demersal Finfish Fishery^									✓
Small Pelagic Fishery (SPF)	✓	✓	✓	✓	✓	✓	✓	✓	
Southern Bluefin Tuna Fishery (SBTF)	✓f	✓	✓f	✓f	✓f	✓f	✓	✓	✓
Southern and Eastern Scalefish and Shark Fishery (SESSF)	✓	✓	✓	✓	✓	✓	✓	✓	
SESSF Trawl Sector	✓f	✓f	✓f	✓f	✓f	✓f			
SESSF Scalefish Hook Fishery (SSCK)		✓f	✓f	✓f	✓f				
SESSF Shark Hook and Gillnet Sector	✓f	✓f	✓f	✓f	✓f				
SESSF Trap Sector	✓f	✓f	✓f	✓f	✓f				
Southern Squid Jig Fishery (SSJF)	✓f	✓f	✓f	✓	✓f	✓	✓	✓	
Western Skipjack Fishery				✓	✓				
Western Tuna and Billfish Fishery (WTBF)	✓			✓	✓				

✓Management area overlapping Environmental Sector
f Fishing effort recorded within 2016-2023 CAES data

5.1.1.1 Bass Strait Central Zone Scallop Fishery

The Bass Strait Central Zone Scallop Fishery (BSCZSF) operates in the Bass Strait north of Tasmania and extends from the Victoria/NSW border, around southern Australia to the Victoria /South Australia border (Figure 5-2). The fishing season is typically July to 31 December (AFMA, 2023a); and the target species is Commercial Scallop (*Pecten fumatus).* Scallop spawning occurs from winter to spring (June to November); however, the timing is dependent on environmental conditions such as wind and water temperature (Sause et al., 1987). Fishing method is via scallop dredge. Fishery can operate down to 120 m water depth but prefers water depth of 70-80 m.

In 2022, fishing was permitted throughout the area of the fishery, except in 4 scallop beds that were closed under the BSCZSF harvest strategy. Fishing in 2023 was concentrated primarily on beds in the eastern Bass Strait.

The fishery has a history of boom and bust, with the catch peaks (1982 to 1983, 1994 to 1996, 2003 and 2018) generally becoming progressively smaller with time. The number of active vessels has declined over the past decades, from 103 during the period 1994 to 9 vessels during 2023 fishing season. Fishing efforts vary from 4,704 dredge-hours in 2021 fishing season to 2,603 dredge-hours in 2023 season, largely due to the reopening of Tasmanian waters to scallop fishing.

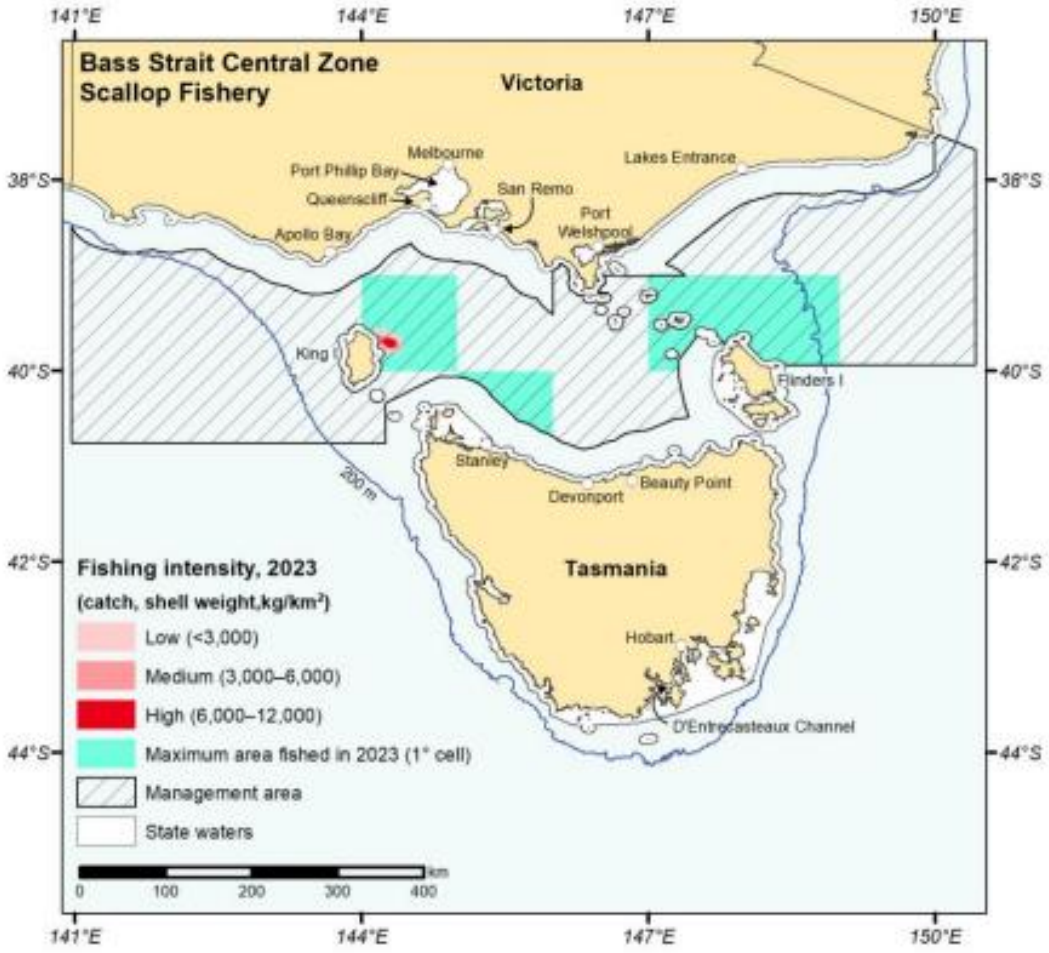


Figure 5-2: Bass Strait Central Zone Scallop Fishery Management Area Relative Fishing Intensity (Source: Butler, et al., 2024)

5.1.1.2 Coral Sea Fishery

The Coral Sea Fishery (CSF) operates in Commonwealth waters extending from Sandy Cape to Cape York in Queensland (Figure 5-3). It is bounded on the east by the Australian Fishing Zone and on the west by a boundary line 10 to 100 nm east of the boundary of the Great Barrier Reef Marine Park (Butler, et al., 2024). The Coral Sea Fishery is a multi-species fishery, targeting a variety of fish, sea cucumbers and crustaceans. The target species include:

- Black teatfish (Holothuria whitmaei)
- Prickly redfish (Thelenota ananas)
- Surf redfish (Actinapyga mauritiana)
- White teatfish (Actinapyga mauritiana)
- Other sea cucumber species (~11 species)
- Greenfish (Stichopus chloronotus)
- Aquarium Sector (>500 species)
- Lobster and Trochus Sector
- Line Sector (numerous finfish and shark species).

There is a 12-month fishing season, commencing on 1 July (AFMA, 2023b). Fishing methods include hand collection (includes barbless hooks and line, scoop, cast and seine nets), demersal line, dropline, mechanised handline, rod and reel, and trotline (Patterson, et al., 2022). The number of active vessels has increased from 2 vessels during the 2020-21 to 4 vessels during 2022-2023 fishing season. Approximately 6.4 t of fish products (excluding the Aquarium Sector, where catch is recorded as the number of individuals) was taken in the Coral Sea Fishery during the 2022-2023 season, representing an increase from the 2.9 t taken in the 2021-2022 season (Butler, et al., 2024).

During 2022-2023 season, fishing was concentrated in two areas offshore of southern and eastern Queensland (Figure 5-3).

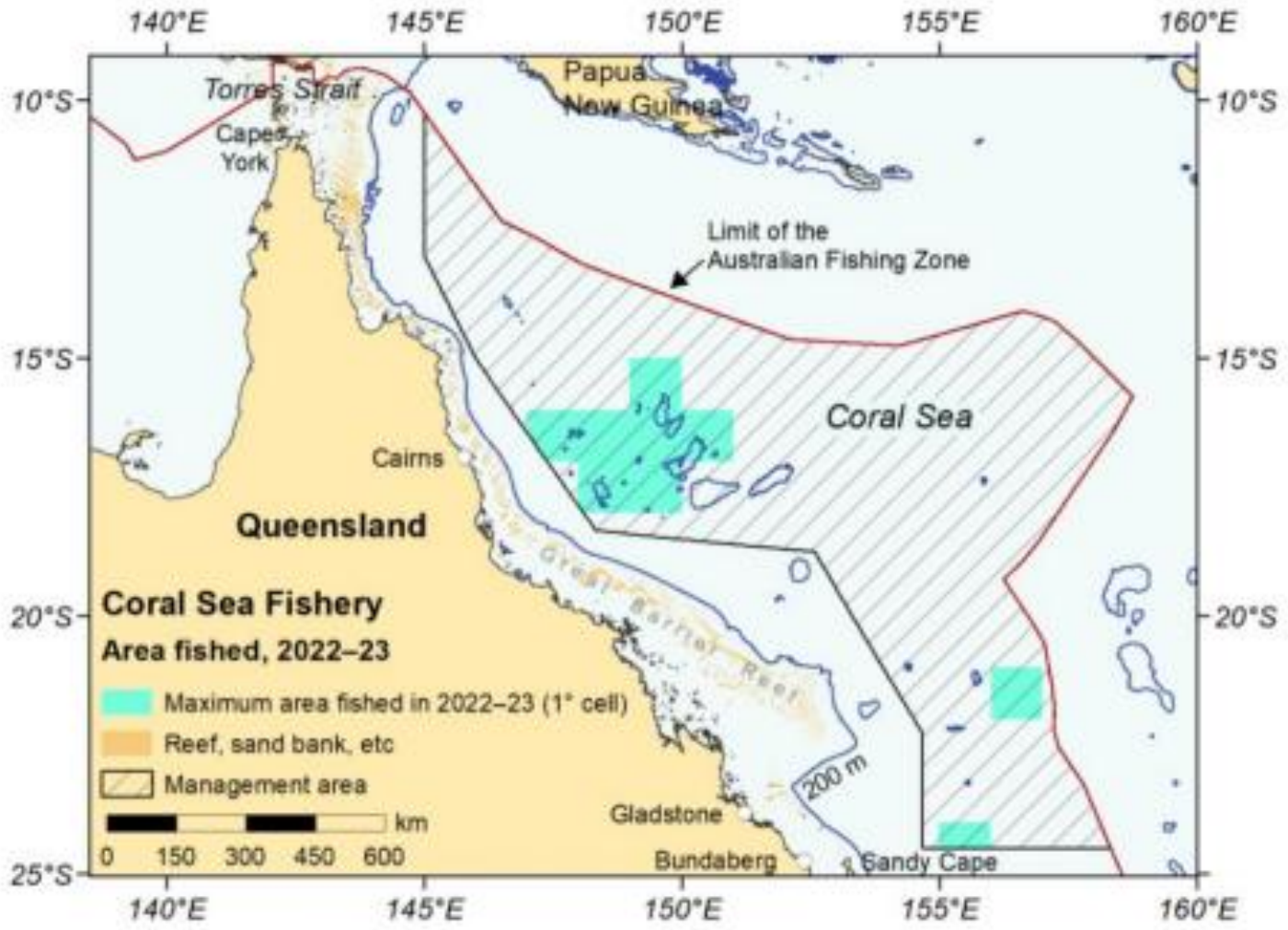


Figure 5-3: Coral Sea Fishery Management Area and 2021-2022 Relative Fishing Intensity (Source: Butler, et al., 2024)

5.1.1.3 Skipjack Tuna Fishery

Two stocks of skipjack tuna (*Katsuwonus pelamis*) are thought to exist in Australian waters, one on the east coast part of the broader Pacific Ocean stock and one on the west coast part of the Indian Ocean stock. There has been no fishing effort in the Skipjack Tuna Fishery (STF) since the 2008-2009 fishing season, due to availability of target species and prices received for the product (Butler, et al., 2024). The management area for the STF covers the entire sea area around Australia to 200 nm offshore; and is split into two sub-fisheries: eastern and western (Figure 5-5). Primary target species were Skipjack Tuna (*Katsuwonus pelamis*).

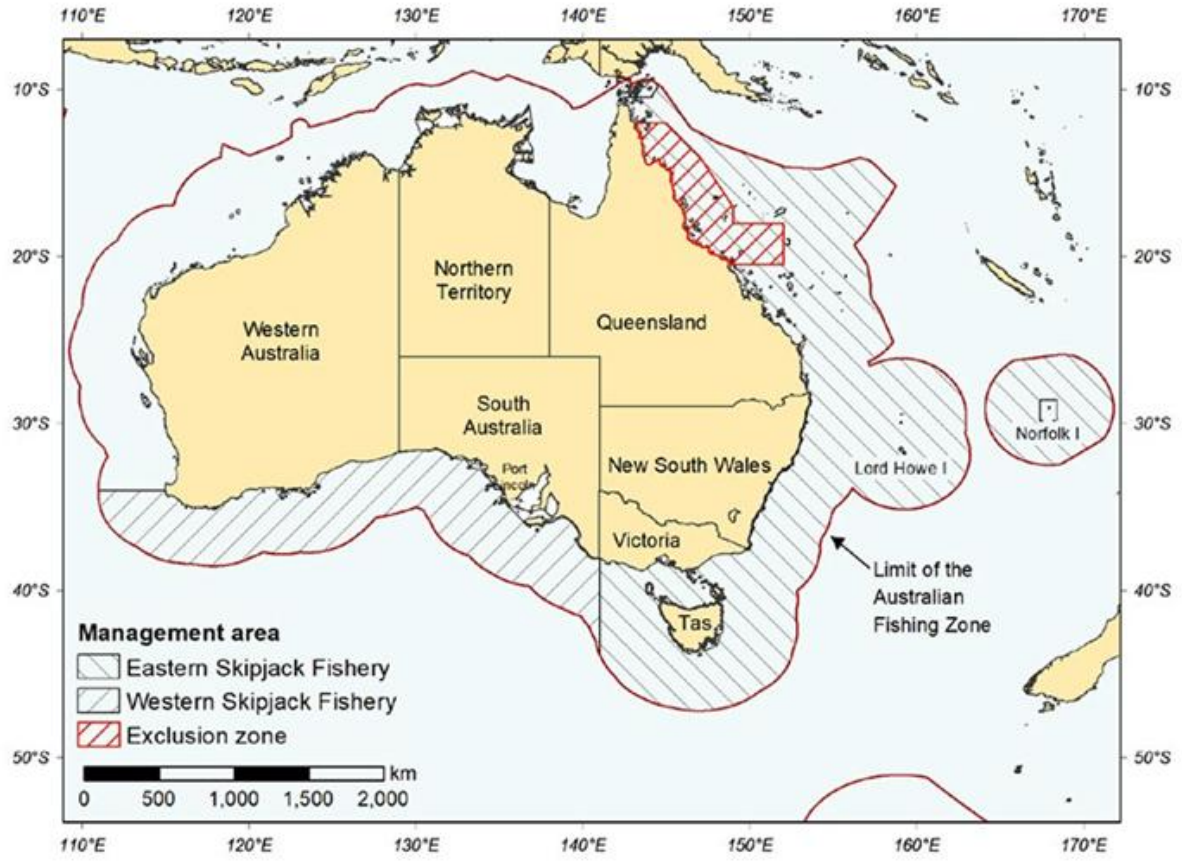


Figure 5-4: Skipjack Tuna Fishery Management Area (Source: Butler, et al., 2024)

5.1.1.4 Eastern Tuna and Billfish Fishery

The Eastern Tuna and Billfish Fishery operates in the Exclusive Economic Zone and adjacent high seas, from Cape York (Queensland) to the Victoria – South Australia border, including waters around Tasmania and the high seas of the Pacific Ocean (Figure 5-5). This fishery excludes the Southern Bluefin Tuna Fishery. Primary target species are:

- Albacore Tuna (*Thunnus alulunga*)
- Bigeye Tuna (*Thunnus obesus*)
- Yellowfin Tuna (*Thunnus albacares*)
- Broadbill Swordfish (*Xiphias gladius*)

- Striped Marlin (*Tetrapturus audux*).

There is a 12-month fishing season, commencing on 1 January (AFMA, 2023c). Fishing methods include pelagic longline, and minor line (trolling, rod and reel, handline). Most of the catch in the fishery was taken with pelagic longlines (7.26 million hooks in 2023), although a small quantity was taken using minor-line methods (502 lines in 2023). The number of active vessels has been steady during 2022 and 2023 season, with a total of 46 vessels engaged in both longline and minor line fishing methods. Fishing efforts recorded at 4,040 t in the 2023 season.

As of June 2025, there are 36 active longline vessels operating in the Eastern Tuna and Billfish Fishery (ETBF), with fishing activity extending from Cairns to the east and west coasts of Tasmania. Recent developments include new entrants to the fishery, such as a venture establishing longline operations out of Portland, Victoria, and the conversion of two purse seine vessels to the longline method for seasonal fishing from Port Lincoln, South Australia. Larger vessels are known to transit and fish through Victorian waters on their way to southern New South Wales grounds early in the southern bluefin tuna season. As of June 2025, the ETBF includes 79 Longline Statutory Fishing Rights (SFR) holders and 83 Minor Line SFR holders, providing the potential capacity for up to 162 vessels. The eastern sector of the Australian Skipjack Fishery remains inactive, with 17 permits issued but no commercial catch currently allocated (Tuna Australia, pers. comm., 20 June 2025).

During 2023, fishing was concentrated offshore of New South Wales and southern/central Queensland coasts (Figure 5-5).

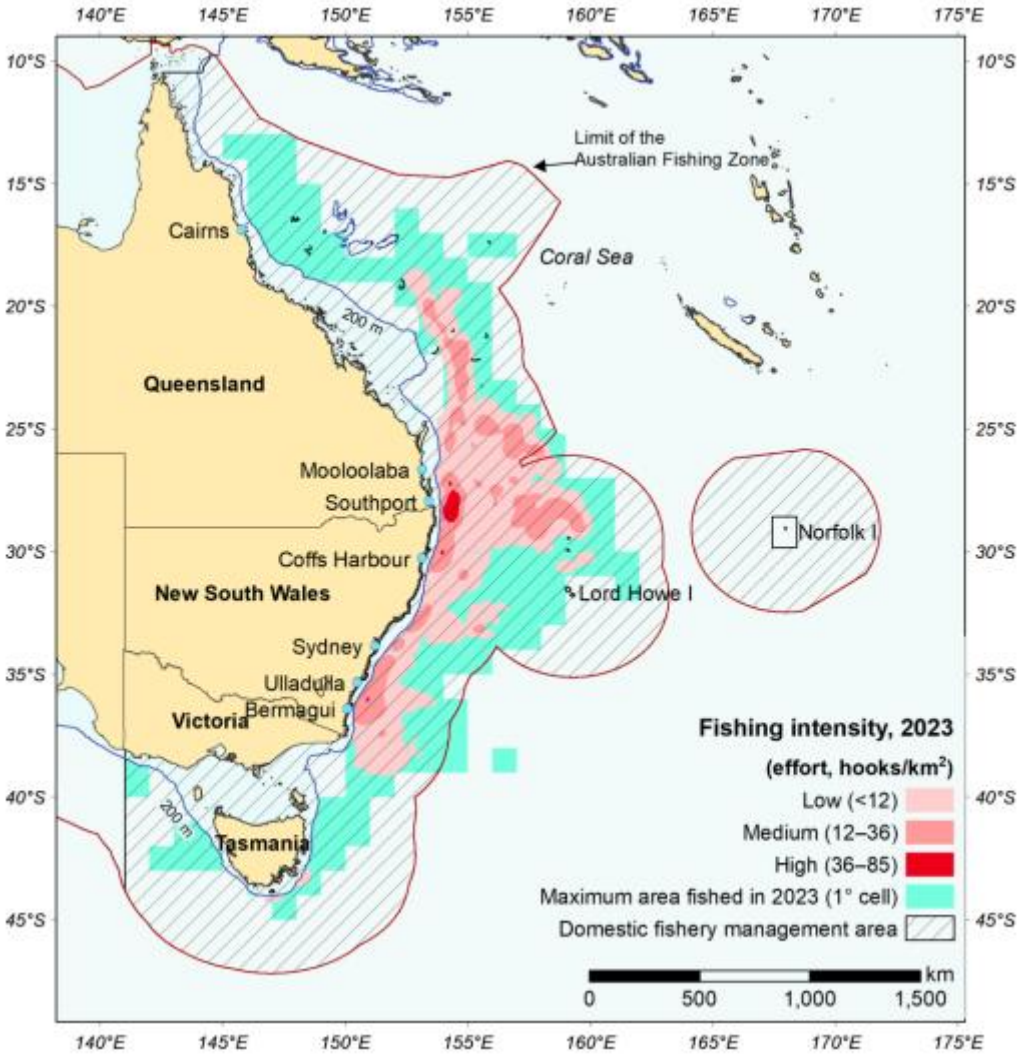


Figure 5-5: Eastern Tuna and Billfish Fishery Management Area and 2023 Relative Fishing Intensity (Source: Butler, et al., 2024)

5.1.1.5 Norfolk Island Fishery

The Norfolk Island Fishery consists of an inshore shelf/upper slope fishery and an exploratory offshore deepwater fishery.

No commercial fishing permits currently exist in the inshore waters adjacent to Norfolk Island although fishing is undertaken by residents of Norfolk Island (AFMA, 2023d).

Norfolk Island Offshore Demersal Finfish Fishery - The Norfolk Island Offshore Demersal Finfish Fishery extends 200 nm from Norfolk Island, excluding the area of the Norfolk Island Inshore Fishery and abuts the New Caledonian EEZ in the north and New Zealand EEZ in the south.

Norfolk Island Inshore Fishery - The Norfolk Island Inshore Fishery covers an area of approximately 67 x 40 nm and was designed to include all shelf waters surrounding Norfolk Island (AFMA, 2023d).

The catch is dominated by redthroat emperor (*Lethrinus miniatus*), known locally as 'trumpeter' (AFMA, 2023d). Other important species include:

- Chinaman Rockcod (*Epinephelus rivulatus*, 5-10%)

- Amberjack (*Seriola dumerili*, 1-5%; first recorded as being captured on the island in 1980)
- Cook's Scorpionfish (*Scorpaena cookii*)
- Queensland Groper (*Promicrops lanceolatus*)
- Western Pigfish (*Bodianus vulpinus*)
- Giant Trevally (*Caranx ignobilis*).

Species composition was reported to change only slightly with season but was always the same relative order (AFMA, 2010).

No stock assessments or biomass estimates for species taken within the inshore fisheries have been made. No stock status classifications have been given to this fishery, since there are no defined stocks for management purposes.

5.1.1.6 Southern Bluefin Tuna Fishery

The Southern Bluefin Tuna Fishery covers the entire Australian Fishing Zone out to 200 nm from the coast (AFMA, 2023e). Southern bluefin tuna are an important seasonal longline target species in southern Australian waters, with catch quotas regionally managed by the Commission for the Conservation of Southern Bluefin Tuna. Australia's total allowable catch allocation reserves 5% for recreational fishing, with the remainder available to the commercial sector (Tuna Australia, pers. comm., 20 June 2025). In this fishery, fish are caught in a net (purse seine) and transferred to floating pontoons, where they are raised until they are big enough to be sold. They are also fished using the pelagic longline method. (AFMA, 2023e). Southern bluefin tuna is also caught by many other countries. Australia's catch of southern bluefin tuna is a part of the total catch internationally (AFMA, 2023e). Primary target species is the Southern Bluefin Tuna (*Thunnus maccoyii*).

There is a 12-month fishing season, commencing on 1 December each year (AFMA, 2023e). The spawning ground is in Western Australia (i.e. outside of the Environmental Sectors). Longline fishing is used off the east coast of NSW, and the fishing intensity is variable (Figure 5-6). The number of vessels in the purse-seine fishery has been fairly stable, ranging from 5 to 8 since the 1994–95 fishing season, with 6 active vessels in the 2022-2023 season (Butler, et al., 2024). The number of longline vessels fishing for southern bluefin tuna off the east coast of Australia has been more variable, ranging from 11 to 24 vessels during the past 10 years (Butler, et al., 2024). The total of catch has increased from 5,972 t in 2021-2022 fishing season to 6,034 t in the 2022-2023 season.

Longline catches have increased substantially in the past five years, with the 2024 season producing a record 1,800–2,000 t following several years of approximately 1,000 t. Longline fishing effort is concentrated from the southeast coast of New South Wales across to Victoria and around both coasts of Tasmania, typically from May to October. Increasing catches earlier in the season are likely due to climate-driven shifts in migration patterns, including a strengthening of migratory routes around Tasmania via Bass Strait. This has coincided with higher recreational and minor line catches of sub-30 kg fish off northern Tasmania, which are presently below the commercial longline size range but may contribute to increased fishing effort in future. Young adult SBT are expected to be prevalent along the Victorian coastline. Increased quota availability has influenced operational strategies, with operators basing closer to fishing grounds early in the season and increasing use of Tasmanian and Victorian ports for offload and resupply, resulting in higher near-port fishing effort in Bass Strait, Tasmanian, and Victorian waters. The Otway Basin functions as a transit zone between major SBT landing ports such as Portland and Tasmanian ports. South coast NSW ports (e.g. Eden and Ulladulla) and Lakes Entrance in Victoria are also significant seasonal hubs, with Eden accommodating up to 12 longline vessels at peak and Lakes Entrance supporting a large

Commonwealth, state, and recreational fleet. Southern bluefin tuna are also harvested in the purse seine sector between December and March, targeting school fish for grow-out in ocean cages at Port Lincoln, South Australia. The availability of catch to longliners can be influenced by purse seine production, including ranching success, farm capacity, market conditions, and harvest timing, with most product exported to the Japanese market (Tuna Australia, pers. comm., 20 June 2025).

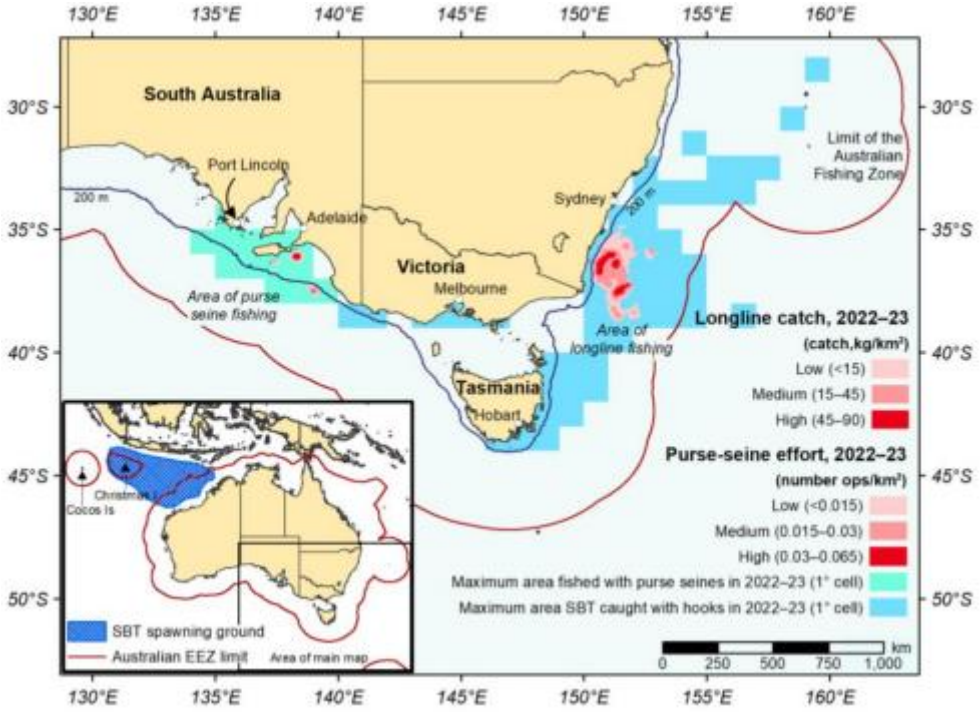


Figure 5-6: Purse-seine effort and Longline Catch in the Southern Bluefin Tuna Fishery, 2022-2023 Fishing Season (Source: Butler, et al., 20243)

5.1.1.7 Southern and Eastern Scalefish and Shark Fishery

The Southern and Eastern Scalefish and Shark Fishery (SESSF) is a multisector, multigear and multispecies fishery, targeting a variety of stocks. The SESSF stretches south from Fraser Island in southern Queensland, around Tasmania, to Cape Leeuwin in southern Western Australia (Buter, et al., 2024). Primary target species include:

- Blue grenadier (*Macruronus novaezelandiae*)
- Tiger flathead (*Neoplatycephalus richardsoni*)
- Silver warehou (*Seriolella punctata*)
- Gummy shark (*Mustelus antarcticus*)
- Pink ling (*Genypterus blacodes*)
- Eastern school whiting (*Sillago flindersi*)
- Orange roughy (*Hoplostethus atlanticus*)
- Blue-eye trevalla (*Hyperoglyphe antarctica*)
- Elephantfish (*Callorhinchus milii*)
- Sawsharks (*Pristiophorus cirratus, P.nudipinnis*)

- School shark (*Galeorhinus galeus*).

The fishery is compromised of the following sectors (Figure 5-7):

- SESSF Cth Trawl Sector (commonly referred to as the South East Trawl Fishery)
- SESSF Scalefish Hook Sector
- SESSF Shark Hook and Gillnet sector
- SESSF Trap sector.

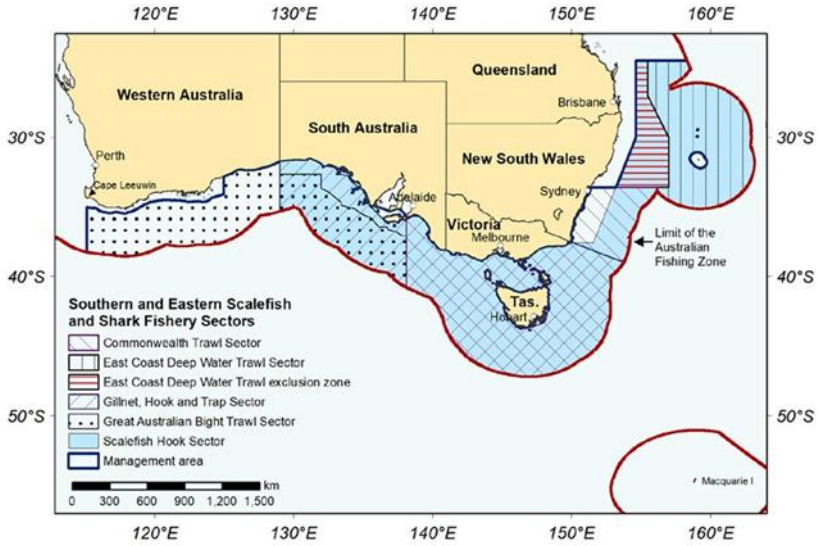


Figure 5-7: SESSF Sectors (Source: Butler, et al., 2024)

There is a 12-month fishing season, commencing 1 May (AFMA, 2023f).

The Commonwealth Trawl Sector (CTS) extends south from Barrenjoey Point in northern NSW to east of Kangaroo Island off South Australia (Figure 5-8) and the Scalefish Hook Sector (SHS) extends around south-eastern Australia to the border between South Australia and Western Australia (Figure 5-9). Effort in these fisheries is widely distributed. However, since 2007 – after the closure to trawling of most SESSF waters deeper than 700 m – effort has become increasingly concentrated on the shelf (up to 200 m) rather than on the slope (Butler, et al. 2024). The CTS predominantly uses demersal otter trawl and Danish-seine fishing methods. Pair trawling and midwater trawling methods are also permitted under the SESSF management plan but are rarely used. The SHS uses a variety of longline and dropline hook fishing methods, some of which are automated (Butler, et al., 2024).

In the 2023–24 fishing season, landings in the SESSF totalled 16,691 t, comprising 12,468 t in the CTS, 2,642 t in the Gillnet, Hook and Trap Sector (GHTS) and 1,581 t in the Great Australian Bight Trawl Sector (GABTS) (Figure 5-8). There was no catch in the East Coast Deepwater Trawl Sector (ECDTS) in the 2023–2004 fishing (Butler, et al., 2024) season.

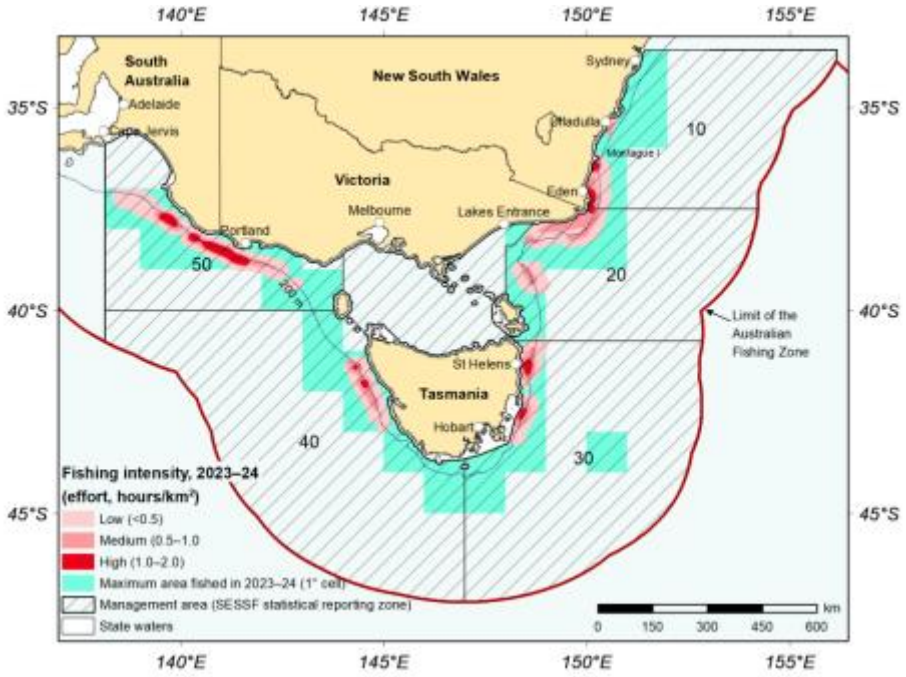


Figure 5-8: Fishing intensity in the Commonwealth Trawl and Scalefish Hook sectors (Source: Butler et al., 2024)

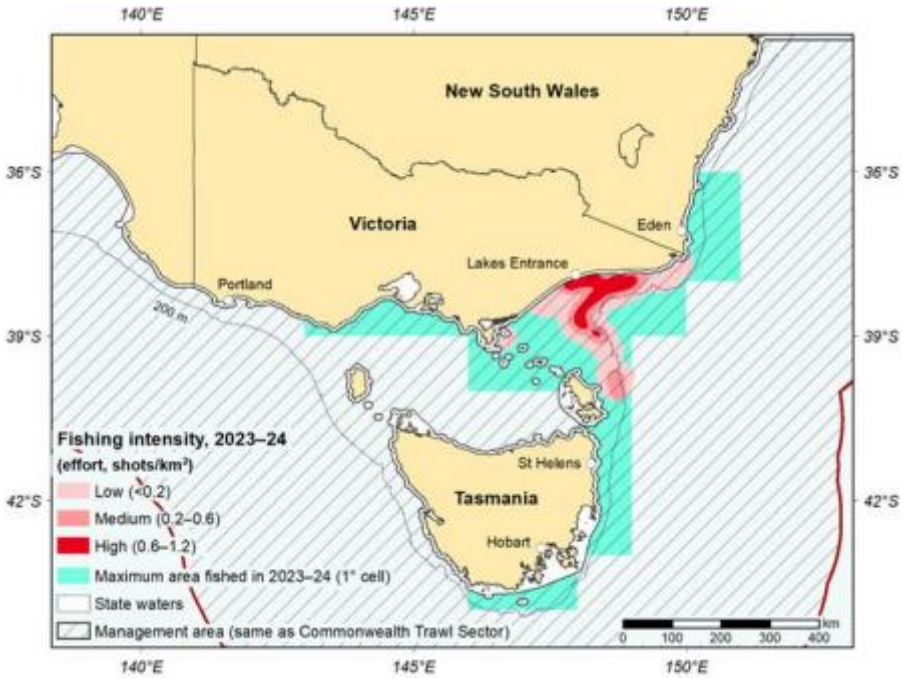


Figure 5-9: Fishing Intensity in the Commonwealth Trawl and Scalefish Hook sectors – Fishing Intensity in the Commonwealth Trawl Sector for Danish seine, 2023–24 Fishing Season (Source: Butler, et al., 2024)

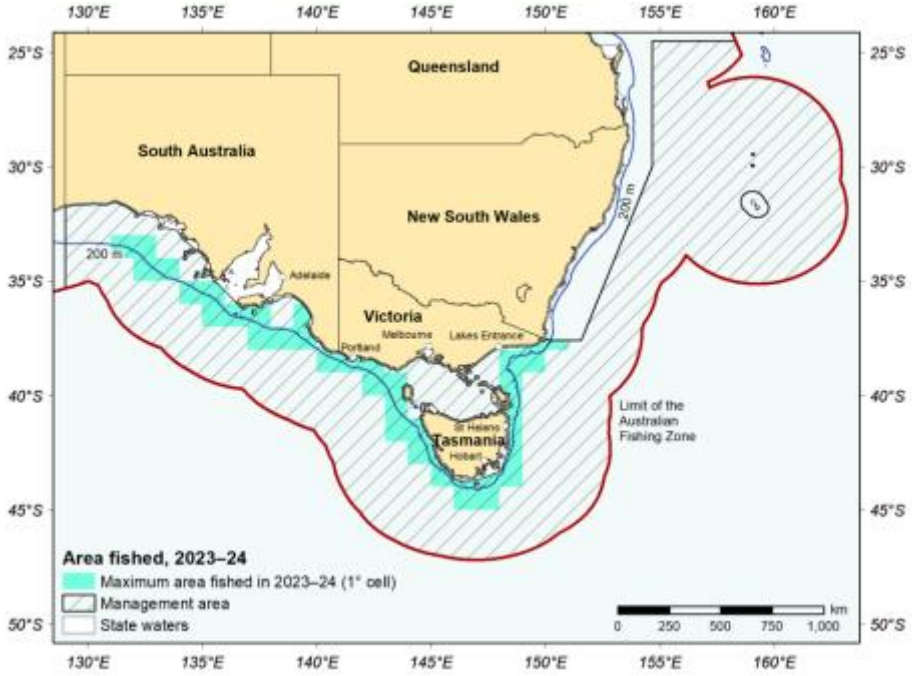


Figure 5-10: Fishing Intensity in the Commonwealth Trawl and Scalefish Hook Sectors – Maximum Area Fished in the Scalefish Hook Sector, 2023–24 Fishing Season (Source: Butler, et al., 2024)

The ECDTS is located beyond the 4,000 m isobath of the continental margin off eastern Australia (Figure 5-11). Effort in this fishery is variable. There was no effort in the fishery between the 2014–15 and 2017–18 fishing seasons, nor between the 2020–21 and 2023–24 fishing seasons (Butler et al., 2024). The ECDTS uses midwater trawl, demersal otter trawl, Danish-seine and pair trawling gears methods. (Patterson, et al., 2022).

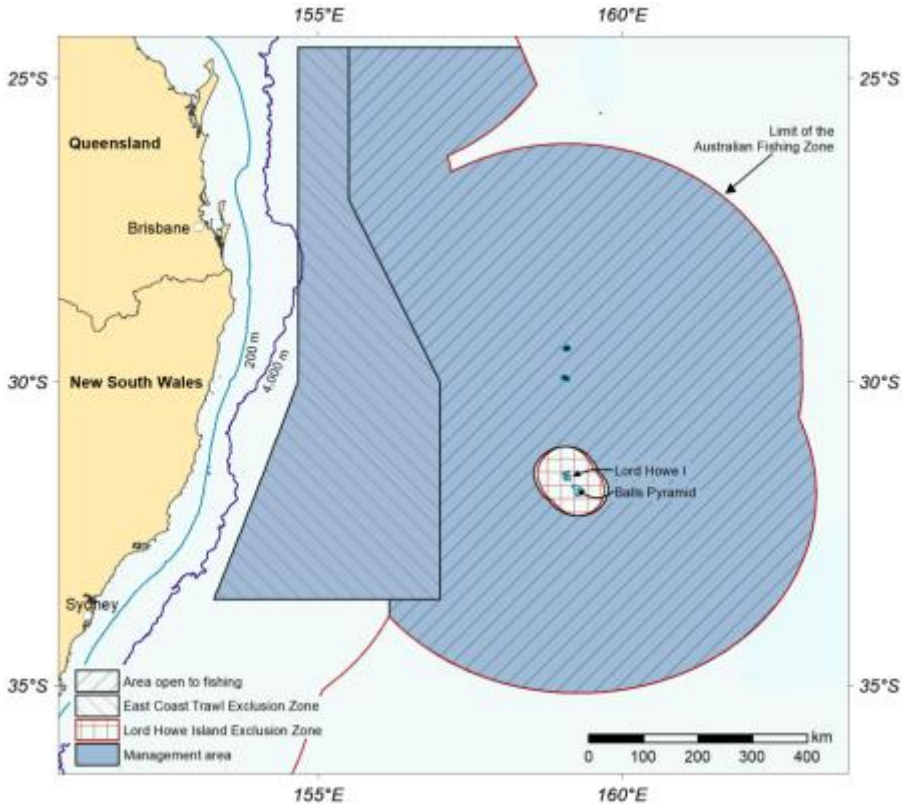


Figure 5-11: Area of the East Coast Deepwater Trawl Sector, 2023-2024 Fishing Season (Source: Butler, et al., 2024)

The Shark Gillnet and Shark Hook Sectors (SGSHS) are part of the GHTS and extend from the Victoria/NSW border, around southern Australia to the South Australia / Western Australia border (Figure 5-12). Since 2007, after the closure to trawling of most SESSF waters deeper than 700 m, effort has become increasingly concentrated on the shelf (to 200 m) rather than on the slope. Most fishing in the SGSHS using nets occurs in Bass Strait, while most fishing using hooks occurs off South Australia. Effort in the gillnet sector peaked in 1987 at 99,000 km of gillnet hauled but has decreased to around one-quarter of this level (23,635 km of gillnet was hauled in 2023–24). Hook effort in 2023–24 was 3.07 million hooks. This is an increase from around 2.34 million hooks in the 2022–23 season, and is the highest number of hooks deployed in recent history (Butler, et al., 2024).

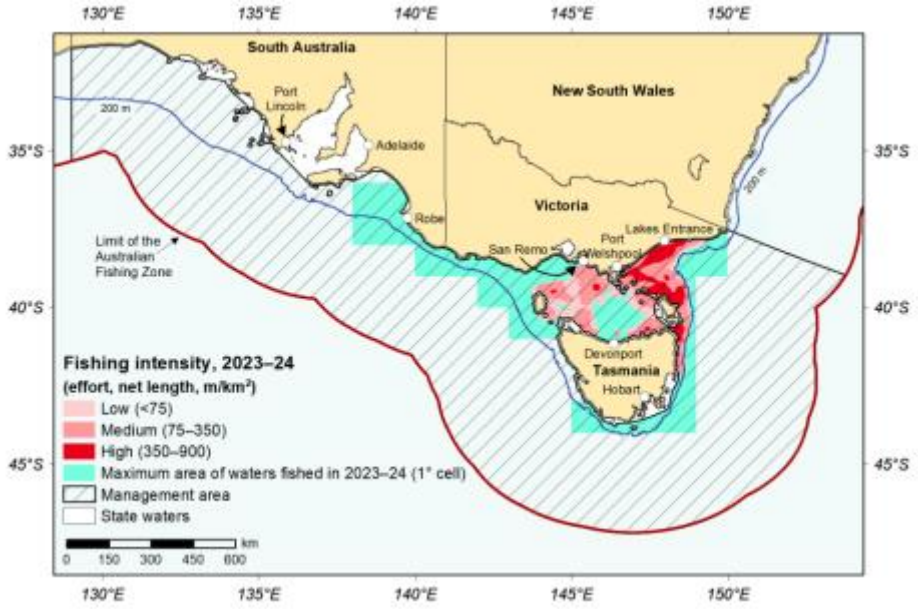


Figure 5-12: Fishing intensity in the Shark Gillnet sector of the Southern and Eastern Scalefish and Shark Fishery, 2023-2024 Fishing Season (Source: Butler, et al., 2024)

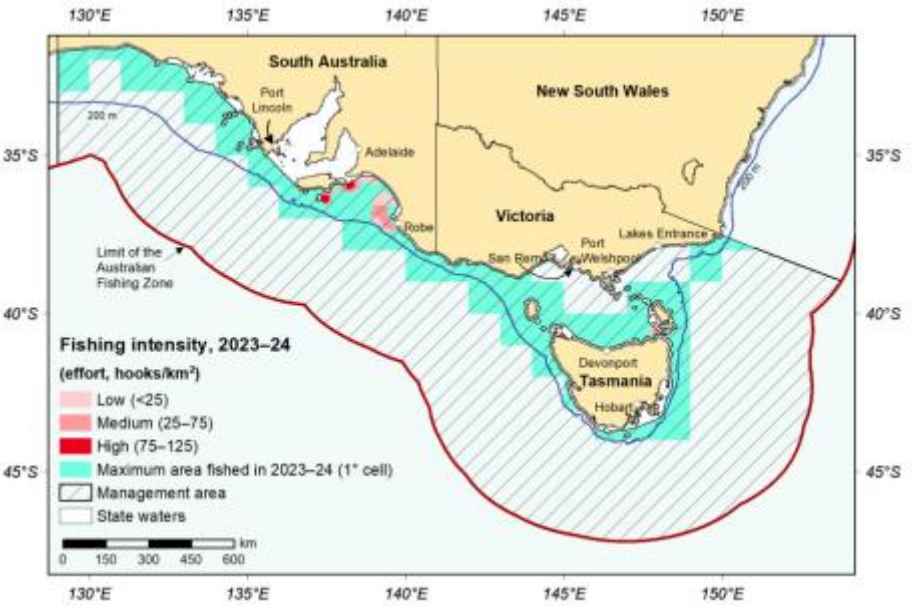


Figure 5-13: Fishing Intensity in the Shark Hook Sector of the SESSF, 2023-2024 Fishing Season (Source: Butler, et al., 2024)

The GABTS extends along the Great Australian Bight between South Australian and southern Western Australia (Figure 5-14) and is comprised of 3 distinct components:

- Continental-shelf fishery - depths less than 200 m
- Upper continental-slope fishery – depths between 200-700 m
- Deepwater fishery – depths of 700 – 1,000 m.

Fishing methods used in the GABTS are otter trawl and danish-seine. Increased effort in the fishery in 2023–24 led to an increase in catch of deepwater flathead, while bight redfish catch decreased compared with the previous season. Deepwater flathead continues to dominate catches, with 721 t landed in the 2023–24 fishing season, which was equivalent to 58% of the 2023–24 TAC (1,238 t). Landings of bight redfish in 2023–24 were 209 t, 21% of the 2023–24 TAC (959 t). Ocean jacket catch decreased from 229 t in 2022–23 to 199 t in 2023–24. There was no commercial harvest of orange roughy in 2022–23 or 2023–24. However, a research catch of 710 kg was taken under the GABTS Orange Roughy Research Plan in 2023–24 (69 t in 2022– 23) (Butler et al, 2024).

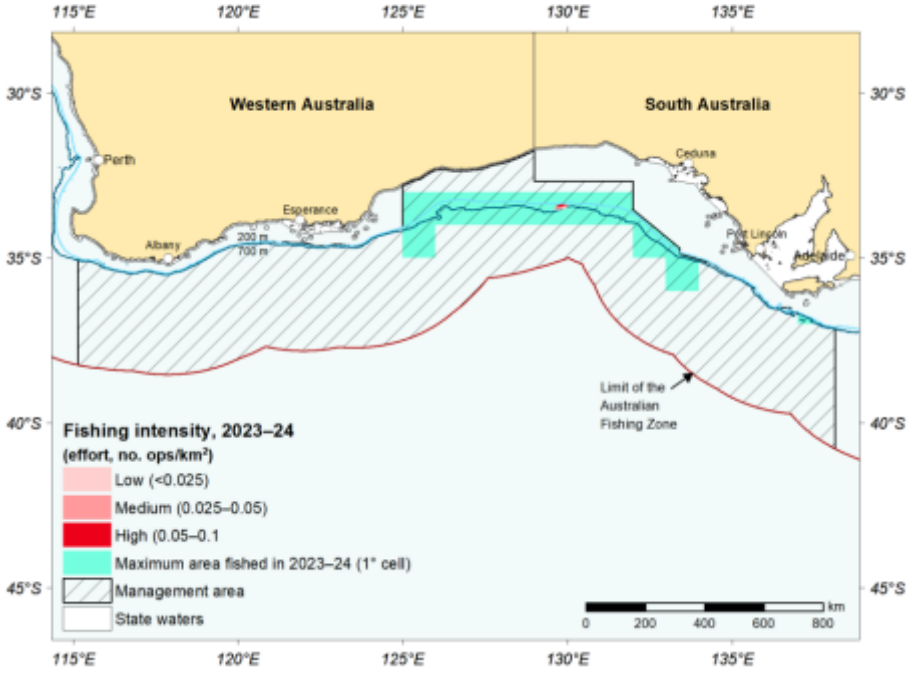


Figure 5-14: Fishing Intensity in the Great Australian Bight Trawl Sector of the SESSF, 2023-2024 Fishing Season (Source: Butler, et al., 2024)

According to research undertaken by Boag and Koopman 2021, though multiple different fisheries have rights to fish around BMG, it is only the SESSF managed fisheries that actively fish around BMG; these are:

- SESSF Commonwealth Trawl sector (Otter trawl and Danish seine)
- SESSF Shark Gillnet and Shark Hook sectors
- SESSF Scalefish Hook sector.

As reported by Boag and Koopman 2021, high levels of otter trawl effort and medium to low levels of Danish seine were reported around BMG during 2018–2019 (Figure 5-15). A total of 12 CTS Danish seine vessels fished within a 5 km radius of BMG from July 2010–June 2020, undertaking 51 shots and landing 4.7 t of fish valued at about $30,000. The main species caught was flathead (81%). A total of 13 CTS otter trawl vessels fished within a 5 km radius of BMG from July 2010–June 2020, undertaking 573 shots and landing 195 t of fish valued at about $1.09 million. Main species caught included flathead (27%), Pink Ling (19%) and Squids (9%).

Average annual catch of fish in the area (a 5km polygon surrounding BMG) equates to approximately $112,000. This is a very small amount of fish and value relative to the size of the SESSF fishery. The two largest SESSF sectors rely on the area around BMG for only 0.26% and 0.01% of their annual

catch. The BMG polygon is probably as important as any other area of that size (relatively small) to the trawl fishery.

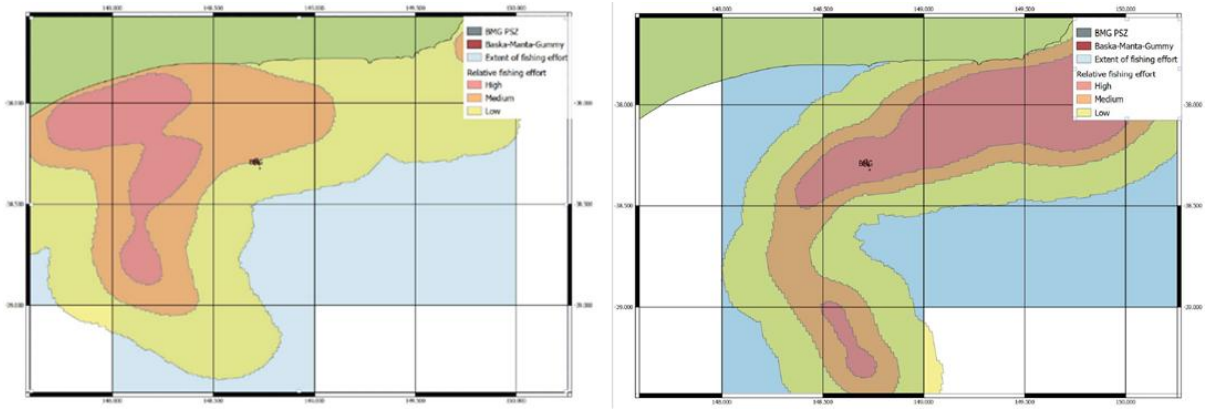


Figure 5-15: Relative Fishing Intensity and Total Area Fished by the CTS Relative to BMG (2018-2019). Left: Trawl Board Sector. Right: Danish Seine Sector. Boag and Koopman 2021.

5.1.1.8 Small Pelagic Fishery

The Small Pelagic Fishery operates in Commonwealth waters from southern Queensland to southern Western Australia (Figure 5-16). It is split into three sub-areas (east, west and sardine) for management purposes. Most historical fishing efforts has occurred off the east and south coast of Tasmania (Butler, et al., 2024). Primary target species are:

- Australian sardine (*Sardinops sagax*)
- Blue mackerel (*Scomber australasicus*)
- Jack mackerel (*Trachurus declivis, T. murphyi*)
- Redbait (*Emmelichthys nitidus*).

It is a 12-month fishing season, commencing on 1 May each year (AFMA, 2023g). Fishing methods include purse seine and midwater trawl fishing vessels (Butler, et al., 2023); midwater trawl has been the main method since 2002.

Purse-seine effort (reflected as search-hours) peaked at 1,093 search-hours in 2005–06 and declined to 45 search-hours in 2013–14. Purse-seine effort has since increased and was 307 search-hours in 2022–23 and 868 search-hours in 2023–24. Midwater trawl effort peaked at 694 shots in 2020–21 and has been variable in recent years. There were 562 midwater trawl shots in the 2023–24 fishing season.

Midwater trawling has been the primary fishing method in the SPF in more recent years and most effort now occurs off the south coast of New South Wales. Low catches in the SPF between 2010–2011 and 2014–2015 are likely to have reflected a lack of markets and fish availability near processing facilities, rather than low levels of overall abundance. Catches increased between 2014–15 and 2016–17, when a factory-freezer trawler operated in the fishery and again between 2016–17 and 2023–24 when midwater trawling effort increased. Total catch (23,230 t) was at its highest level in 2023–24, comprising mostly blue mackerel, jack mackerel and redbait (Butler, et al., 2024).

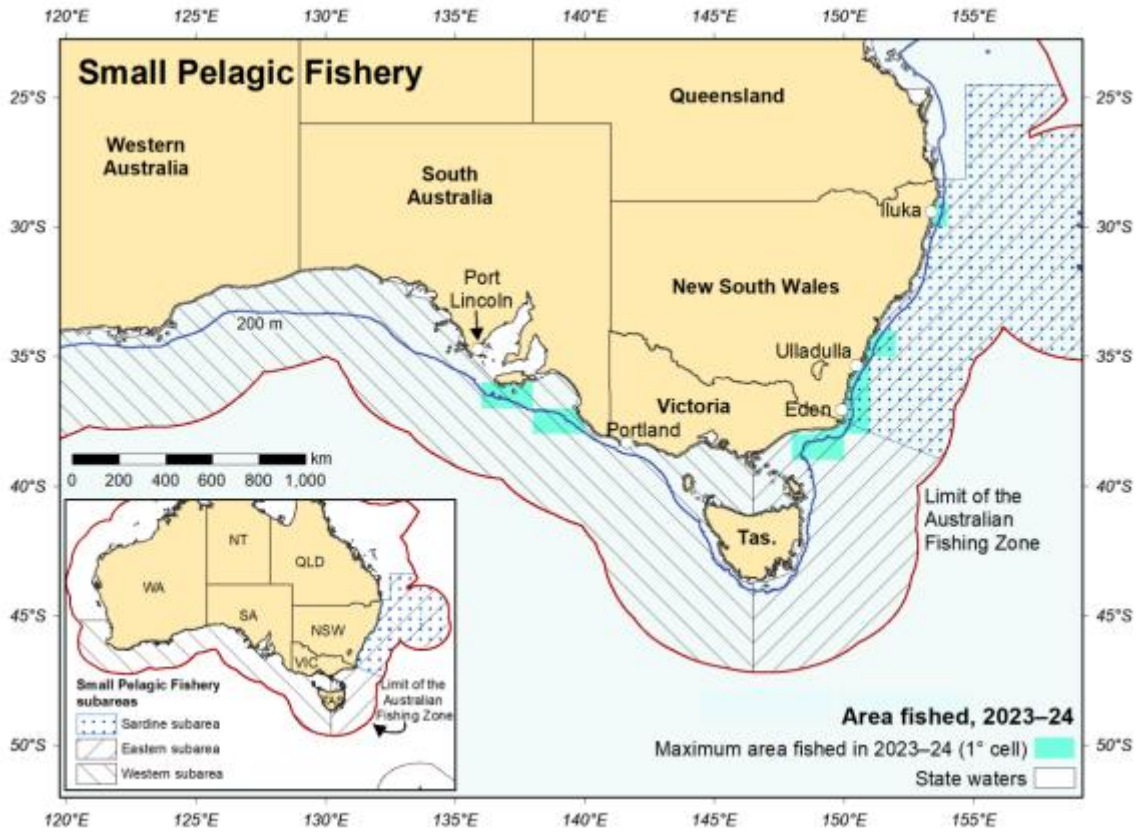


Figure 5-16: Small Pelagic Fishery Management Area and 2023-2024 Fishing Season (Source: Butler, et al., 2023)

5.1.1.9 Southern Squid Jig Fishery

The Southern Squid Jig Fishery is located in waters off NSW, Victoria, Tasmania and South Australia, and in a small area off southern Queensland (Figure 5-17) (Butler, et al., 2024). The Southern Squid Jig Fishery is a single-method (jigging) fishery, primarily targeting the Gould's squid (*Nototodarus gould*) (SETFIA, 2016). Vessels typically operate at night in continental shelf waters between 60–120 m water depth. Squid are also caught in the Commonwealth Trawl Sector and GAB Trawl Sector of the SESSF.

Gould's Squid is a short-lived species that is characterised by highly variable recruitment from year to year, resulting in a "boom and bust" fishery (SETFIA, 2016).

It has a 12-month fishing season, commencing on 1 January each year (AFMA, 2023g). Squid are caught using demersal trawl gear, and in state-managed fisheries using a variety of gears, including trawl, jigging, and hook and line (Butler, et al., 2024).

There has been a variable but increasing trend in fishing effort in the SSJF since 2014 when just 50 jig-hours were recorded. In 2023, there was a total of 4,509 jig-hours and 8 active jig vessels, an increase from 2022 when there were 1,320 jig-hours and 6 active jig vessels. In both 2022 and 2023, there were 4,800 gear SFRs (Butler, et al., 2024).

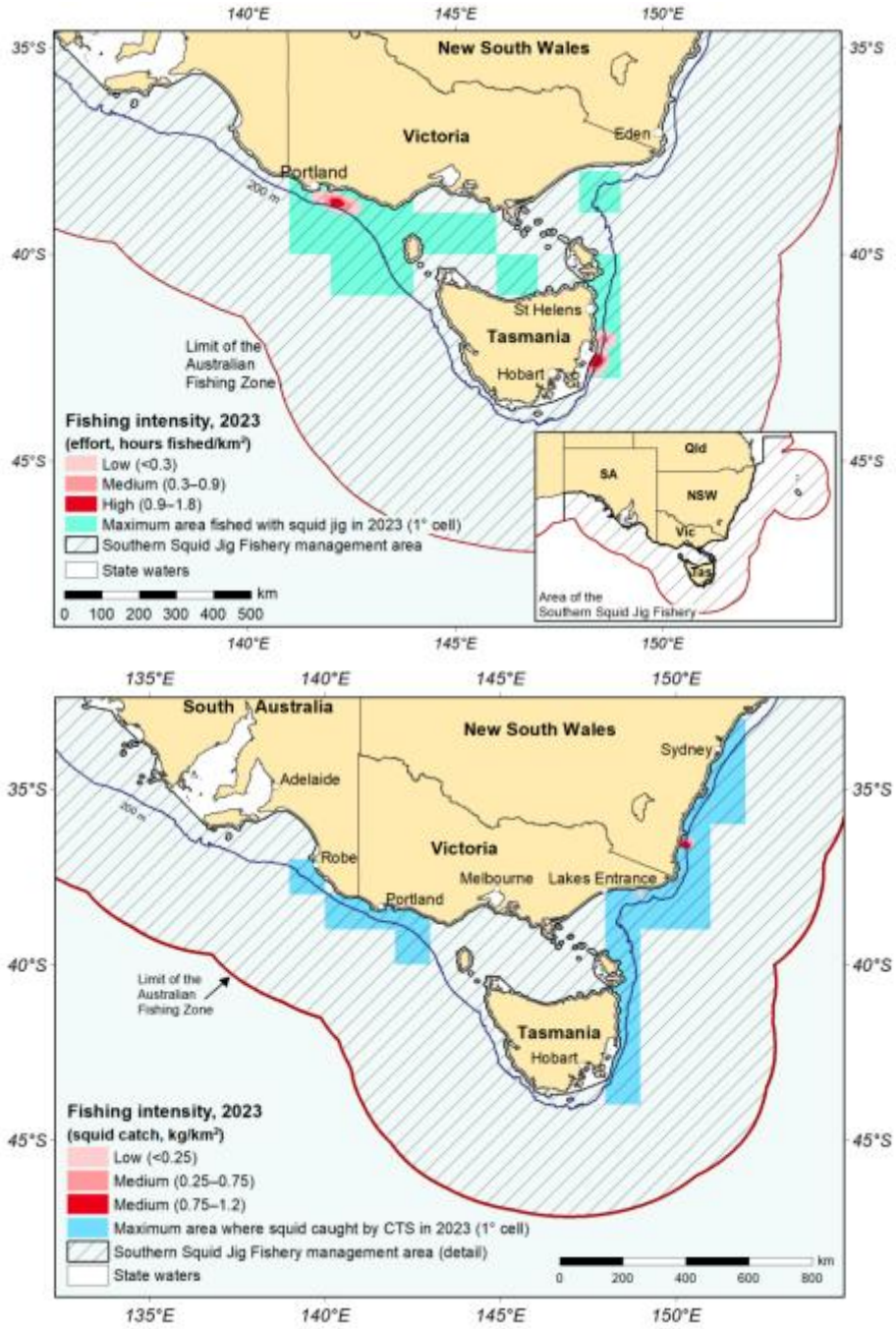


Figure 5-17: (a) Fishing Intensity in the Southern Squid Jig Fishery and (b) Commonwealth Trawl Sector Squid Catch, 2023

5.1.1.10 Western Tuna and Billfish Fishery

The Western Tuna and Billfish Fishery operates in waters extending west from the South Australia / Victoria border (Figure 5-18) It has a 12-month season, commencing 1 February each year. Primary target species include:

- Bigeye tuna (*Thunnus obesus*)
- Yellowfin tuna (*Thunnus albacares*)

- Broadbill swordfish (*Xiphias gladius*)
- Striped marlin (*Tetrapturus audux*), being a minor component of the catch.

Fishing methods in the Western Tuna and Billfish Fishery are predominantly pelagic longline, with some minor-line fishing. In recent years, fishing effort has concentrated off south-west Western Australia, with occasional activity off South Australia (Butler, et al., 2024). Since 2005, fewer than five vessels have been active in the fishery each year (Patterson, et al., 2022). In 2023, only 4 vessels were active. The total catch of the fishery has significantly decreased from 146 t in 2022 to 208 t in 2023 season (Butler et al., 2024).

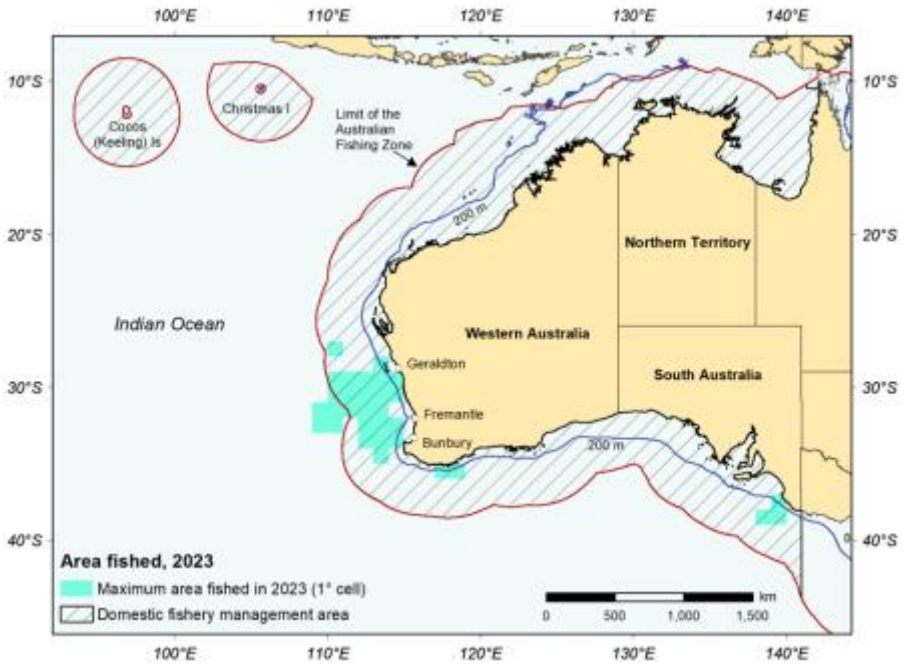


Figure 5-18: Western Tuna and Billfish Fishery Management Area and 2023 Fishing Area (Source: Butler, et al., 2024)

5.1.2 State-Managed Fisheries

The Offshore Constitutional Settlement (OCS) allows for individual fisheries to be managed under relevant State government, with fishing areas extending into both Commonwealth and State waters. In terms of state management, Tasmanian fisheries are managed under the Living Marine Resources Management Act 1995; in South Australia under the Fisheries Management Act 2007; in Victoria under the Fisheries Act 1995; in New South Wales under the Fisheries Management Act 1994, and in Queensland under the Fisheries Act 1994.

There are 40 state-managed commercial fisheries with active fishing effort recorded between 2016 - 2023 within the Environmental Sectors (Table 5-2 to Table 5-6).

5.1.2.1 South Australia State Managed Commercial Fisheries

Table 5-2: South Australia State managed Commercial Fisheries within the Environmental Sectors (PIRSA, 2025)

Fishery	Area/Description	Extends into Commonwealth Waters	Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Abalone Fishery	The commercial sector of the South Australian Abalone Fishery has been managed as three separate fishery management zones known as the Southern, Central and Western Zone Abalone fisheries (Figure 5-19). Within these fishery management zones, there are aquatic reserves, which have prohibitions and restrictions on what species can be taken, including abalone.	Yes	• Greenlip Abalone (*Haliotis laevigate*) • Blacklip Abalone (*Haliotis rubra*).	✓								
Charter Boat Fishery	The South Australian Charter Boat Fishery is a commercial platform for recreational fishing activities; as such, all catch from the fishery is regarded as recreational catch. The majority of charter boat fishing activities occur around reef, seagrass meadows, unvegetated soft bottom, sheltered beaches and tidal flats. The charter boat	No	Primary Species: • Snapper (Pagrus auratus) • King George Whiting (Sillaginodes punctatus) • Southern Bluefin Tuna (*Thunnus maccoyii*) • Nannygai (redfish, red snapper, swallowtail) (*Centroberyx gerrardi*).	✓								

Fishery	Area/Description	Extends into Commonwealth Waters	Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	fishery is managed through a licensing and registration system. The Charter Boat Fishery operates within South Australian marine waters, from the Western Australian border to the Victorian border. The South Australian marine waters are divided into marine fishing areas, which are used to distinguish harvest locations and enable spatial research and management of the fishery: West Coast; Spencer Gulf / Coffin Bay; Gulf St. Vincent / Kangaroo Island; Victor Harbor / South East; Other (offshore areas). The fishery is generally managed at a whole-of-state level with size and catch limits in place for individual species, although there are some specific management arrangements that apply to particular regions of the fishery.		Other Species: • Silver Trevally (Pseudocaranx georgianus) • Southern Garfish (Hyporhamphus melanochir) • Southern Calamari (Sepioteuthis australis).									
Marine Scalefish Fishery	The commercial Marine Scalefish Fishery is a multi-species and multi-gear fishery. There are over	Yes (only for some species)	Primary Species: • King George Whiting (*Sillaginodes punctata*)	✓								

Fishery	Area/Description	Extends into Commonwealth Waters	Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	60 species of marine scalefish taken commercially. The Marine Scalefish Fishery operates in all coastal waters of South Australia between the Western Australian and Victorian border; however, for some species the OCS extends the fishery area out to 200 nm (Figure 5-19). The fishing area includes gulfs, bays and estuaries (excluding the Coorong). The fishery provides for the commercial harvest of most commercially available aquatic resources, with the exception of southern rock lobster, prawns, abalone and freshwater fish species. The majority of catches of these primary species comes from Spencer Gulf and Gulf St Vincent		• Southern Garfish (*Hyporhamphus melanochir*) • Snapper (*Pagrus auratus*) • Southern Calamari (*Sepioteuthis australis*). Other Species: • Vongole spp. • Australian Herring • Western Australian Salmon • Yellowfin Whiting • Shark spp.									
Miscellaneous Fishery	The Miscellaneous fishery includes: species that are not in management arrangements of existing commercial fisheries specialised fisheries multiple types of fishing gear.	No	• Sea urchins • Scallop • Native oyster • Giant crab • Western Australian salmon	✓								

Fishery	Area/Description	Extends into Commonwealth Waters	Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Many of the fisheries included are low production, low value, or both. Biological information on most of the miscellaneous species is limited.		• Beachcast seagrass and macro-algae • Eyre golden perch • Welch's grunter • Barcoo grunter.									
Rock Lobster Fishery	The South Australian Rock Lobster fishery is based on the capture of Southern Rock Lobster, however other species (including giant crabs and octopus) are permitted to be landed and sold. Miscellaneous dive fishing activities are currently used to harvest sea urchins, scallops, turbo, specimen shells and native oysters. The Rock Lobster fishery is separated into a Southern Zone and Northern Zone (Figure 5-19).	Yes	• Southern Rock Lobster (*Jasus edwardsii*)	✓f								
Sardine Fishery	The Sardine Fishery is a component of the Marine Scalefish Fishery; access to the sardine fishery is provided through a licence for the Marine Scalefish Fishery with a sardine net endorsement. The area of the fishery includes all South Australian waters out to the	Yes	• Australian Sardine (*Sardinops sagax*) • Australian Anchovy (*Engraulis australis*) Take of the following are also permitted:	✓f								

Fishery	Area/Description	Extends into Commonwealth Waters	Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	200 nautical mile Australian Exclusive Economic Zone (Figure 5-19).		• Australian anchovy (*Engraulis australis*) • Maray (*Etrumeus teres*) • Blue sprat (*Spratelloides robustus*) • Sandy sprat (*Hyperlophus vittatus*).									

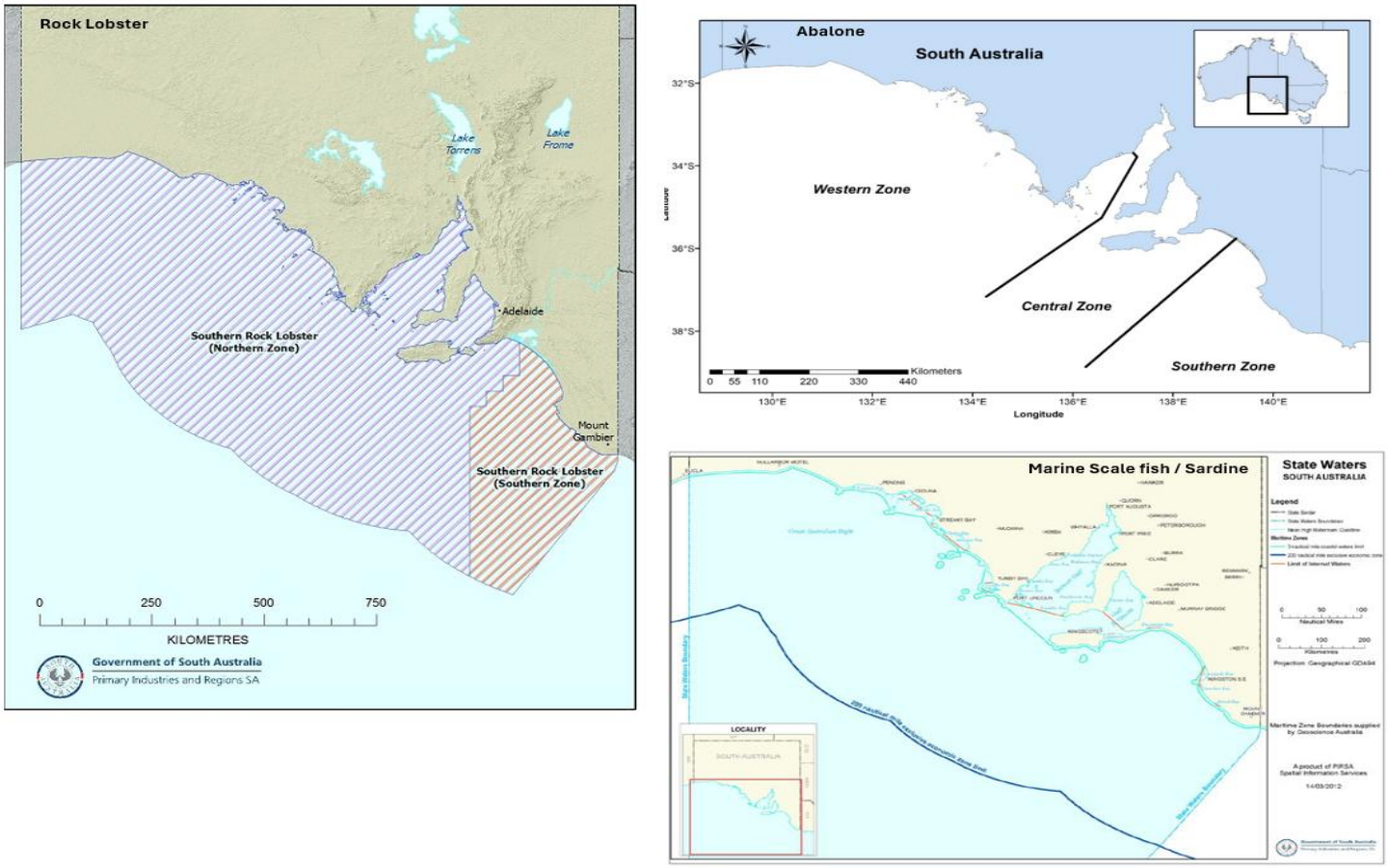


Figure 5-19: South Australian Commercial Fisheries Management Areas: Rock Lobster, Abalone, and Marine Scalefish / Sardine Fishery (Source: PIRSA 2025)

5.1.2.2 Victoria State-managed Commercial Fisheries

Table 5-3: Victoria State managed Commercial Fisheries within the Environmental Sectors (Victorian Fisheries Authority 2024)

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Abalone Fishery	Abalone are caught along the majority of the Victorian coastline. Abalone diving activity typically occurs close to the shoreline (generally up to water depths of 30 m) by divers who use an iron bar to prise it from the rocks. The divers can stay under water for long periods by using hookah gear. The fishery is quota managed, with a total allowable commercial catch set annually based on the outcomes of a stock assessment process. There are three (Western, Central and Eastern) management zones (Figure 5-20).	Yes	• Greenlip Abalone (*Haliotis laevigate*) • Blacklip Abalone (*Haliotis rubra*).	✓	✓	✓						
Sea Urchin	Sea urchins inhabit coastal subtidal reefs in 6-10m of water although *Heliocidaris erythrogramma* has been reported at water depths	No	• White sea urchin (Heliocidaris erythrogramma)	✓	✓	✓						

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	between 10-40m in the coastal waters of NSW. The Sea Urchin Fishery occurs in waters adjacent to Victoria (State coastal waters only, with exclusions). The commercial fishery is managed spatially on the basis of four separate management zones: the Eastern Zone (EZ), Port Phillip Bay Zone (PPBZ), Central Zone (CZ) and Western Zone (WZ) (Figure 5-22). Fishing season is open all year and the fishery is managed under a conservative Total Allowable Commercial Catch and divers may only collect sea urchin by hand.		• Black, long-spined sea urchin (*Centrostephanus rodgersii*).									
Eel Fishery	Eel are harvested in Victorian coastal river basins south of the Great Dividing Range. Short-finned eels are found across the State, while long-finned eels are only found in eastern Victoria (Figure 5-22).	No	• Short-finned eel (*Anguilla australis*) • Long-finned eel (*Anguilla reinhardtii*).	✓	✓	✓						

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Giant Crab Fishery	The commercial fishery has two management zones, the Western Zone (Portland, Warrnambool and Apollo Bay) and Eastern Zone (Queenscliff, San Remo and Lakes Entrance), a division which reflects the zonal boundaries of the rock lobster fishery (Figure 5-20In the Western zone, giant crabs can only be taken using commercial rock lobster pots by Western Zone rock lobster fishers. The fishery is based in the Western Zone; at the time of writing there was no giant crab fishing in the Eastern Zone. Giant crabs inhabit the continental slope at approximately 200 m depth and are most abundant along the narrow band of the shelf edge. Fishers target giant crabs using baited rock lobster pots.	Yes	• Giant crab (*Pseudocarcinus gigas*).	✓f	✓f	✓						
Octopus Fishery	Octopus Fishery commenced on 1 August 2020. The fishery is divided into 3 management zones: western, central and eastern (Figure 5-20). Octopus Fishery	Yes	• Pale octopus (*Octopus pallidus*) • Maori octopus (*Macroctopus maorum*)	✓f	✓f	✓f						

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Access Licenses authorise commercial take of octopus from the eastern octopus zone. This is where the majority of commercial octopus fishing in Victoria has occurred to date. Central and western zones are managed through exploratory and temporary permits.		• Gloomy octopus (*Octopus tetricus*).									
Multi-species Fishery	This fishery is comprised of 3 sub-sectors: Ocean fishery, Commercial Permit fishery and Octopus fishery (central and western) (Figure 5-20).	Yes	• Pale octopus (Octopus pallidus)	✓f	✓f	✓f						
Pipi Fishery	Pipi is the common name given to the small bivalve which is found on high-energy sandy beaches in the intertidal zone. The fishery covers the entire Victorian coastline, with the exception of Port Phillip Bay and Marine National Parks where shellfish cannot be harvested in the intertidal region. However, the fishery is only currently open at Discovery Bay (targeted primarily by commercial fishers) and Venus Bay (primarily a recreational	No	• Pipi (Donax deltoids)	✓f	✓f							

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	fishery)(Figure 5-22). Most of the Pipi harvest to date has been taken under Ocean Fishery Access Licences.											
Rock Lobster Fishery	The Rock Lobster fishery expands the length of the Victorian coast. The fishery is divided into two separately managed zones: Eastern and Western (Figure 5-21). The Eastern Zone extends west from the New South Wales border to Apollo Bay; the Western Zone extends from Apollo Bay west to the border with South Australia. The main ports in the Eastern Zone are Queenscliff, San Remo and Lakes Entrance. In the Western Zone, most catch is landed through Portland, Port Fairy, Warrnambool, Port Campbell and Apollo Bay. Southern Rock Lobsters are found to depths of 150 m, with most of the catch coming from inshore waters less than 100 m deep.	Yes	• Southern rock lobster (*Jasus edwardsii*)	✓f	✓f	✓f						
Scallop Fishery	The Victorian Scallop Fishery is one of three scallop zones in the Bass	Yes	Primary:	✓	✓f	✓f	✓	✓				

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Strait and extends out from the coastline to 20 nm (Figure 5-21).Historically, the majority of the fishing activity in the Victorian zone has occurred in the eastern waters of the State, with most vessels launching from the ports of Lakes Entrance and Welshpool. Scallops mature after one year but do not spawn until the second year. Adult scallops normally spawn between late winter and early spring		• Commercial scallop (*Pecten fumatus*). Other: • Doughboy scallop (*Chlamys asperrimus*).									
Ocean Wrasse Fishery	The commercial fishery extends along the entire length of the Victorian coastline and out to 20 nm offshore, except for marine parks (Figure 5-21). Most wrasse is harvested by hook and line although commercial rock lobster fishers who also hold a commercial wrasse licences can keep those fish that they catch in their rock lobster pots.	Yes	Primary targets: • Bluethroat Wrasse (*Notolabrus tetricus*) • Purple Wrasse (*N. fucicola*). Other: • Rosy Wrasse (Pseudolabrus psittaculus) • Senator Wrasse (Pictilabrus laticlavius)	✓f	✓f	✓f						

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			• Southern Maori Wrasse (Ophthalmolepis lineolatus).									
Bays and Inlet Fisheries	Victorian bay, inlet and estuarine finfish fisheries are multi-species, multi-method fisheries. The fishery area includes Western Port, Port Phillip Bay, Corner Inlet/Nooramunga and the Gippsland Lakes.	No	Multiple species		✓	✓						

Figure 5-20: Victorian Commercial Fisheries: Abalone, Giant Crab, Multispecies, and Octopus

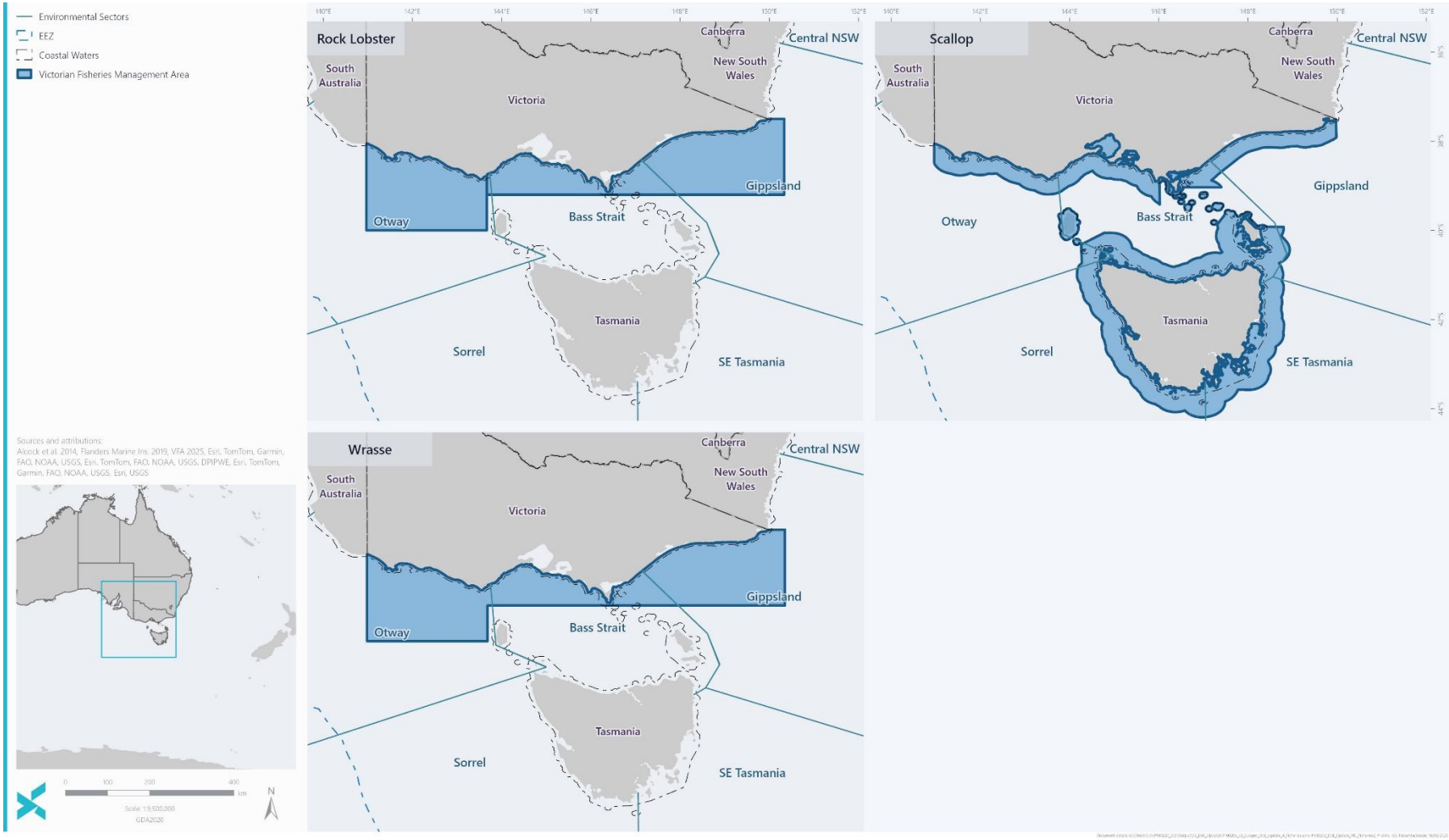
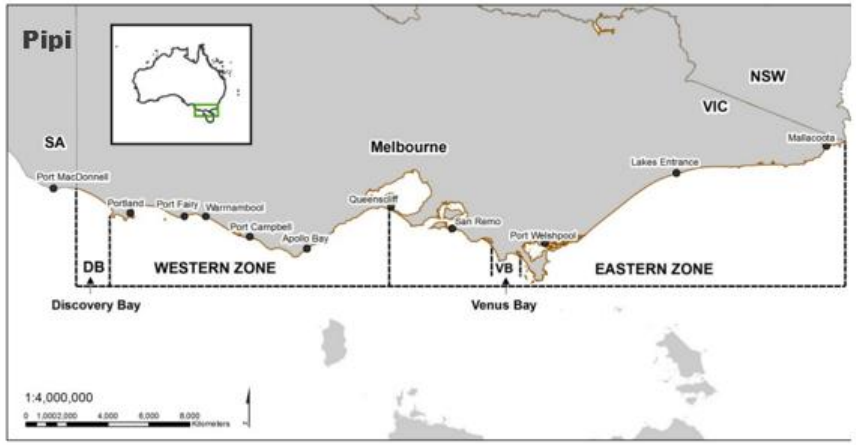
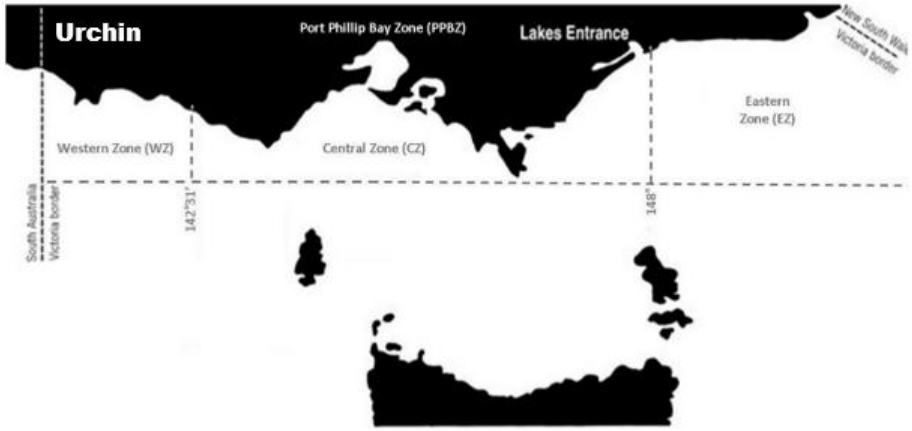


Figure 5-21: Victorian Commercial Fisheries: Rock Lobster, Scallop, and Wrasse





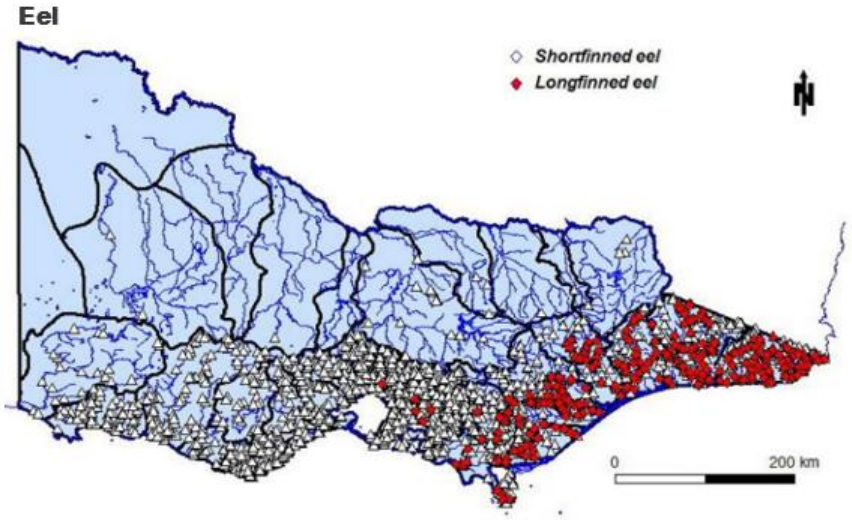


Figure 5-22: Victorian Commercial Fisheries: Pipi, Urchin, and Eel (Source: VFA 2018; 2025c; DCCEEW, 2024m)

5.1.2.3 Tasmania State Managed Commercial Fisheries

Table 5-4: Tasmania State Managed Commercial Fisheries within the Environmental Sectors (DNRET 2024)

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Abalone Fishery	The Tasmanian wild abalone industry is a major contributor to the Tasmanian economy; and is the largest wild abalone fishery in the world, providing approximately 25% of the annual harvest. The fishery is managed as zones: Northern, Bass Strait, Western and Eastern (Figure 5-23). Predominantly occur within the littoral zone from depths of 5-30 m, though they can also be found down to 40 m. Blacklip abalone are distributed around Tasmania. Greenlip abalone are found along the north coast and around the Bass Strait islands (Bradshaw, 2018).	Yes	• Greenlip Abalone (*Haliotis laevigate*) • Blacklip Abalone (*Haliotis rubra*).	✓	✓	✓f	✓f	✓f				
Commercial Dive Fishery	A number of different species are collected by the Commercial Dive Fishery. The Commercial Dive	Yes	Primary targets: • Sea Urchin (*Heliocidaris erythrogramma*)		✓		✓	✓				

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Fishery is divided into five zones: south eastern, central eastern, north eastern, northern and western. Hand collected by divers. Harvest occurs when the roe quality peaks just before spawning.		• Wavy periwinkles (*Lunella undulata*). Other: • Longspined sea urchin (Centrostephanus rodgersii)									
Giant Crab Fishery	Operates in State and Commonwealth waters surrounding Tasmania in waters south of 39° 12', and out to 200 nm from the coastline. A comparatively small fishery but is of relatively high value. The fishery has been commercially targeted since the early 1990's, changing from being open access to limited entry and is now managed by individual transferable quota. Seasonal opening: • Males – OPEN all year round. • Females – OPEN from 15 November in a year to 31 May the following year inclusive.	Yes	• Giant crab (Pseudocarcinus gigas)	✓f	✓f	✓f	✓f	✓f				

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Rock Lobster Fishery	The rock lobster fishery is a major Tasmanian industry providing significant benefits from exports from the commercial fishery. The rock lobster lives in a variety of habitats ranging from shallow rocky inshore pools out to the continental shelf. The fishery is divided into two zones, northern and southern. Season opening for the 2024 season are described below: • Female – CLOSED from Wednesday, 1 May 2024 for all State waters. • Male – CLOSED from Sunday, 1 September 2024 all waters south of St Helens Pt around to Sandy Cape (41° 29'). • Male – CLOSED from Tuesday, 1 October 2024 all other State waters.	Yes	• Southern Rock Lobster (*Jasus edwardsii*)	✓f		✓f	✓f	✓f				
Scalefish / Octopus Fishery	The Tasmanian Scalefish Fishery is a multi-species and multi-gear fishery that is predominantly made	No	Some of the species commercially targeted include:	✓	✓		✓	✓				

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	up of small owner operated commercial businesses and a large and diverse recreational fishery (Figure 5-23). The main gear types include gillnet, hooks and seine nets, other fishing gears in use include traps, Danish seine, dip nets and spears.		• Banded Morwong (*Cheilodactylus spectabilis*) • Southern Calamari (*Sepioteuthis australis*), • Octopus (*Octopus maorum*) • Tiger Flathead (*Neoplatycephalus richardsoni*), • Southern School Whiting (*Sillago flindersi*) • Southern Garfish (*Hyporhamphus melanochir*) • Wrasse (*Notolabrus sp.*), • Gould's Squid (*Nototodarus gouldi*) • Bastard Trumpeter (*Latridopsis forsteri*), • Blue Warehou (*Seriolella brama*) • Silver Warehou • Flounder (*Rhombosolea tapirine)*									

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			• Silver Trevally (*Pseudocaranx dentex*) • Striped Trumpeter (*Latris lineata*).									
Scallop Fishery	Extends to 200 nm from the Tasmanian coast, except for Bass Strait, where its jurisdiction covers 3-20 nm offshore. The fishery is managed under the provisions of the *Living Marine Resources Management Act 1995* and Fisheries (Scallop) Rules 2011. It is primarily based on the harvest of the commercial scallop. Although commercial fishers can legally take the doughboy scallop and the queen scallop; these species have only minor commercial significance in Tasmania. Seasonal access: • OPEN – 5 July 2024 • CLOSED – 31 December 2024	No	Primary: • Commercial scallop (*Pecten fumatus*) Other: • Doughboy scallop (*Chlamys asperrimus*) • Queen scallop (Aequipecten opercularis)		✓	✓	✓	✓				
Marine Plant	Hand harvested onshore with the exception of the Undaria sp. and	No	• Bull Kelp • Undaria		✓		✓	✓				

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	may be hand collected through diving. The Marine Plant Fishery is split into 6 zones: • King Island Area • North west Area • Granville Area • Unzoned Area • Restricted Undaria Area • Undaria Area.											
Shellfish Fishery	The commercial shellfish fishery harvests shellfish either by hand, diving from small vessels or wading and includes clams in Georges Bay North (two licences), native oysters in Georges Bay (two licences), and wild Pacific oysters (no licence cap).	No	• Venerupis clams • Native oyster (*Ostrea angasi*) • Wild Pacific oysters		✓		✓	✓				

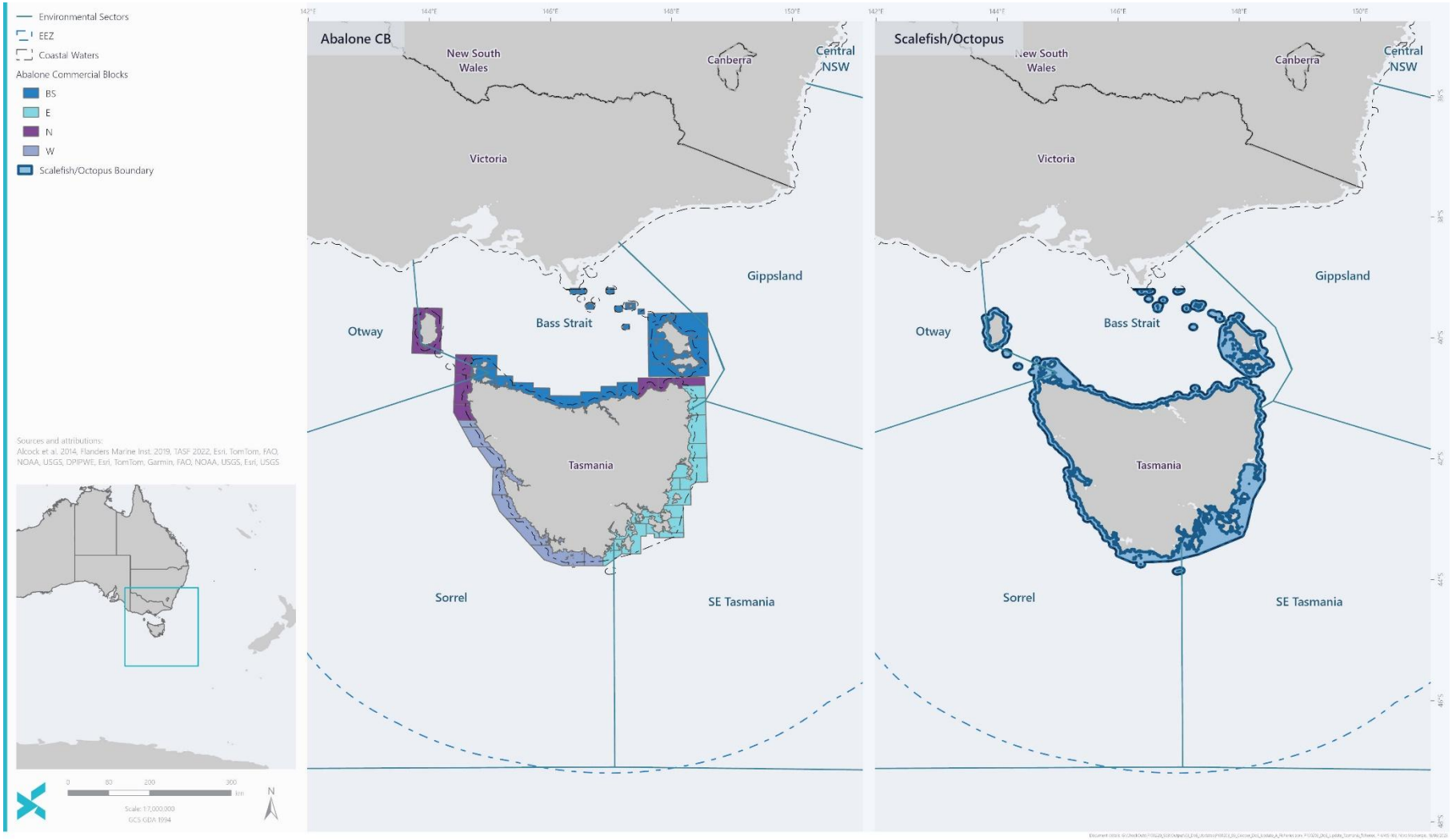


Figure 5-23: Tasmanian Commercial Fisheries: Abalone Commercial Blocks (CB) and Scalefish / Octopus Boundary

5.1.2.4 New South Wales State Managed Commercial Fisheries

Table 5-5: New South Wales State managed Commercial Fisheries within the Environmental Sectors (DPI 2025)

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Abalone Fishery	The blacklip abalone forms the basis of the abalone fishery in NSW. Abalone are commercially harvested, through hand collection, from rocky reefs by divers typically using surface-supplied air or scuba. In practice, most commercial abalone fishing takes place on the south coast of NSW, primarily from Jervis Bay to the Victorian border (Figure 5-24), with most abalone found close to the shore. Season is year-round. New size limits and endorsement conditions in force from 10 July 2018.	No	• Blacklip abalone (*Haliotis rubra*)			✓f			✓f	✓		
Estuary General Fishery	The Estuary General Fishery is a diverse multi-species multi-method fishery that may operate in 76 of the NSW's estuarine systems (Figure 5-24). This fishery is a	No	Catch includes: • Sea Mullet (*Mugil cephalus*) – 40%			✓f			✓f	✓f		

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	significant contributor to regional and state economies providing high quality seafood and bait to the community. On average, the 10 species that make up over 80% of landings by weight are those shown in the Target Species column.		• Luderick (*Girella tricuspidata*) – 8% • Yellowfin bream (*Acanthopagrus australis*) – 8% • School Prawn (*Metapenaeus macleayi*) – 5% • Blue Swimmer Crab (*Portunus pelagicus*) – 4% • Dusky Flathead (*Platycephalus fuscus*) – 4% • Sand Whiting (*Sillago ciliata*) – 3% • Pipi (*Donax deltoides*) – 3% • Mud Crab (*Scylla serrata*) – 3% • Silver Biddy (*Gerres subfasciatus*) – 2%									
Estuary Prawn Trawl Fishery	The fishery uses otter trawl nets in three estuaries in NSW, (the	No	• School Prawns (*Metapenaeus macleayi)*						✓f	✓f		

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Clarence, Hawkesbury and Hunter Rivers) (Figure 5-25). With the exception of the Hawkesbury River, the fishery operates for defined seasons (generally October to May) and within each estuary is confined to specific times and areas. The majority of prawn catches are landed during the 'dark' of the moon (between the last and first quarter), on either run out or 'slack' tides.		• Eastern King Prawns (*Melicertus plebejus)*									
Lobster Fishery	The NSW Lobster Fishery is small but valuable. The Fishery extends from the Queensland border to the Victorian border and includes all waters under jurisdiction of NSW to around 80 miles from the coast (Figure 5-25). It is characterised by inshore and offshore sectors. Inshore fishers use small beehive or square traps in waters up to 10 metres in depth,	Yes	Primary: • Eastern rock lobster (*Sagmaraisus verreauxi*) Other catch: • Southern Rock Lobster (*Jasus edwardsii*) • Tropical Rock Lobster (*Panulirus longipes* and *P. ornatus)*.			✓f			✓f	✓f		

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	whilst offshore fishers use large rectangular traps.											
Ocean Hauling Fishery	The Ocean Hauling Fishery is broken up into 7 regions along the NSW coast and targets approximately 20 finfish species using commercial hauling and purse seine nets from sea beaches and in ocean waters within 3 nm of the coast.	No	Catch includes: • Pilchards (*Sardinops sagax*) • Sea Mullet (*Mugil cephalus*) • Australian Salmon (*Arripis trutta*) • Blue Mackerel (*Scomber australasicus*) • Yellowtail Scad (*Trachurus novaezelandiae*) • Yellowfin Bream (*Acanthopagrus australis*)			✓f			✓f	✓f		
Ocean Trap & Line Fishery	The Ocean Trap and Line fishery is a multi-method, multi species fishery targeting demersal and pelagic fish along the entire NSW coast, in continental shelf and slope waters (Figure 5-26).	Yes	Primary catch: • Snapper (*Chrysophrys auratus)* • Yellowtail kingfish (*Seriola lalandi)* • Leatherjackets • Bonito (*Sarda australis)*			✓f			✓f	✓f		

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	The Ocean Trap and Line Fishery is a share management fishery. This means that commercial fishers must hold sufficient shares to be eligible for an endorsement to operate in the fishery. An endorsement authorises the use of specific gear to take fish for sale from certain waters. There are six types of Ocean Trap and Line endorsements in NSW; line fishing western zone, line fishing eastern zone, demersal fish trap, school and gummy shark, spanner crab northern zone and spanner crab southern zone.		• Silver trevally (*Pseudocaranx georgianus*) Other: • Rubberlip (grey) Morwong (N*emadactylus douglasii)* • Blue-eye Trevalla (*Hyperoglyphe antarctica)* • Sharks • Bar Cod (*Epinephelus ergastularius)* • Yellowfin Bream (*Acanthopagrus australis)* • Spanner Crabs (*Ranina ranina)*									
Ocean Trawl Fishery	The Ocean Trawl Fishery operates along the entire NSW coast and in the continental shelf and slope waters. There are two sectors to the Ocean Trawl Fishery: the prawn trawl sector and the fish trawl sector which is further split	Yes	Primary catch: • School whiting (comprising of stout whiting (*Sillago robusta*) and red spot whiting (*S.flindersi*))			✓f			✓f	✓f		

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	into the Northern Zone and Southern Fish Trawl Restricted Fishery (Figure 5-26). Both sectors use otter trawl nets. The fishery is a share management fishery; meaning commercial fishers must hold sufficient shares to be eligible for an endorsement to operate in the fishery. An endorsement authorises the use of specific gear to take fish for sale from certain waters. Many of the fishers endorsed for fish trawling are also endorsed for prawn trawling.		• Eastern King (*Melicertus plebejus*), School (*Metapenaeus macleayi*) and Royal Red prawns (*Haliporoides sibogae*) • Tiger Flathead (*Platycephalus richardsoni)* • Silver Trevally (*Pseudocaranz georgianus)* • Various species of sharks and rays, squid, octopus and bugs									
Sea Urchin & Turban Shell Restricted Fishery	The NSW Sea Urchin and Turban Shell restricted fishery is relatively small with few divers participating. The fishery operates along the entire NSW coastline and is split into 5 regions. The main constraint on development is high processing costs and limited domestic markets. Fishing for sea urchins is generally constrained to that part	No	• Black urchin (*Centrostephanus rodgersii*) • Red urchin (*Heliocidaris erythrogramma*) • Purple urchin (*Heliocidaris tuberculata*). • Sydney Turban Shell (*Turbo torquatus*)			✓f			✓f	✓		

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	of the year when the roe is well developed. A number of the fishing sub-regions have been closed to commercial fishing since 1994.		• Military Turban (*Turbo militaris*) • Green Turban Shell (*Turbo undulatus*)									
S37 Permit Fishery	A Section 37 permit (miscellaneous permit) is required for any activity that involves taking or possessing fish or marine vegetation that would otherwise be unlawful under the *Fisheries Management Act 1994.* This includes activities such as: • Science or Research Collection • Aquarium Collection • Possessing Pacific Oysters • Collecting Marine Vegetation for Commercial Purposes.	Yes	• Various			✓f			✓f			

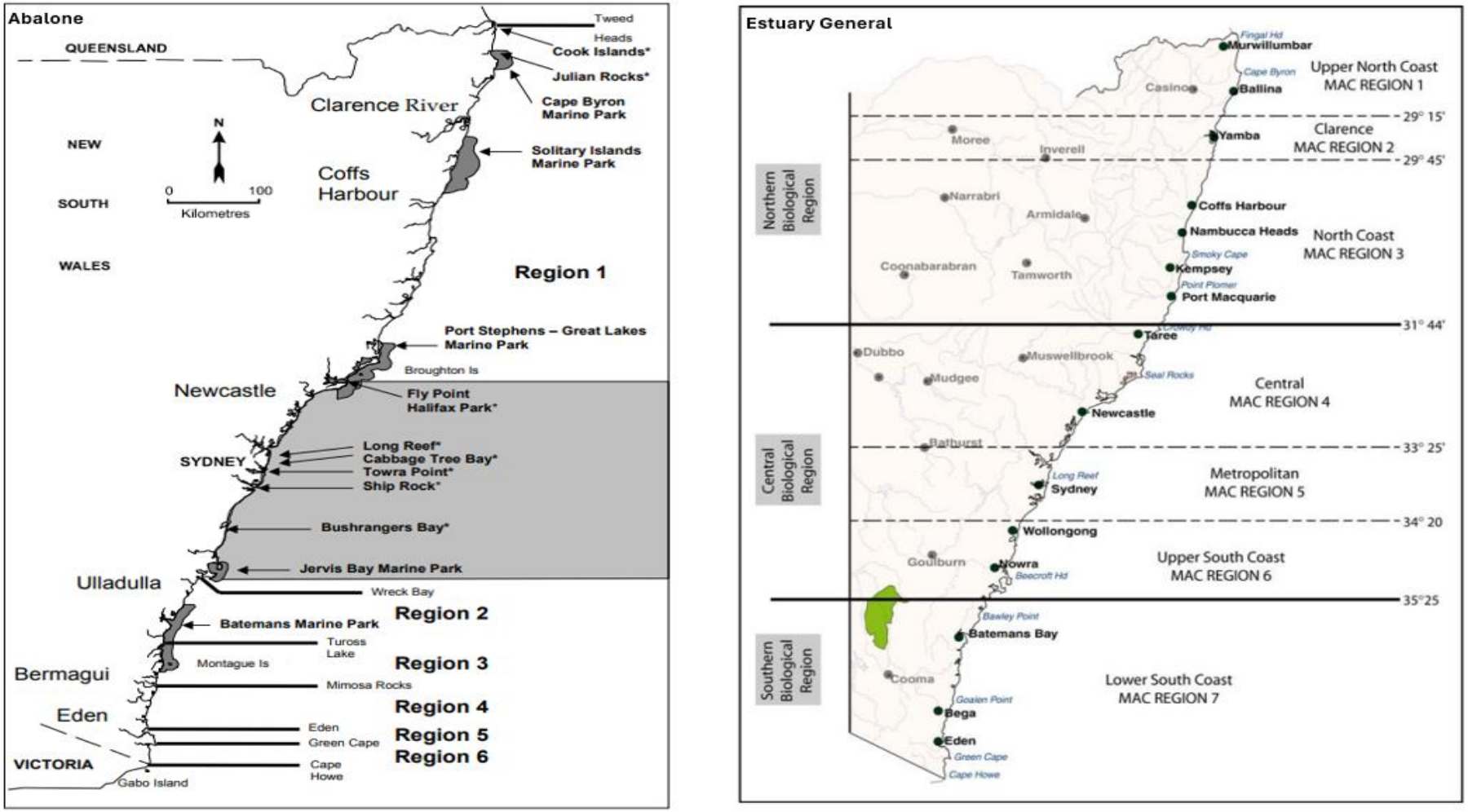


Figure 5-24: New South Wales Fisheries Management Areas: Abalone Fishery and General Estuary Fishery (Source: DPI NSW, 2025)

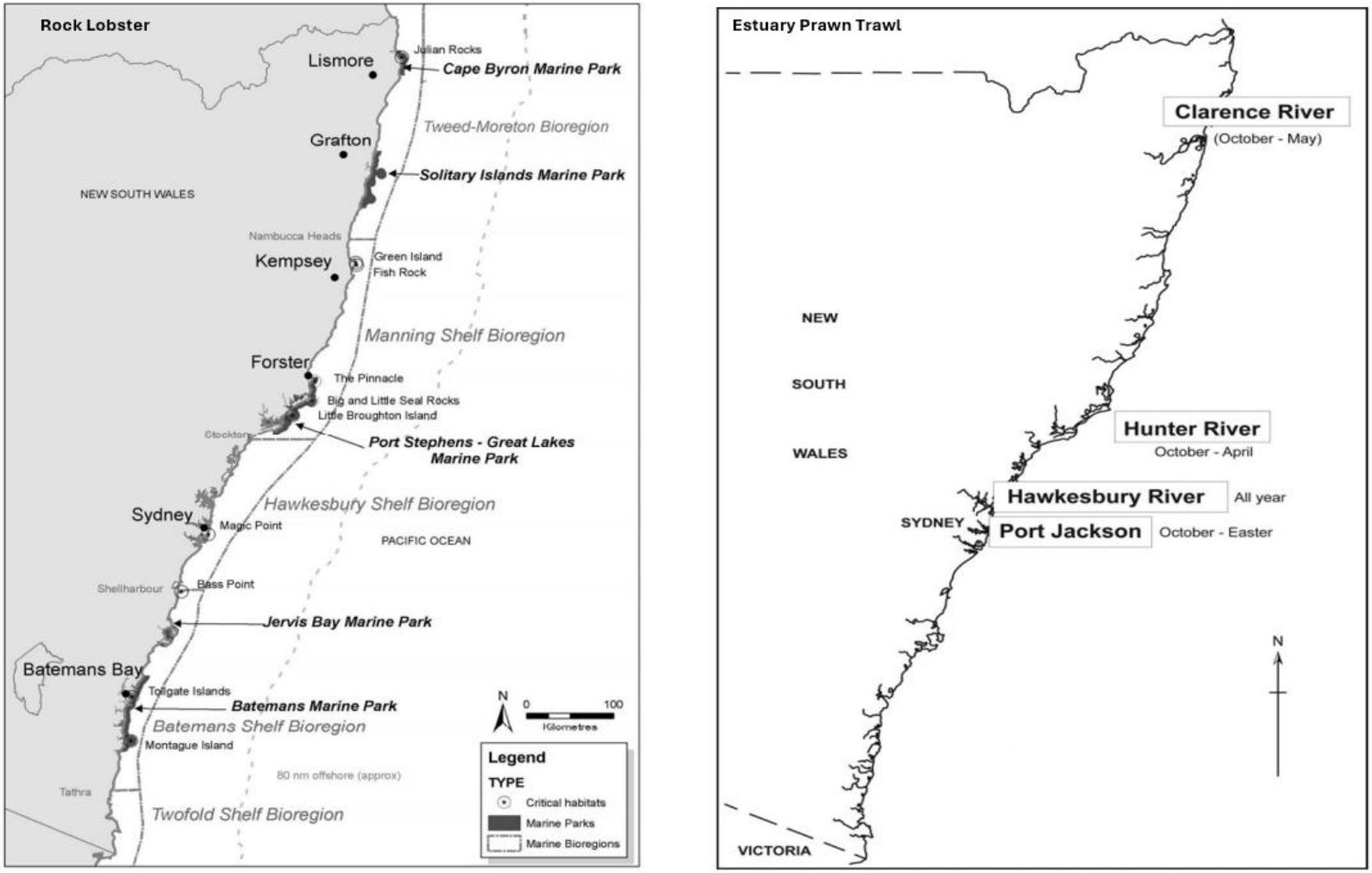


Figure 5-25: New South Wales Fisheries Management Areas: Rock Lobster Fishery and Estuary Prawn Trawl Fishery (Source: DPI NSW, 2025) _

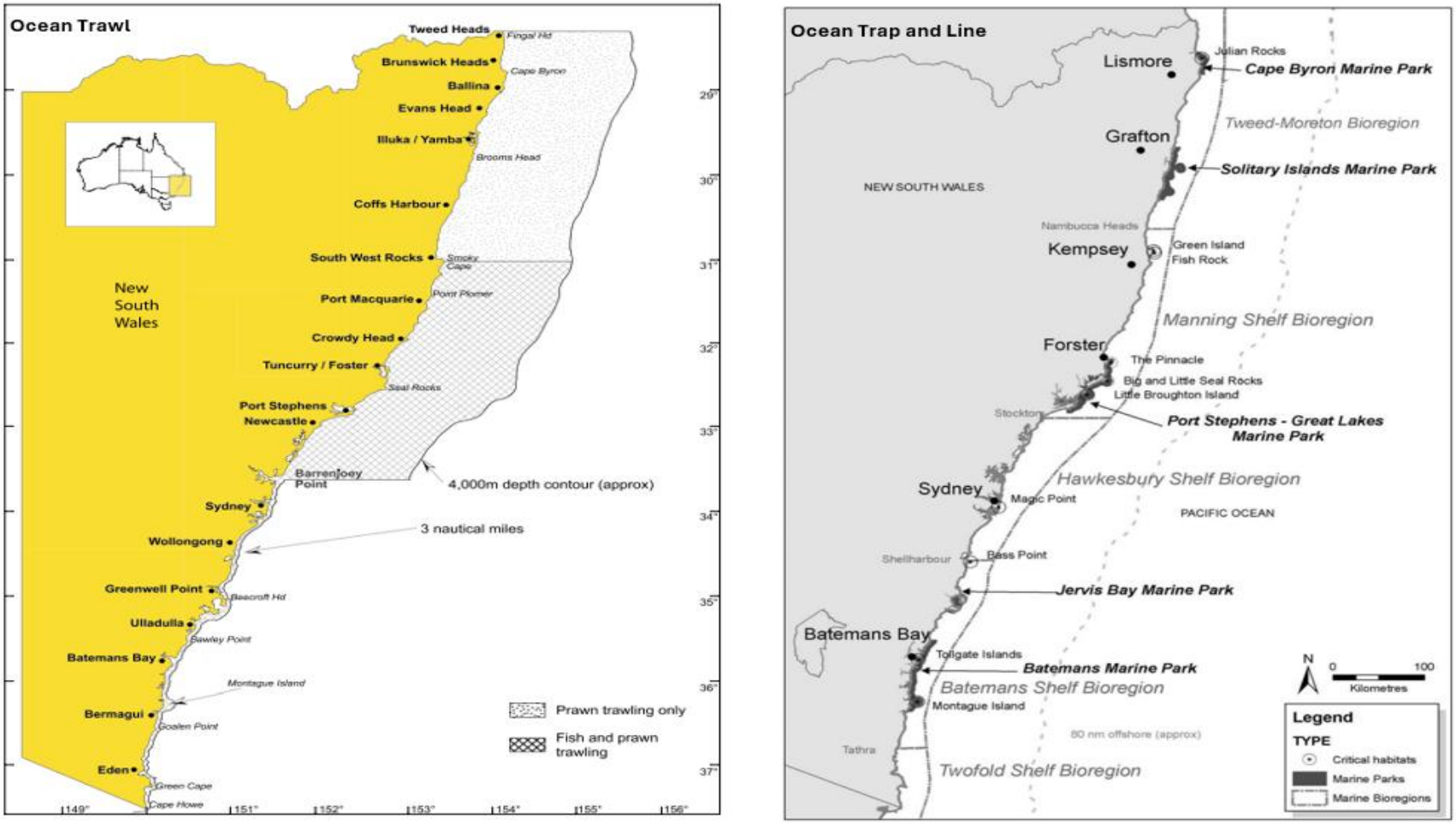


Figure 5-26: New South Wales Commercial Fisheries Management Areas: Ocean Trawl Fishery and Ocean Trap and Line Fishery (Source: DPI NSW, 2025)

5.1.2.5 Queensland State Managed Commercial Fisheries

Table 5-6: Queensland State managed Commercial Fisheries within the Environmental Sectors (Queensland Government 2025)

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Crab Fisheries	There are three fisheries (mud crab, blue swimmer crab, and spanner crab) that operated within the Queensland Crab Fishery (Figure 5-27). The fishery operates throughout the state's coastal waters, including the Gulf of Carpentaria, except for areas that are closed to fishing in general or to crabbing in particular. Fishing methods include wire-mesh or trawl-mesh crab pots, and dillies.	Yes	• Mud Crab • Blue Swimmer Crab • Spanner Crab							✓		
Eel Fisheries	The commercial eel fishery has two components: adults and juveniles. A commercial harvest fishery licence authorises fishers for both the adult and juvenile components. Commercial capture/harvest of adult eels is only permitted using baited eel traps or round traps.	Yes	• Long-finned eel (*Anguilla reinhardtii)* • Short-finned eel (*Anguilla australis*).							✓		
Harvest Fisheries	The Harvest Fishery includes the following individually managed	Yes	Sea Cucumber:							✓		

Fishery	Area/Description	Extends info Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	fisheries: sea cucumber, marine aquarium fish, coral, trochus, tropical rock lobster, and minor harvest. These fisheries are characterised by their harvesting method, which is primarily by hand or by using hand-held implements. Commercial harvesting methods often involve the use of underwater breathing apparatus, such as scuba or hookah. On a smaller scale, commercial harvest fisheries exist in Queensland for: • beachworms, bloodworms and yabbies (i.e. the 'bait fisheries') • shells, shell grit and star sand • pearl shells • wild-caught oysters.		• Blackfish (*Actinopyga palauensis*) • Burrowing Blackfish (*Actinopyga spinea*) • Sandfish (*Holothuria scabra*) • White Teatfish (*Holothuria fuscogilva*) • Prickly Redfish (*Thelenota ananas*) Marine Aquarium: • Damselfish (*family Pomacentridae*) • Butterflyfish and Bannerfish (family *Chaetodontidae*) • Angelfish (family *Pomacanthidae*) • Wrasses (family *Labridae*) • Surgeonfish (family *Acanthuridae*) • Gobies (family *Gobiidae*) Coral:									

Fishery	Area/Description	Extends info Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			• Live corals, such as *Euphyllidae, Zoanthida, Corallimorpharia* and *Fungidae* families • Sea Anemones • Oornamental (non-living) corals, such as *Acroporidae* and *Pocilloporidae* families • Live rock (dead coral skeletons with algae and other organisms living on them) • Coral rubble (coarsely broken up coral fragments) • Coral sand (finely ground-up particles of coral skeleton) Trochus: • Giant Top Shell (*Trochus niloticus*) Tropical Rock Lobster: • Tropical Spiny Rock Lobster (*Panulirus ornatus*)									

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			Minor Harvest: • Bait fisheries, such as beachworms, bloodworms and yabbies • Marine specimen shells • Pearl shells • Wild-caught oysters									
Line Fisheries	Line fishing is one of Queensland's main forms of commercial fishing, producing approximately 2200 t of product, valued at about $34.5 million a year. There are five-line fisheries: • Coral Reef Fin Fish Fishery • Rocky Reef Fin Fish Fishery • Pelagic Fishery • Gulf of Carpentaria Fin Fish Fishery • Deepwater Multiple-Hook Fishery. The line fisheries operate in specified tidal waters out to the Queensland OCS boundary. All five fisheries use fishing lines, with a restriction on the number of	Yes	Primary catch: • Coral Trout • Spanish Mackerel • Red-throat Emperor Other catch: • Snapper • Jobfish • Red Emperor • Nannygai • Trevally • Spotted Mackerel							✓		

Fishery	Area/Description	Extends into Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	lines and hooks that can be used. Boats used range from fleets with sophisticated equipment to small dinghies.											
Net Fisheries	Net fishing is one of Queensland's main forms of commercial fishing, producing approximately 6670 t of product valued at about $31.9 million each year. There are two commercial net fisheries: • Gulf of Carpentaria Inshore Fin Fish Fishery • East Coast Inshore Fin Fish Fishery The net fisheries are multi-species fisheries, with fishers targeting different species at different times of the year. The net fisheries operate along the entire Queensland coastline as far out as the Queensland OCS boundary.	Yes	East Coast Inshore Fin Fish Fishery (southern): • Mullet • Tailor • Whiting • Flathead • Bream • Mulloway • School Mackerel							✓		
Trawl Fishery	The trawl fishery is Queensland's largest commercial fisheries, producing up to 7800 t of product	Yes	Primary catch: • Prawns (Tiger Prawn, Endeavour Prawn, Red Spot King Prawn, Banana							✓		

Fishery	Area/Description	Extends info Commonwealth Waters	• Target Species	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	worth about $99 million each year. It has four main trawl fisheries: • East Coast Otter Trawl Fishery • Moreton Bay Otter Trawl Fishery • River and Inshore Beam Trawl Fishery • Fin Fish (Stout Whiting) Trawl Fishery. The trawl fisheries cover all tidal waters out to the Queensland East Coast OCS boundary between Cape York and the New South Wales border.		Prawn, Eastern King Prawn, Bay Prawn) • Scallops • Whiting • Moreton Bay Bugs • Squid (Pencil Squid, Tiger Squid, Arrow Squid) Other catch: • Blue Swimmer Crabs • Barking Crayfish • Cuttlefish • Mantis Shrimp • Octopuses • Pinkies • Pipefish • Red Spot Crabs • Balmain Bugs									

✓*Management area overlapping Environmental Sector*
f Fishing effort recorded with 2016 -2023 reporting period

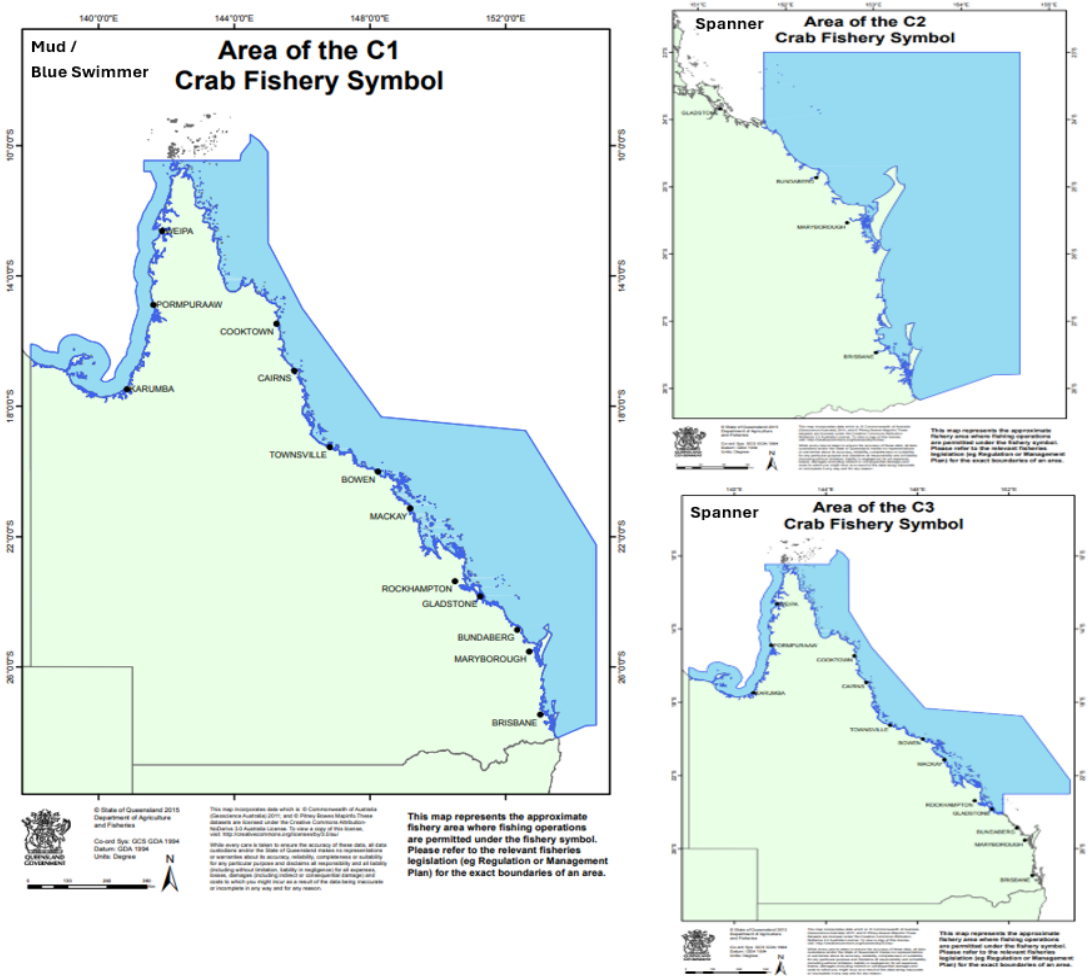


Figure 5-27: Queensland Commercial Fisheries Management Areas: Mud Crab and Blue Swimmer (C1), and Spanner Crab (C2 and C3) Fisheries (Source: Queensland Government, 2025) Commercial Aquaculture

The Sydney rock oyster (*Saccostrea glomerata*) is the principal species cultivated in New South Wales commercial aquaculture (NSW DPI, 2024). Commercial production spans 41 estuaries, with the primary production hubs ranging from Wonboyn River Estuary in the south to the Tweed River in the north, with Port Stephens and Wallis Lake serving as the main producing areas (NSW DPI, 2023).

Production in NSW is largely reliant on natural spatfall. Fertilisation occurs in the water column with the spat (larvae) settling on plastic slats for collection. They are transferred to baskets or trays to grow further. Oysters reach market maturity in approximately 3.5 years (NSW DPI, 2024).

Marine aquaculture in South Australia uses methods including sea-cages, rack and rail, longline and benthic structures. The major species farmed include abalone, seaweed, mussels, Pacific oysters Southern bluefin tuna and Yellowtail kingfish (Department of Primary Industries and Regions South Australia, 2025).

Shellfish cultured in Victoria include blue mussel and abalone that are cultured via longline submerged below the surface of the water to avoid wave action (VFA, 2021a). In Victoria, the Victorian Shellfish Hatchery entered into a commercial agreement to run on a commercial basis in 2012. This diversified from mussel spat to also successfully produce commercial runs of angasi oyster, commercial scallops and Sydney rock oysters (VFA, 2021b). A three- year trial for Sydney rock oyster culture has been proposed in the Gippsland Lakes system through a partnership between the Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC) and the VFA (VFA, 2021c). Currently, in 2025, 27 sites were made available for tender, for marine aquaculture in Port Philip Bay for the production of shellfish and other species (VFA, 2025). Licences enabling seaweed aquaculture are not currently available in Victoria, however seaweed aquaculture is being trialled at a small number of existing crown lease areas in Victoria's marine aquaculture reserves (VFA, 2024).

In Queensland, Sydney rock oysters are farmed south of Hervey Bay, with the majority of leases located in Moreton Bay.

QX oyster disease caused by the microscopic parasite *Marteilia Sydneyi* is present from southern Queensland to southern New South Wales (Queensland Government, 2025).

5.2 Recreational Fisheries

Recreational fishing in Australia is a multi-billion-dollar industry and includes rock, beach, boat and estuary fishing, using rod and line. Game fishing can include additional equipment such as fighting belts, gimbals and outriggers (Game Fishing Association Australia, 2025a). Most recreational fishing typically occurs in nearshore coastal waters (DAFF, 2024) (shore or inshore vessels) within bays and estuaries, with some recreational game fishing occurring in offshore deep drop locations (VRFish, pers. Comms (ECSP OPP). 20/01/2025. Between 2018-2019 3.81 million fishing events occurred within Victoria. It was found that Victorian fishers were less likely to fish in ocean areas than other states (75.3% compared to 85.0%) and that Victorian fishers are more likely to go fishing in freshwater than other states, with 80.6% of Victorian fishers reporting they went fishing in a freshwater location in the last year (Moore et al., 2023). Charter fishing operations were confirmed to occur in the Environmental Sectors including the Otway Environmental Sector from Port Campbell, Apollo Bay and Warrnambool by Victorian Recreational Fishing Peak Body during ongoing engagement. Game fishing occurs across the Otway Environmental Sectors from Port MacDonnell to Portland and to Narooma in the Gippsland Environmental Sector (Game Fishing Association Australia, 2025b). The variation in recreational fishing intensity along the coast is illustrated in Figure 5-28. Common recreational fish species include tiger flathead, bream, snapper, Australian salmon, and lobster; and offshore catches can include mackerel, tuna, groper and shark.

A total of 15,287 recreational fishing trips were recorded from surveyed Victorian ramps in 2018 – 2019 (IMAS, 2020). Southern bluefin tuna were targeted for 26% of these trips. Portland accounted for 82% of the southern bluefin tuna harvest. Five larger southern bluefin tuna were caught from Port Campbell during this period (IMAS, 2020).

Deep dropline fishing uses electric winches and heavy-duty rods which occurs within deeper waters e.g. over 250m. Target species (AFMA, 2025) within this industry include:

- blue-eye trevalla
- pink ling
- ribaldo
- ocean perch.

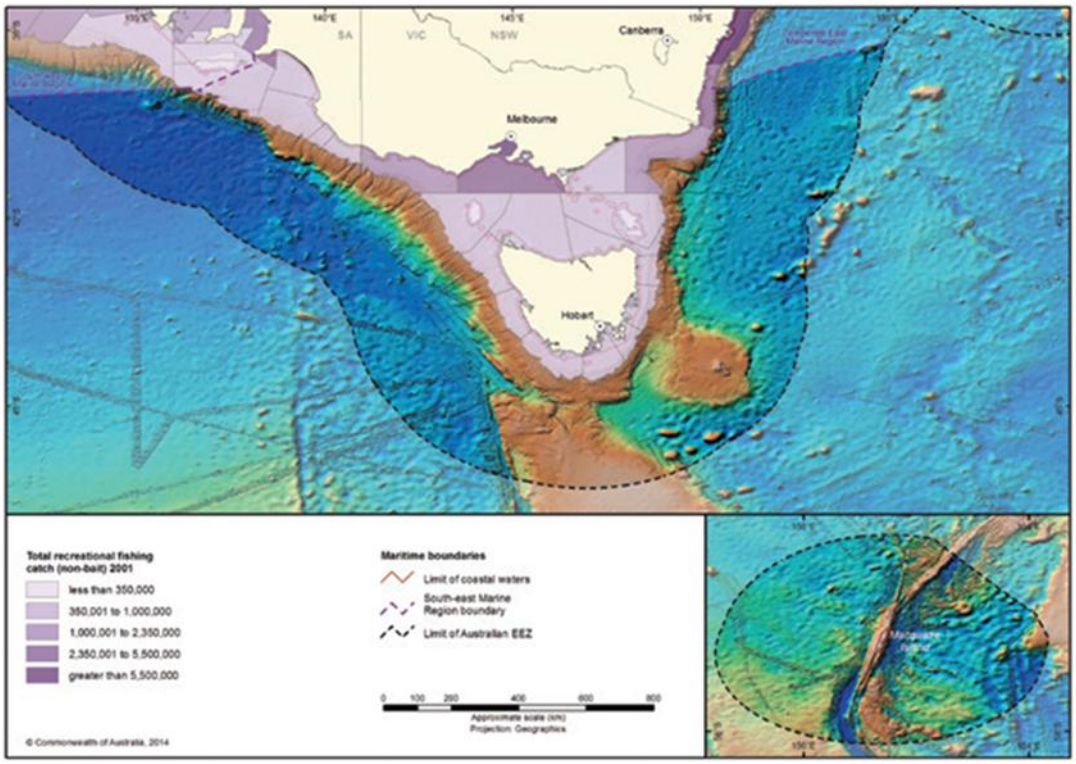


Figure 5-28: Recreational Fishing Catch in South-Eastern Marine Region (Source: DoE, 2015a)

5.3 Coastal Settlements

Australians have a strong affinity to the coast, with over 80% of the population living within 50 km of the coast (Hugo et al., 2013). Some of the Australia's most populated places occur on the coast within the Environmental Sectors. Based on the top ten highest population places in each state, the 22 places listed in Table 5-7 occur along the coast of the Environmental Sectors.

The communities of Orbost, Newmerella and Marlo (within the Shire of East Gippsland) are the closest coastal settlements to Amplitude Energy's BMG and Gippsland assets. At the 2021 Australian census, the estimated resident population for East Gippsland was 48,715 (an increase from 42,926 in 2011) (ABS, 2021). The Shire of East Gippsland has an aging population (.id Consulting, 2017).

Port Campbell is the nearest town to Amplitude Energy's Casino assets. At the 2021 Australian census, the estimated resident population for Port Campbell was 440 persons, with a population estimate of 4,008 person for the Otway region (ABS, 2021). Other coastal communities along the Otway coast include Apollo Bay, Princetown, Peterborough, Warrnambool, Port Fairy and Portland; all provide services to the commercial and recreational fishing industries in southwest Victoria. Portland is Victoria's western-most commercial port and is a deep-water port with breakwaters sheltering a marina and boat ramp. The Port of Warrnambool has a breakwater and yacht club and provides shelter for commercial fishing boats. Port Fairy has both harbour and fish processing facilities, but is not suitable for use by large vessels, nor is Port Campbell.

Table 5-7: Highest Populated Coastal Interfacing Places within the Environmental Sectors (Digital Atlas of Australia, 2025) [1]

	Otway	**Bass Strait**	**Gippsland**	**Sorell**[2]	**SE Tasmania**	**Central NSW**	**SE Queensland**	**Lord Howe**[2]	**Norfolk Island**[2]
Victoria	• Warrnambool	• Melbourne • Geelong							
Tasmania		• Launceston • Devonport • Burnie • Ulverstone			• Hobart				
New South Wales						• Sydney • Newcastle • Central Coast • Wollongong • Gold Coast (Tweed Heads) • Port Macquarie • Coffs Harbour			
Queensland							• Brisbane • Gold Coast- • Sunshine Coast • Bundaberg • Hervey Bay		

Note: 1. All the top ten highest population places in South Australia, are either located to the east of the 'Otway' Environmental Sector, or inland (e.g. Mount Gambier)

5.4 Recreation and Tourism

The coast and marine region within the Environmental Sectors provide a diverse range of recreation and tourism opportunities, including scuba diving, charter boat cruises, cruise shipping, whale and wildlife watching, sailing, snorkelling, surfing, and kayaking. Popular tourist destinations adjacent include Phillip Island, the Great Ocean Road (Victoria); Strahan and the Freycinet Peninsula (Tasmania); Merimbula, Bermagui (New South Wales); and Gold and Sunshine Coasts, and Fraser Island (Queensland). Norfolk Island is a popular tourist destination known for its history and culture, beaches and National Park.

In 2023-24 tourism in Victoria was estimated to be worth $36 billion to the economy in Gross State Product and generated approximately 288,800 jobs (Tourism Research Australia, 2025). The latest data from Tourism Research Australia shows that total tourism expenditure in Victoria was $40 billion in the year ending December 2024. Tourism Gross State Product grew by 13% in 2023–24, which outpaced Victoria's overall growth in GSP of 6%, highlighting the significant role of tourism in supporting the state's economic progress.

The Great Ocean Road region, which stretches the western outskirts of Geelong to the South Australian border Figure 5-29, is characterised for its tourist attractions, including the National Heritage listed Great Ocean Road. 2023-24 regional tourism satellite account results show a total contribution of $1.5 billion gross regional product from the Great Ocean Road region (Tourism Research Australia, 2024).

The Gippsland region, which stretches from Melbourne's eastern outskirts all the way to the state border with NSW (Figure 5 21), is characterised for its tourist attractions. Coastal assets include the Gippsland lakes, Wilsons Promontory National Park, Phillip Island and Croajingolong National Park (Aither, 2019). In 2023 – 2024 the tourism sector contributed 4.7% to the Gross Value Add of regional economy, with $1.2 billion total tourism consumption (Tourism Research Australia, 2024).

Figure 5-29: Victoria's Tourism Regions (Source: Tourism Victoria, 2017)

5.5 Industry

5.5.1 Shipping

The south-east and eastern coasts are some of Australia's busiest in terms of shipping activity and volumes (Figure 5-30; AMSA, 2024). This traffic includes international and coastal cargo trade, and passenger and ferry services. Major ports include Melbourne, Geelong, Western Port, Sydney and Brisbane, with other minor ports important to commercial and recreational fishing, yachts and other pleasure craft.

Amplitude Energy's assets do not coincide with major routes; with higher volumes of traffic located to the south of the wells within the Petroleum Titles VIC/L24, VIC/L32 and VIC/RL13 (Figure 5-31). A shipping exclusion zone ('area to be avoided') also exists around the operating oil and gas platforms in the Gippsland Basin, whereby unauthorised vessels larger than 200 gross tonnes are excluded from entry (Figure 5-32). Two traffic separation schemes have been implemented to enhance safety of navigation around the 'Area to be Avoided' by separating shipping into one-direction lanes for vessels heading north eastwards and those heading south westwards. One separation area is located south of Wilson's Promontory, and the other south of the Kingfisher B platform (Figure 5-32).

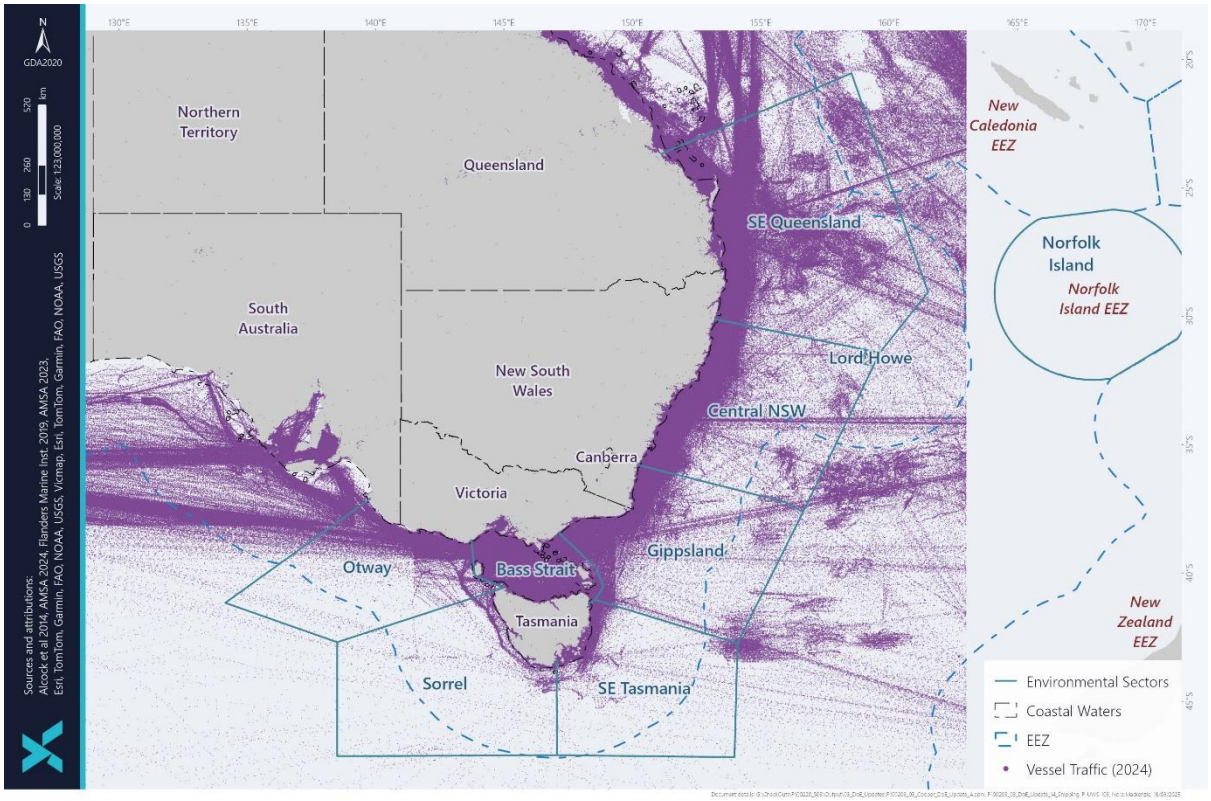


Figure 5-30: Vessel Traffic within the Environmental Sectors for 2024 (Source: AMSA, 2024)

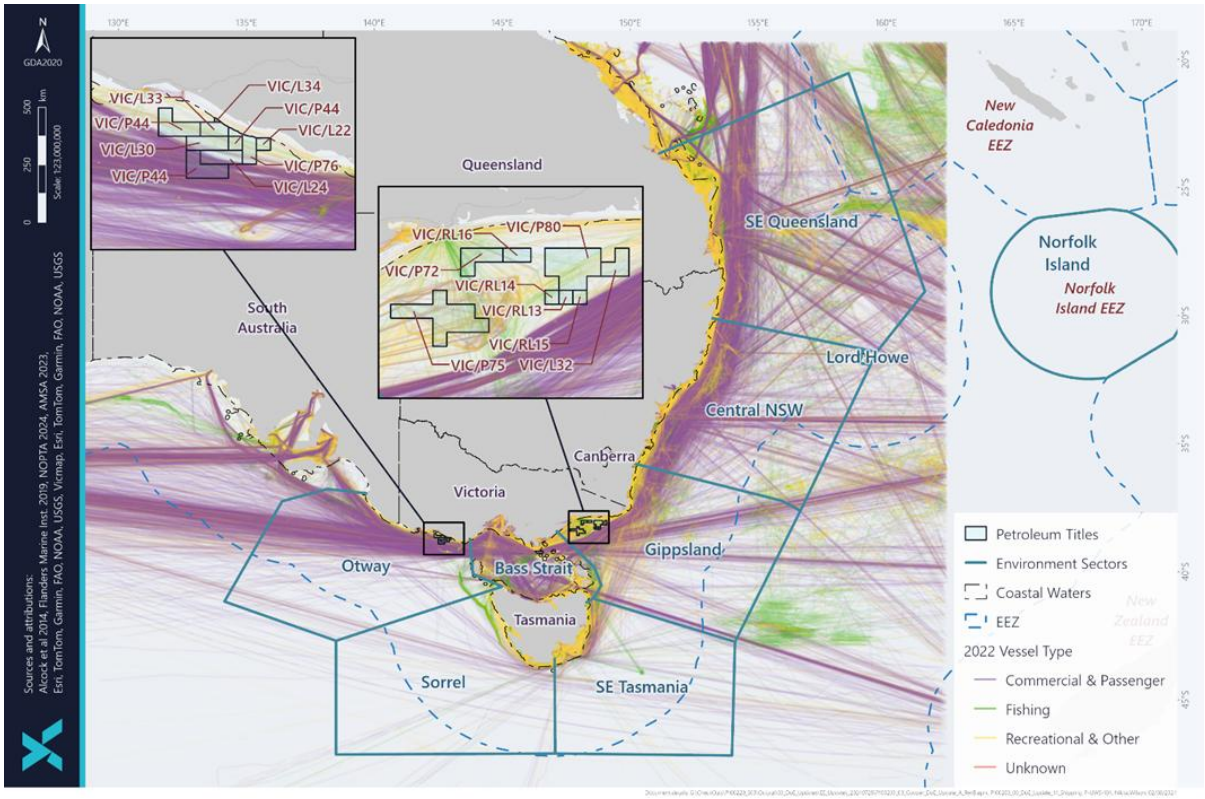


Figure 5-31: Vessel Type in the Vicinity of Petroleum Titles

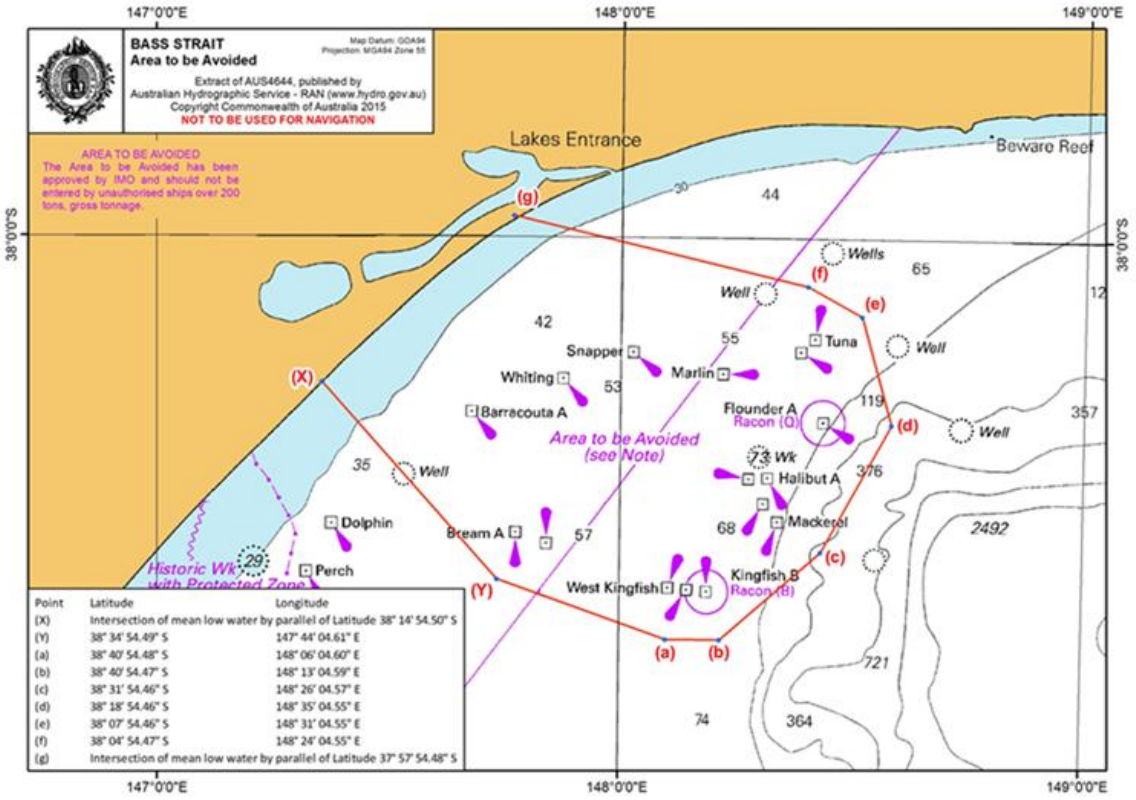


Figure 5-32: Shipping Exclusion Zones (Area to be Avoided) (Source: ABF, 2017)

5.5.2 Oil and Gas Exploration and Production

In 2021-22, oil comprised ~ 36% of all energy consumed in Australia whilst natural gas accounted for 27% of primary energy sources (APPEA, 2023). Renewables increased from 7% in 2019-20 to 8% of primary energy consumption in 2021-22 (APPEA, 2023). In 2021–22, Australia recorded a A$40 billion surplus in the trade of oil and gas — up substantially from the previous year's surplus of $15.9 billion in 2020–21 (APPEA, 2023). Liquefied natural gas (LNG) exports (primarily from northern WA and Queensland) continue to make a significant contribution to Australia's economy).

Victoria's petroleum (oil and gas) exploration and production within the Environmental Sectors is concentrated in the offshore Commonwealth waters of the Otway and Gippsland basins. There are a number of current offshore petroleum titles within both basins (Figure 5-33).

Production from offshore Victoria has been a fundamental in supplying energy to homes and industry in Australia's southern and eastern population centres for over 50 years. From 1967–2015, the Gippsland Basin Joint Venture alone produced 54% of Australia's crude oil and gas (DIIS, 2017). Petroleum infrastructure in Gippsland Basin is well developed, with a network of pipelines transporting hydrocarbons produced offshore to onshore petroleum processing facilities. Several petroleum wells and oil and gas pipelines are located within the Otway, Gippsland and Bass Strait Environmental Sectors (Figure 5-34). Overall production of crude oil and condensate from the Gippsland Basin had been declining for over three decades, while gas production remained steady. In recent years, hydrocarbon production has remained relatively strong due to infill drilling in the developed fields and work-overs undertaken to renew down hole equipment and to open new zones (DIIS, 2017). Total petroleum production from the Gippsland Basin was 74.8 MMboe (11.9 GL) in 2016, up from 61.4 MMboe (9.76 GL) in 2015 (DIIS, 2017).

The Otway Basin is a northwest-trending passive margin rift basin that extends from southeast of South Australia to a boundary with the contiguous Sorell Basin to the west of King Island. The Otway Basin is an established gas producing region; however, most discoveries are confined to the onshore and shallow water inboard parts of the basin. Current offshore production in the Otway Basin includes the Thylacine, Geographe, Casino, Henry and Netherby fields (Figure 5-34). The Minerva gas field, adjacent Casino, ceased production in 2019 and is in the process of being decommissioned. No production is currently occurring in the Torquay or deep-water sub-basins (DIIS, 2017). Over the past few decades, numerous exploration and development wells have been drilled, and seismic surveys have been undertaken in the Otway Basin. The most recent being the Beach Energy Artisan-1 exploration well (Vic/P43) in 2021 and Schlumberger Otway Basin 2D Marine Seismic Survey in 2020.

At the time of writing, the following EPs are under development or assessment, and which propose to undertake activities in the Otway Region in the next 5-years:

- Otway Basin 3D Multi-client Marine Seismic Survey
- Regia MSS
- Beach Energy Otway Drilling Campaign
- Woodside Energy Minerva Facility Decommissioning
- Conoco Phillips Exploration Drilling.

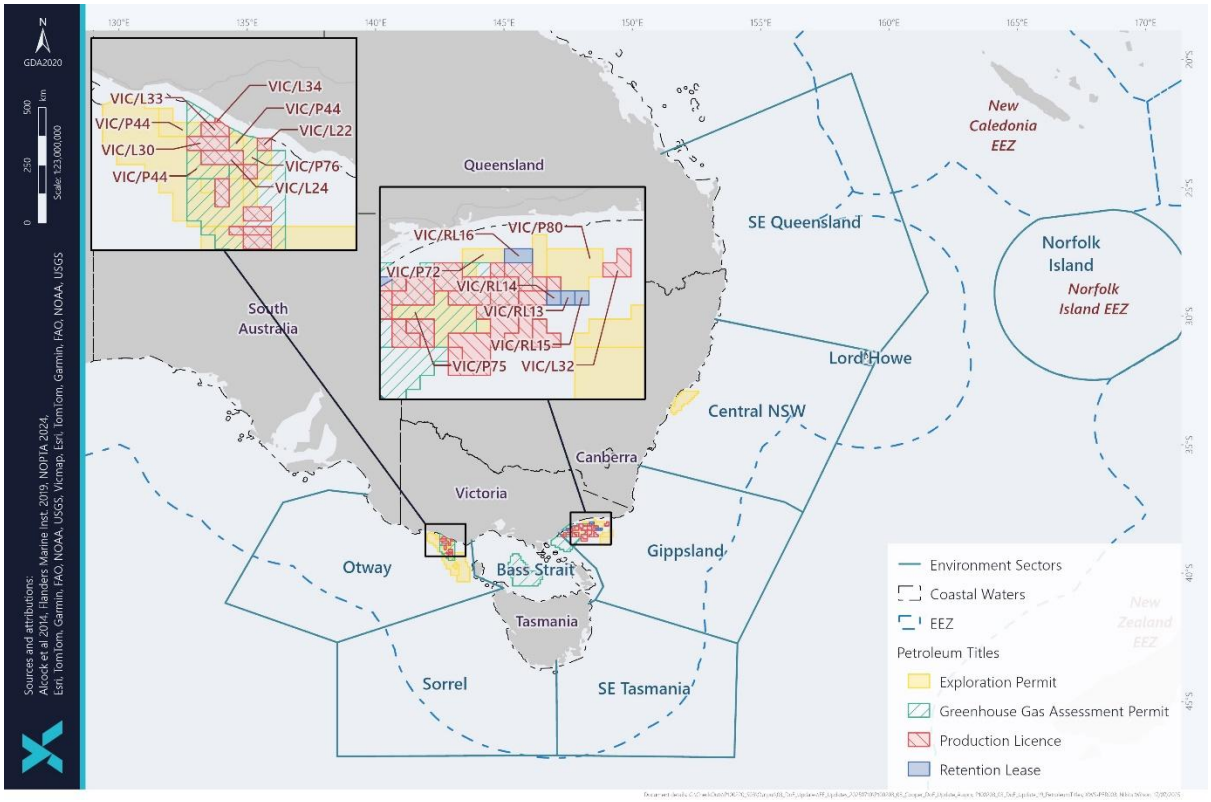


Figure 5-33: Gippsland Basin Oil and Gas Petroleum Titles

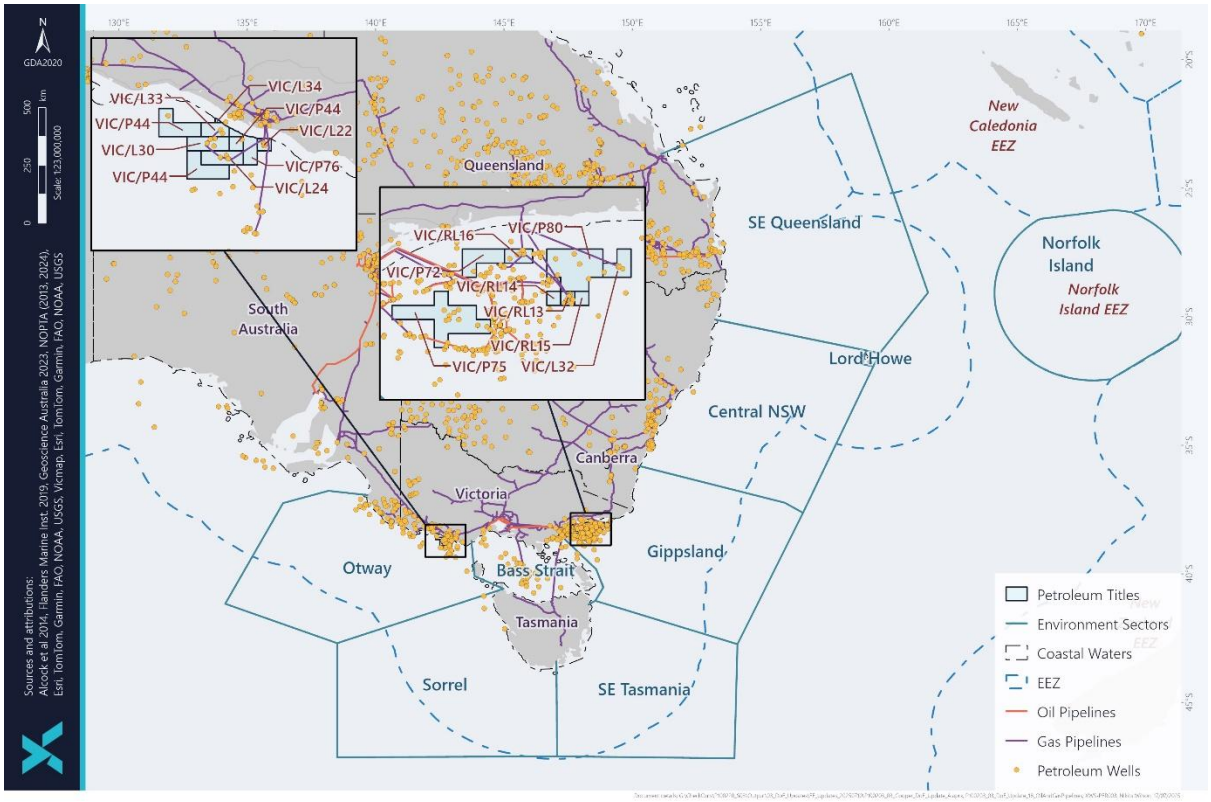


Figure 5-34: Gippsland Basin Oil and Gas Pipelines and Petroleum Wells

5.5.3 Renewable Energy

Energy transition has been rapidly growing in Australia. Several offshore wind areas are declared or waiting to be declared to support the energy transition. Offshore wind farm areas can only be built in areas approved by the Australian Government. Six offshore wind areas have been declared as suitable for offshore wind energy as of July 2025. These are:

- Southern Ocean Victoria
- Gippsland Victoria
- Hunter NSW
- Illawarra NSW
- Bass Strait Tasmania
- Indian Ocean off Bunbury, Western Australia.

One offshore wind farm (OWF), Spinifex OWF, was awarded a feasibility licence in March 2025 and is now in the pre-planning phase of development in the Otway.

The area of the Bass Strait off Gippsland was the first offshore wind zone declared. This spans approximately 15,000 km^2 in Australian waters, running from Lakes Entrance in the east to south of Wilsons Promontory in the west. Within the Otway region the Southern Ocean area was declared between Portland and Warrnambool and covers an area of 1,030 km^2. The Southern Ocean declared area overlaps with Amplitude Energy titles VIC/P44 and VIC/L30. The Australian Government granted a feasibility licence in March 2025 to the Spinifex Offshore Wind Farm which is located within the Southern Ocean declared area.

There are 11 active feasibility licences for offshore wind projects off Gippsland's coast in Victoria (DCCEEW, 2025d). The licence holders are:

- High Sea Wind Pty Ltd
- Gippsland Skies Pty Ltd
- Blue Mackerel North Pty Ltd
- Kut-Wut Brataualung Pty Ltd
- Ørsted Offshore Australia 1 Pty Ltd (Gippsland 01)
- Star of the South Wind Farm Pty Ltd (SOTS)
- Iberdrola Australia OW 2 Pty Ltd (Aurora Green)
- Navigator North Project Pty Ltd
- Ørsted Offshore Australia 1 Pty Ltd (Gippsland 02)
- Kent Offshore Wind Pty Ltd
- Great Eastern Offshore Wind Farm Project Co Pty Ltd.

Offshore wind areas within the Environmental Sectors are shown in Figure 5-35.

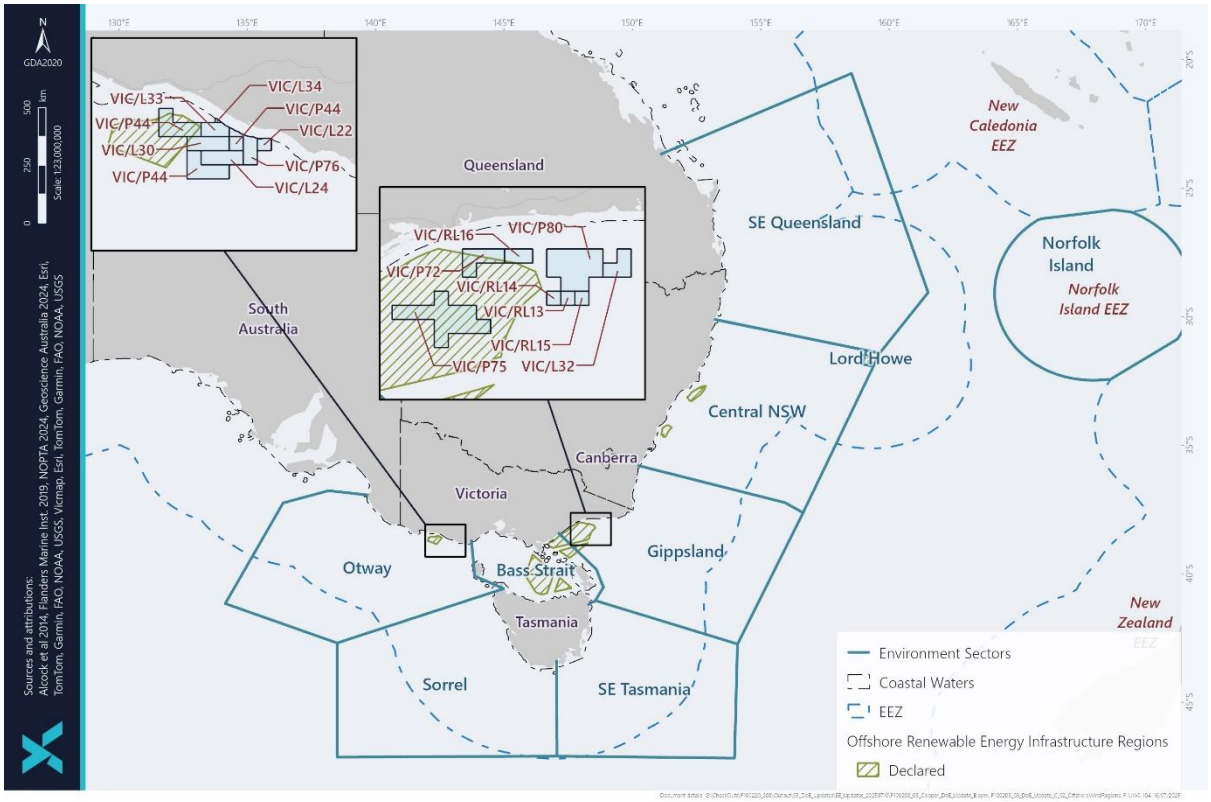


Figure 5-35: Offshore Wind Farm Declared Areas

5.5.4 Subsea Cables and Pipelines

Submarine cables are underwater infrastructure linking to other zones of Australia or with other countries; the submarine communications cables carry the bulk of Australia's international voice and data traffic. Several submarine cables were identified within the Environmental Sectors, including (but not limited to):

- Bass Strait: two operational submarine transmission lines (both Telstra fibre optic cables).
- Basslink: a subsea interconnector, completed in 2006 which joins the Tasmanian and national electricity grid.
- Indigo Central: a subsea interconnector, completed in 2019 offering direct, low latency connectivity from Sydney to Perth.
- The East Coast cable and Hawaiki Nui have a landing in Melbourne and are expected to be installed by 2024 and 2025, respectively.
  - The East Coast Cable will connect two existing cable systems (the North West Cable System and the Australia-Singapore Cable). The East Coast Cable will connect two existing cable systems (the North West Cable System and the Australia-Singapore Cable).
  - Hawaiki Nui will connect Australia, New Zealand, American Samoa, Hawaii and the west coast of the United States. The Hawaiki Nui will connect Australia, New Zealand, American Samoa, Hawaii and the west coast of the United States.

Under the *Telecommunications and Other Legislation Amendment (Protection of Submarine Cables and Other Measures) Act 2005*, the Australian Communications and Media Authority (ACMA) can propose cable protection zones over these assets if they are considered to be of national significance (DEWHA, 2009b). Two protection zones have been declared in Sydney. The Northern Sydney Protection Zone which extends 74 km offshore from Narrabeen beach and to the depth of 2000 m, and the Southern Sydney Protection Zone which extends 55 km offshore from Tamarama and Clovelly beaches, and to the depth of 2000 m (ACMA, 2022). No protection zones have been declared within the Otway or Gippsland Environmental Sectors.

5.5.5 Defence

The Australian Defence Force conducts a range of training, research activities, and preparatory operations (Figure 5-36). Australian Defence Force activities within the Environmental Sectors include transit of naval vessels, training exercises, shipbuilding and repairs, hydrographic survey, surveillance and enforcement, demolition, use of explosives, use of radar, sonar, sonobuoys, flares, sensors and other equipment, and search and rescue. Major bases within the Environmental Sectors include:

- HMAS Cerberus in Western Port Bay, Melbourne (naval training)
- the multi-purpose wharf at Twofold Bay, Eden (naval operations)
- Fleet Base East in Sydney (Navy destroyers and support ships)
- HMAS Waterhen in Sydney (Navy minehunting vessels)
- Wollongong and Jervis Bay (Defence training).

Primary training locations within the Environmental Sectors include East Australia Exercise Area off the south coast of New South Wales, and the Royal Australian Air Force flying training areas and air-to-air ranges off the north coast of New South Wales (Figure 5-37).

Mine fields were laid in Australian waters during World War II. Post-war minefields were swept to remove mines and to make marine waters safe for maritime activities. There are three areas identified as dangerous due to unexploded ordnances, located south and east of Wilson's Promontory (Figure 5-35).

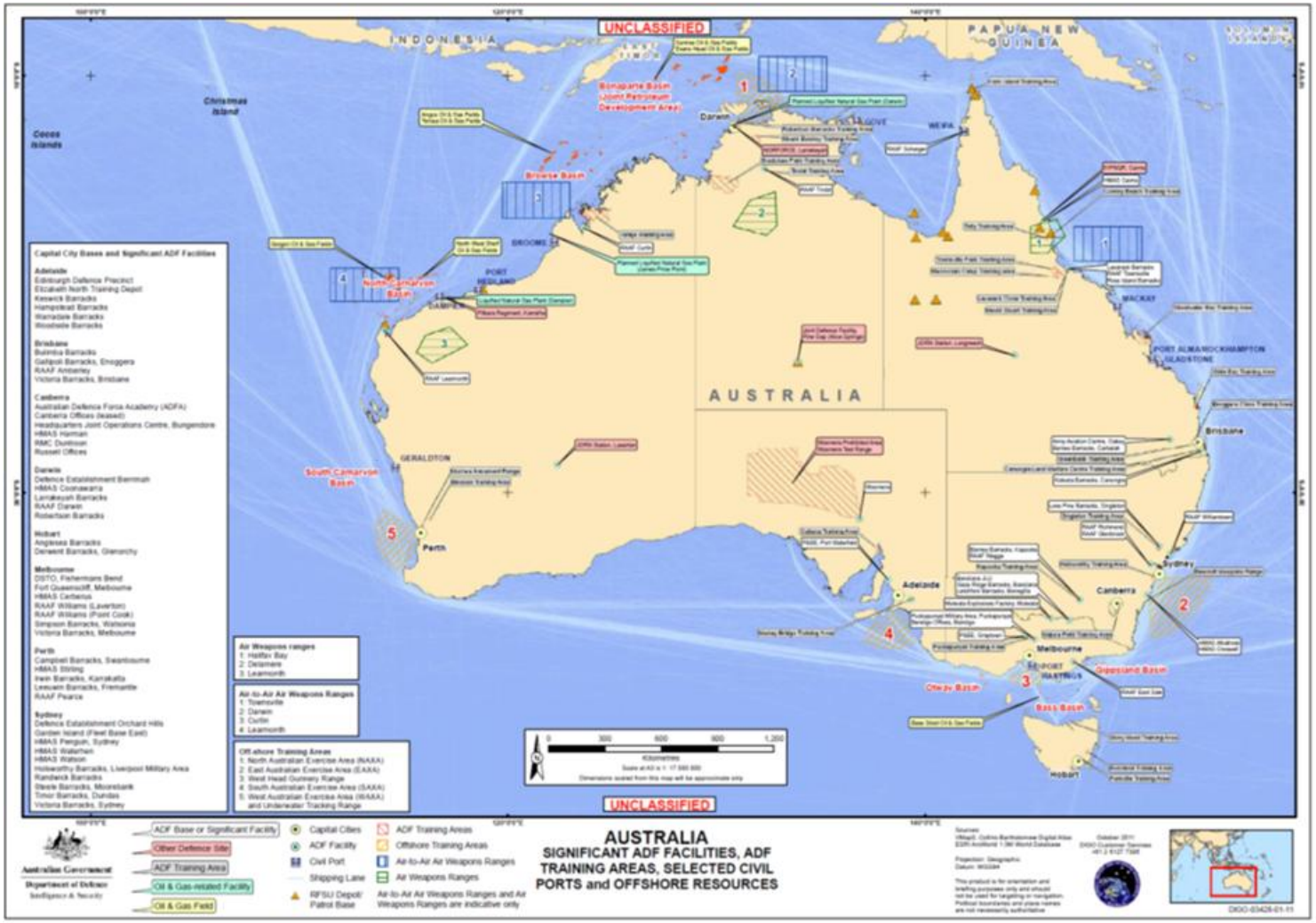


Figure 5-36: Significant Defence Bases and Facilities in Australia (Source: Department of Defence, 2014)

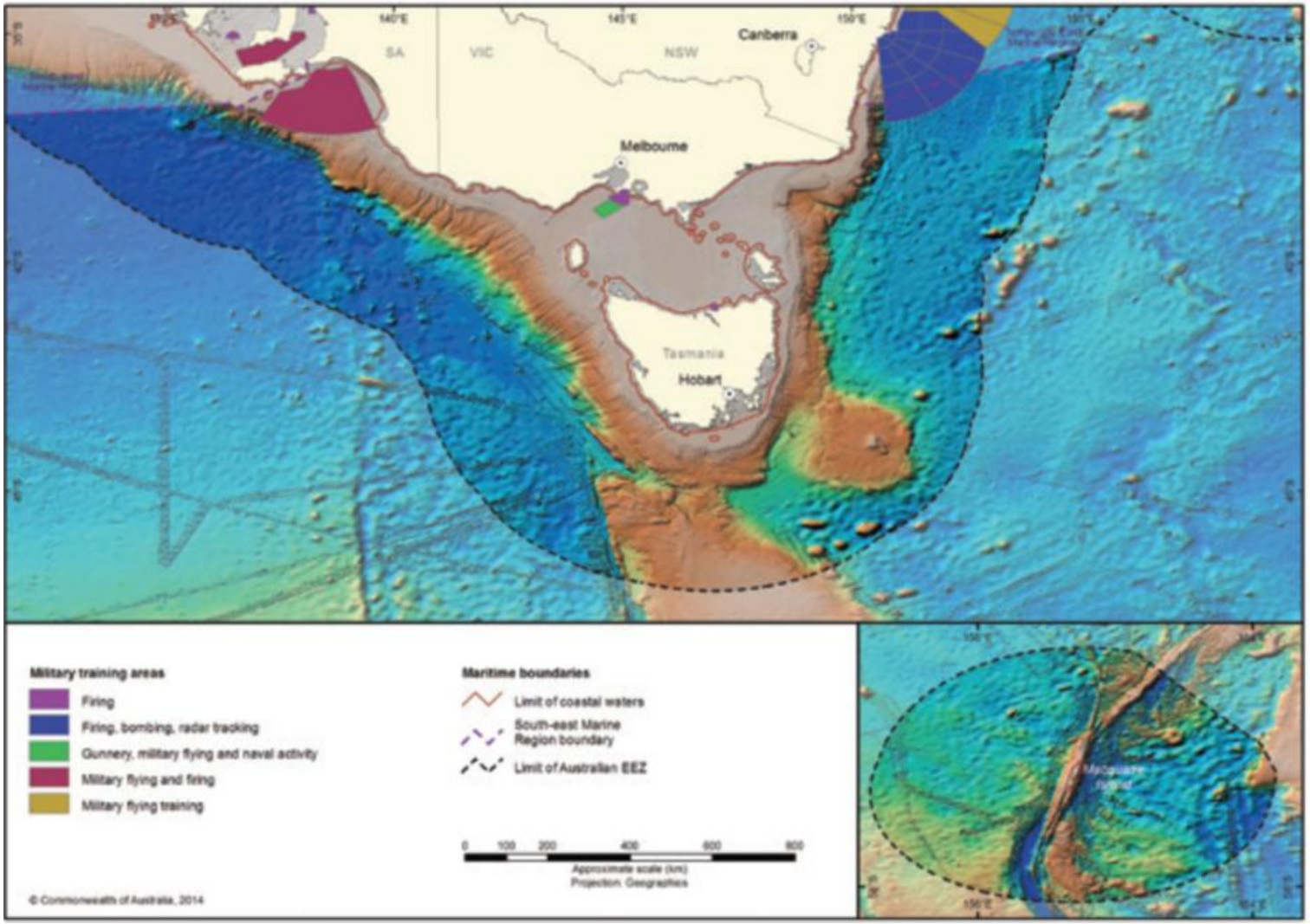


Figure 5-37: Significant Defence Bases and Facilities in Southern Australia (Source: Department of Defence, 2014)

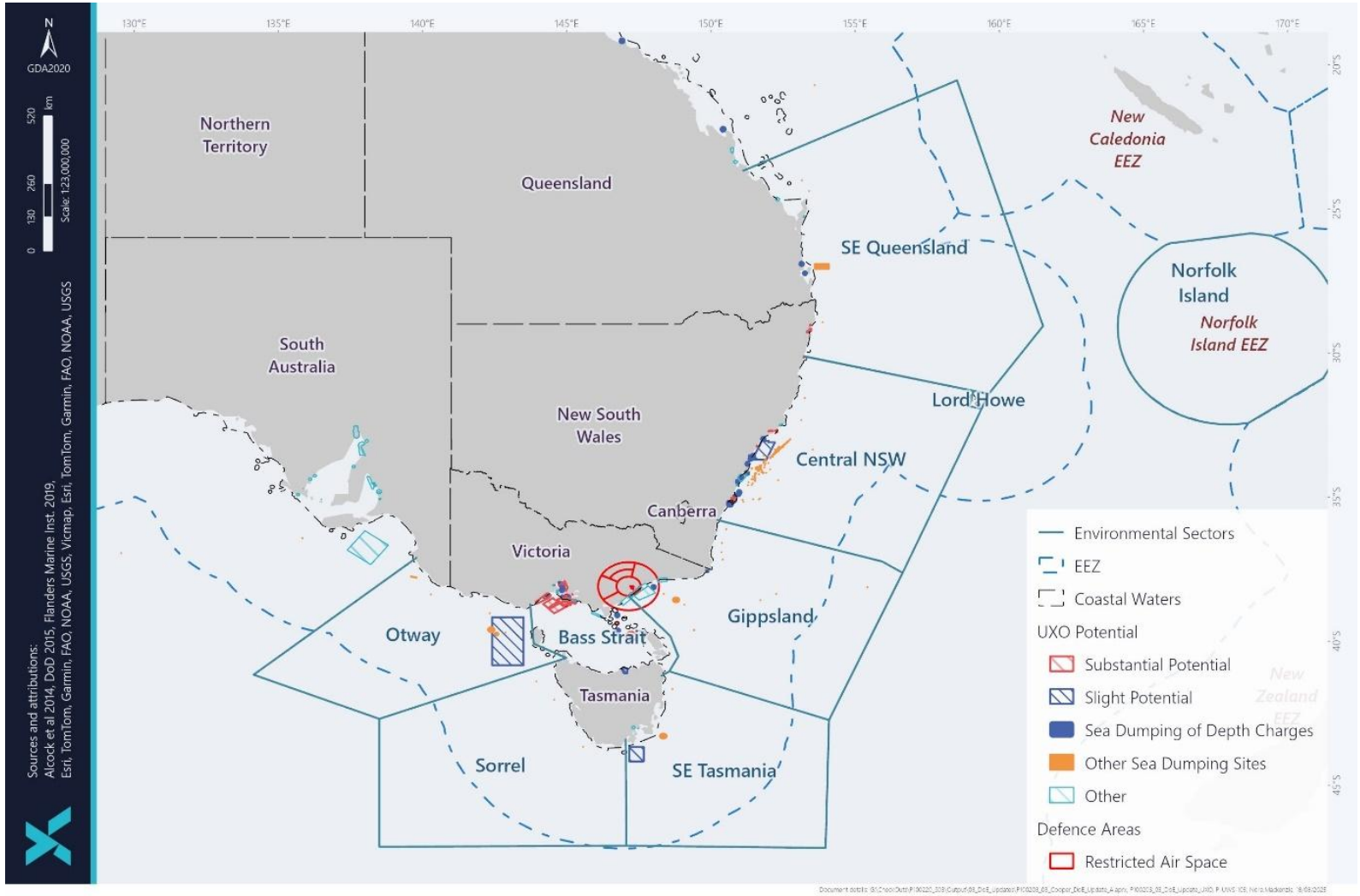


Figure 5-38: Department of Defence Activities and Potential UXO Located within the Environmental Sectors

5.6 Culture and Heritage

5.6.1 First Nations Cultural Heritage

First Nations people cultural heritage refers to the knowledge and lore, practices and people, objects and places that are valued, culturally meaningful and connected to identity and Country (Victorian Aboriginal Heritage Council, 2023).

To determine relevant First Nations cultural heritage that may be in proximity to Amplitude Energy activities, the following sub-sections provide details on:

- Knowledge and lore:
  - History of Sea Country (Section 5.6.1.1).
  - Modern First Nations coastal uses and interests (Section 5.6.1.2).
- Practices and people:
  - Relevant First Nations groups (Section 5.6.1.3 to 5.6.1.5).
  - Indigenous Land Use Agreements (Section 5.6.1.6).
  - Native Title (5.6.1.7).
  - Indigenous Protected Areas (Section 5.6.1.8).
- Objects and places that are valued, culturally meaningful and connected to identity and Country:
  - Values and sensitivities (Section 5.6.1.9)

5.6.1.1 History of Sea Country

Sea Country is not distinguishable from land-based Country to First Nations Peoples. It includes parts of open ocean, beaches, land and freshwater on the coast and encompasses all living things, beliefs, values, creation spirits and cultural obligations connected to an area (The University of Adelaide, 2023). Water is of particular cultural significance to First Nations Peoples as an integral part of songs, ceremonies, hunting and collecting, and other activities that bind people to their Country and each other, including fishing (Smyth, Egan, & Kennett, 2018) Amplitude Energy offshore activities overlap elements of sea country. These include the coast, open ocean and living things; these things are ecologically and spiritually connected to First Nations culture.

First Nations groups hold strong connections to the south-east marine region, as occupation of coastal areas dates back over at least 40,000 years (DoE, 2015a). The coastal area of south-east Australia was amongst the most densely populated regions of pre-colonial Australia; these areas provided an abundance of marine and other resources that were not available away from the coast and oceans (NOO, 2002). First Nations Peoples relationship with offshore waters was based on travel to islands in bark rafts and canoes, and the use and management of coastal species (e.g., migratory eels and bull kelp) that are part of ocean ecosystems far from the coast (NOO, 2002). During recent ice age periods (the last ending approximately 14,000 years ago), sea levels were significantly lower, and the coastline was a significant distance seaward of its present location, enabling occupation and travel across land that is now submerged.

Holdgate, et. al. (2003) indicates the offshore Gippsland area was subject to a maximum sea-level fall of ~120m below present and that there are preserved fluvial features created by the exposure of the marine shelf at the last glacial maximum. For a maximum retreat of 120 m below present day, this indicates some Amplitude Energy Gippsland permits would have been terrestrial regions or shallow marine regions. Areas now submerged would have provided for First Nations People of that

time, and some landscape features now partially submerged, continue to have a place in culture and stories told today.

During consultation with Eden Local Aboriginal Lands Council, stories were shared on strong links to killer whales that would push baleen whales to the shallows where local warriors would kill the whales and share the soft parts of the whale with the killer whales (Figure 5-39). This knowledge was shared with whaling fleets circa 1800's, who also hired some of the local First Nations community for their whaling skills.

There was both a practical symbiotic connection as described, and a spiritual connection, with some clans believing that ancestral spirits would pass into the killer whales.

Eden Local Aboriginal Lands Council also described connections to porpoises that would herd fish to shore with fish then being captured by the community.

Figure 5-39: Image Showing Mural at Eden Killer Whale Museum Depicting First Nations Killer Whale Legend

It is likely that the palaeo shelf was exposed and incised by fluvial systems over glacial maximum periods from the time of Australia's First Nations Peoples (~60,000 years ago to present day) (De Decker, et al., 2020). Areas now submerged within the Bass Strait would have provided for First Nations People of that time, and there are some landscape features now partially submerged which continue to have a place in culture and stories told today. Within the Otway region, the Tyrendarra lava flow is a particular landscape and seabed feature which is linked to First Nations stories and deep continued connection with Country. The lava flow extends from Mt Eccles to ~15 km offshore, east of Portland. The Budj Bim aquaculture system and network of stone dwellings was engineered from the lava flow by First Nations People millennia ago to harvest Kooyang (short-finned eel) from the rivers and wetlands. The aquaculture system forms part of the world heritage listed Budj Bim Cultural Landscape (UNESCO 2023). Evaluation of high-quality 3D seismic imagery has indicated there is no geological evidence of recent (500,000 years or less) volcanic or hydrothermal flow events within the sedimentary record within Amplitude Energy's operated Otway offshore acreage.

Several crater complexes and lava flows are present within the greater onshore region, however, are unlikely to extend into the Amplitude Energy acreage. During meetings with Gunditj Mirring Traditional Owners Aboriginal Corporation, and from review of the recent Sea country Plan (GMTOAC, 2023) some additional values and sensitivities were outlined which include connection to Karntubul (whales), Koorn Moorn (seals), the Bonney upwelling and Deen Maar (see Section 5.6.1.11).

5.6.1.2 Modern Indigenous Coastal Uses and Interests

First Nations people hold strong connections to the south-east marine region. The Victorian coast is of significance with respect to First Nations cultural heritage. The Victorian coastline includes areas where there may be no physical evidence of past cultural activities but includes places of spiritual or ceremonial significance, places where traditional resource use occurs or trade and travel routes (Aboriginal Victoria, 2008).

Contemporary First Nations interests in the region are diverse and First Nations communities of the South-east and Temperate East Marine Regions continue to strengthen cultural and spiritual connection to the ocean, and to use ocean resources for food, traditional purposes and income (Commonwealth of Australia, 2015b). The Eastern Maar Country Plan describes the country's first peoples as continuing to utilise coastal resources, collecting tucker such as abalone and crayfish.

5.6.1.3 Relevant First Nations Groups – South Australia

A portion of the coastal area within the Otway Environmental Sector overlaps with the state of South Australia and is associated with one First Nations group. No Recognised Aboriginal Representative Body (RARB) has been declared for the area. Therefore, the Map of Indigenous Australia (AIATSIS, 1996) was used to determine the formally recognised First Nations people of the southeast region of South Australia (Figure 5-40).

The Buandig people (alternative spelling includes but is not limited to Boandik and Bunganditj) are the Traditional Owners of this southeast region of South Australia. Bungandiji Country includes the coastal area from the south of Robe to the mouth of the Glenelg River at Nelson, Victoria and has been occupied by the Buandig people over the past 50,000 years (City of Mount Gambier, 2024). The Buandig people lived near sandy beaches and tidal estuaries relying on the coastal and marine environment for resources with shellfish being of particular importance.

The Ngarrindjeri are the Traditional Owners of the Lower Lakes, Murray Mouth and Coorong and along the River Murray as far north as Mannum. The Ngarrindjeri Nation is made up of 18 Laklinyeris (tribes). The First Peoples of the River Murray and Mallee Region are the Traditional Owners of the River Murray area from the Victorian border to Morgan (ABMC, 2025).

Figure 5-40: Map of Indigenous Australia – South Australia (Source: AIATSIS, 1996)

5.6.1.4 Relevant First Nations Groups – Victoria

The coastal areas of the Otway Basin, Bass Strait and Gippsland Basin are associated with several First Nations groups (Figure 5-41). The Victorian Aboriginal Heritage Council's Reconciliation Action Plan map was used to determine the formally recognised First Nations people of the Victorian coastline (VAHC, 2023). First Nations groups with connection to land and Sea Country along coastal Victoria include:

- Gunditjmara people are the formally recognised First Nations people of the western coast of Victoria (Otway) from the SA border to Portland/Port Fairy.
  - The Guntitj Mirring Traditional Owners Aboriginal Corporation (GMTOAC) conveyed their responsibility for protecting and healing country in the event of an emergency response.
- Eastern Maar people are the formally recognised traditional owners of the western/central coastline of Victoria (Otway) from Portland/Port Fairy to Lorne.
- Wadawurrung people are the formally recognised traditional owners of the central coastline of Victoria (Bass Strait) from Lorne to Geelong.
- Bunurong people are the formally recognised traditional owners of the central coastline of Victoria (Bass Strait) from Melbourne to Inverloch.
- Gunaikurnai people are the formally recognised traditional owners of the eastern coastline of Victoria (Gippsland Basin) from Port Welshpool to Lakes Entrance.
  - The Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC), has shared knowledge of some sites and types of artefacts known in the Orbost area. A strong desire to be involved in protecting Country was expressed, whether this be during operations (possibly supporting marine mammal observation programs), or during emergency events in providing local cultural advice to the response agency and potentially being able to support oiled wildlife response (under direction of DEECA).

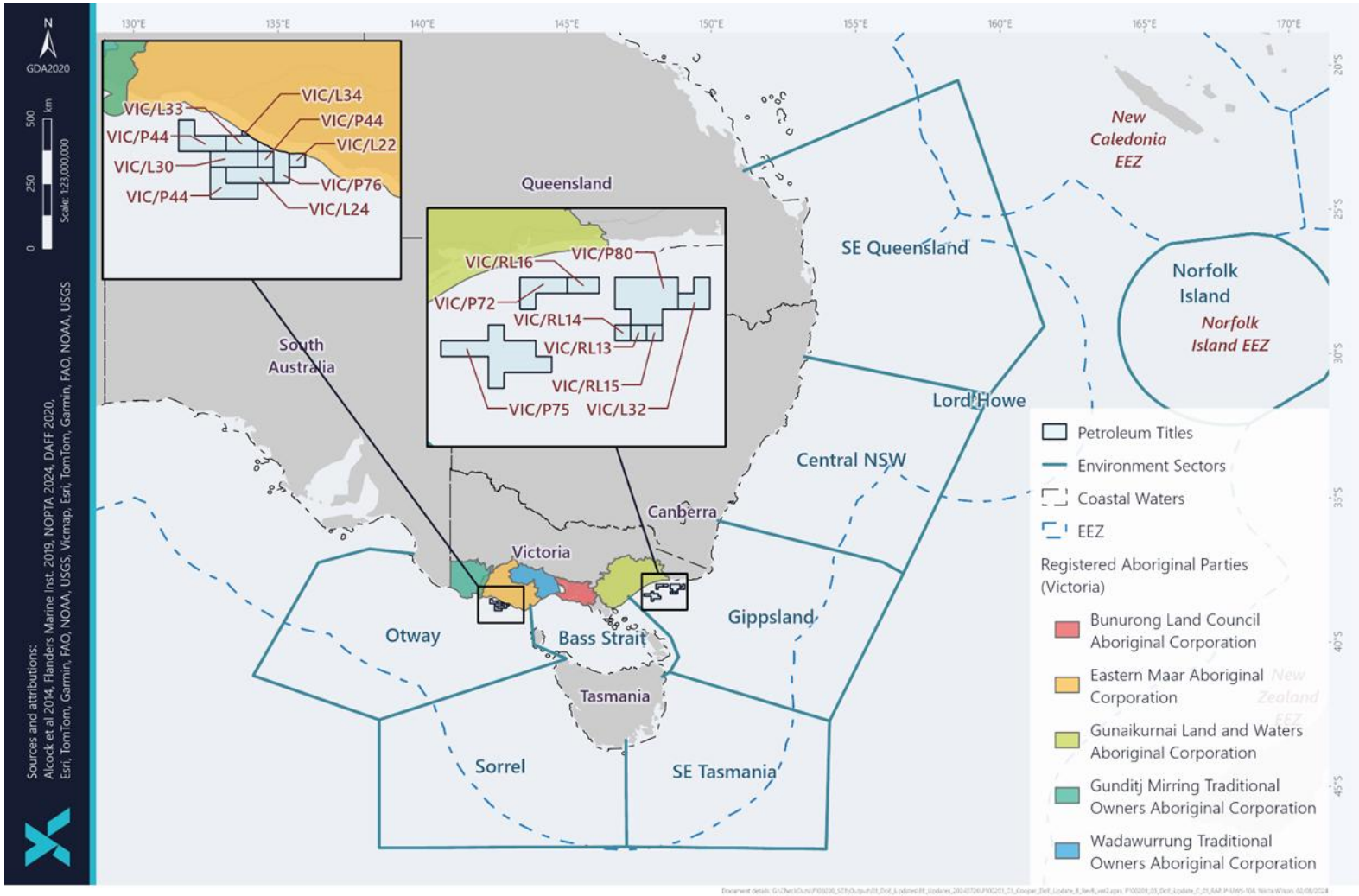


Figure 5-41: Registered Aboriginal Parties Relevant to the Victorian Coastline

5.6.1.5 Relevant First Nations Groups – Southeast NSW

The Gippsland Environmental Sector also includes part of Southeast NSW. The coastal areas of Southeast NSW comprise a number of clans with many using various Yuin dialects. The NSW Aboriginal Land Council map was used to identify First Nations people of NSW (Figure 5-43). Collectively they form the claimant group known as South Coast Peoples. Administratively community services are supported through 13 Local Aboriginal Land Councils, each with its own board and CEO. The South Coast People have submitted a Native Title Determination Application relating to the lands and waters from Hacking River to Towamba River (Figure 5-42).

During consultation with the southern-most LALC, stories have been shared with Amplitude Energy representatives regarding connections to marine mammals (see 5.6.1.10). A strong desire to be involved in supporting any emergency response activities was expressed in the unlikely case of an oil spill threatening Country.

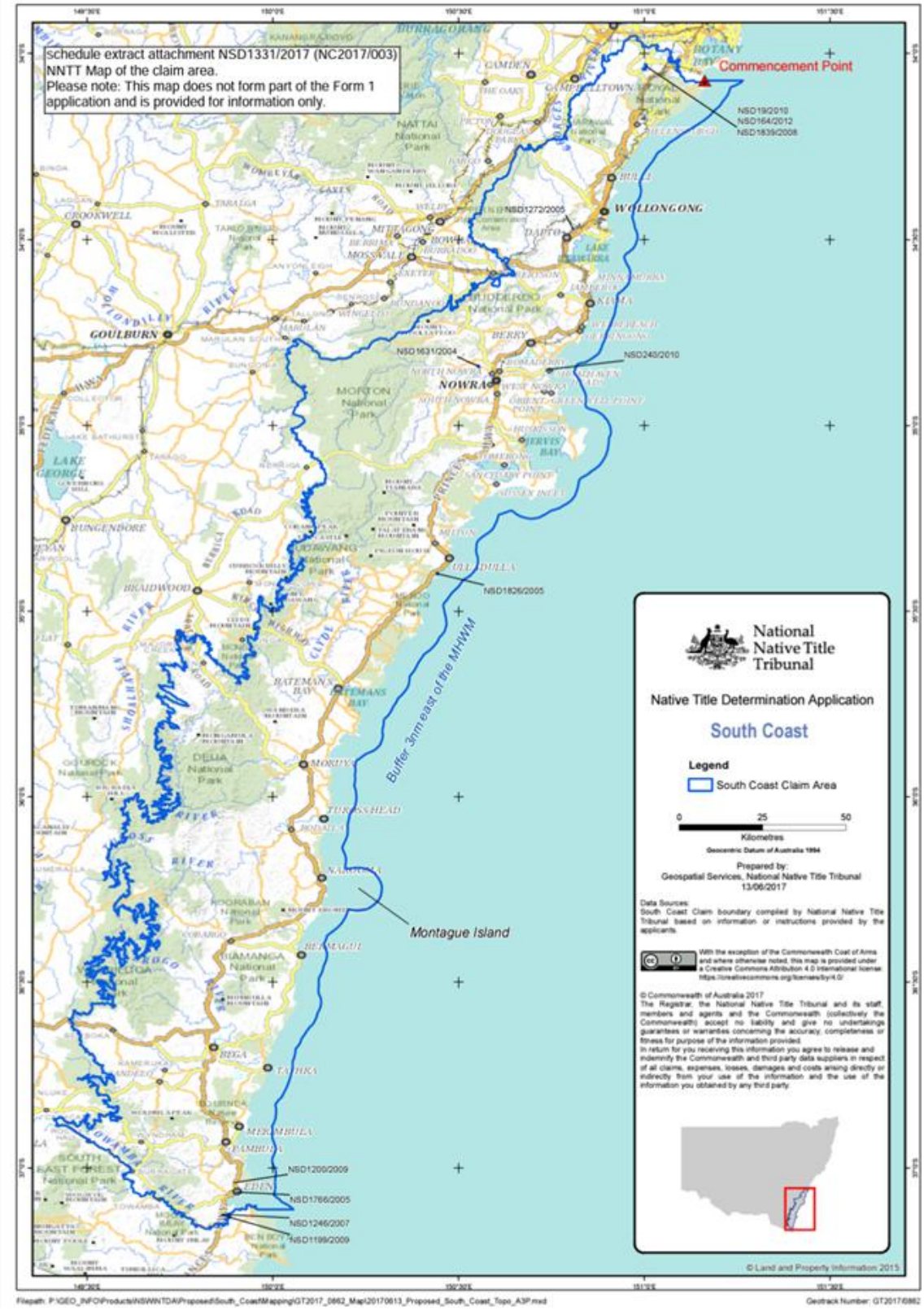


Figure 5-42: Native Title Determination Application – South Coast Map (Map reproduced with the kind permission of the National Native Title Tribunal (Source: NNTT, 2017)

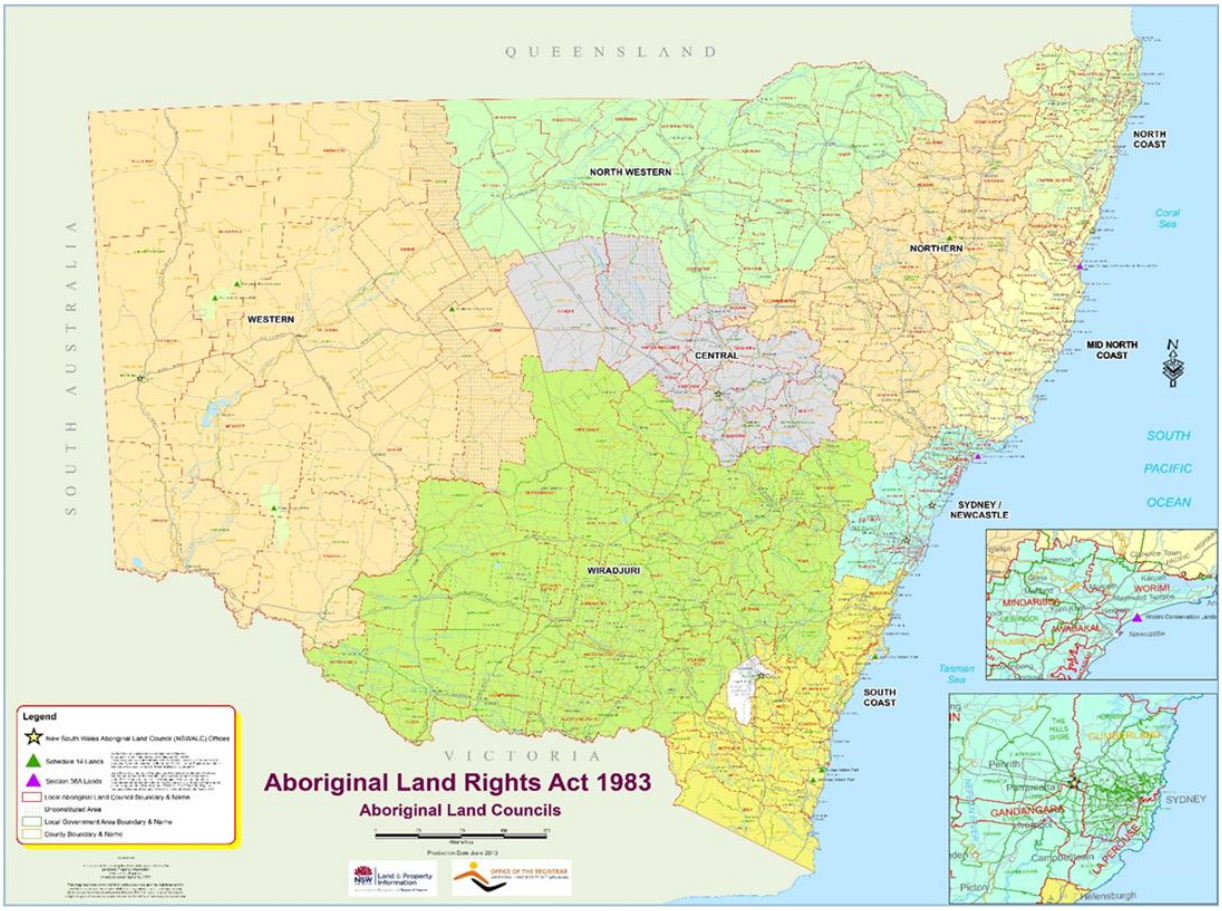


Figure 5-43: New South Wales Local Aboriginal Councils

5.6.1.6 Indigenous Land Use Agreements

Indigenous Land Use Agreements (ILUA) across Australia within the Environmental Sectors. ILUAs are voluntary agreements regarding the management of portions of land agreed upon by native title parties and others. ILUAs within the State of Victoria are listed below and displayed in Figure 5-44. There are no ILUAs within SE Tasmania, Sorrel, Lord Howe or Norfolk Island Environmental Sectors.

Indigenous Land Use Agreements – Otway Environmental Sector

- Gunditj Mirring people and the State of Victoria (VI2006/004).
- Gunditj Mirring Non-Extinguishment Principle ILUA (VI2010/001).

Further, there has been multiple ILUAs between proponents and Indigenous communities with agreements including:

- BHPP – Minerva (VIA1999/001).
- SEAGAS Port Campbell VIC to Torrens Island SA Pipeline with the Gunditjmara people (VI2015/002).
- Gournditch Mara and Essential Petroleum Resources Ltd (VI2005/006).

No existing South Australian ILUAs are recorded on the National Native Title Tribunal within the Otway Environmental Sector.

Indigenous Land Use Agreements – Gippsland Environmental Sector

On the Victorian coastline there are the following ILUAs recorded on the National Native Title Tribunal associated with the groups listed in section 5.6.1.4.

- Gunaikurnai Fee Simple Grants ILUA – Terms of Access (VI2023/001).
- Gunaikurnai and Icon Energy ILUA – Exploration (VI2013/008).
- Gunaikurnai Settlement ILUA – Native Title Settlement (VI2010/003).

Further, there has been multiple ILUAs between proponents and Indigenous communities with agreements including:

- Twofold Bay ILUA (NI2001/003).
- Gumbaynggirr (Boney) Settlement ILUA (NI2018/004).

Indigenous Land Use Agreements – Central NSW Environmental Sector

The following ILUAs recorded on the National Native Title Tribunal within the Central NSW Environmental Sector include:

- Gumbaynggirr (Boney) Settlement ILUA (NI2018/004).
- Gumbaynggirr Wenonah Head ILUA (NI2018/005).

Indigenous Land Use Agreements – Bass Strait Environmental Sector

The following ILUAs recorded on the National Native Title Tribunal within the Bass Strait Environmental Sector include:

- Gunaikurnai and Icon Energy ILUA – Exploration (VI2013/008).
- Gunaikurnai Settlement ILUA – Native Title Settlement (VI2010/003).
- Blairgowrie ILUA – Development (Community) (VIA200/004).
- **Indigenous Land Use Agreements – SE Queensland Environmental Sector**

The following ILUAs recorded on the National Native Title Tribunal within the southeast Queensland Environmental Sector include:

- Bundjalung People of Byron Bay (NI2006/004)
- Ti Tree Lake (Taylor's Lake) (NI2006/005)
- Yaegl Interim Licences ILUA (NI2018/006)
- Bandjalang Interim Licences ILUA (NI2018/008)
- Cavanbah (Byron Bay) Arakwal Indigenous Land Use Agreement (NI2019/005)
- Bunjalung of Byron Bay (Arakwal) (NIA2001/001)
- Ariadne Area Agreement (QI2002/069)
- Stuart Stage 2 Project ILUA (QI2003/063)
- Port Curtis Coral Coast & QGC Pty Limited ILUA (QI2010/009)
- Santos Petronas Port Curtis Coral Coast GLNG ILUA (QI2010/011)
- Surat Gladstone Pipeline Pty Ltd and Port Curtis Coral Coast ILUA (QI2010/017)
- Port Curtis Coral Coast and Australia Pacific LNG Pty Limited ILUA (QI2010/042)
- Quandamooka State ILUA (QI2011/038)

- Quandamooka Redland City Council ILUA (QI2011/039)
- Arrow Energy and Port Curtis Coral Coast People Arrow LNG Project ILUA (QI2012/092)
- Gladstone, Rockhampton and Bundaberg Ports Project ILUA (QI2014/026)
- Fraser Island, Great Sandy National Park / K'Gari ILUA (QI2014/088)
- Port Curtis Coral Coast People and Local Government ILUA (QI2016/045)
- Port Curtis Coral Coast Tenure Resolution ILUA (QI2017/013)
- Port Curtis Coral Coast Protected Areas ILUA (QI2017/014)
- Quandamooka Tenure Resolution ILUA (QI2019/027)
- Tangalooma ILUA (QI2019/028)
- Cooloola Great Walk Ecotourism Project ILUA (QI2022/021)
- Scarborough Surrender Area ILUA (QI2023/002)
- Dunwich Sewage Treatment Plant (QIA2000/011).

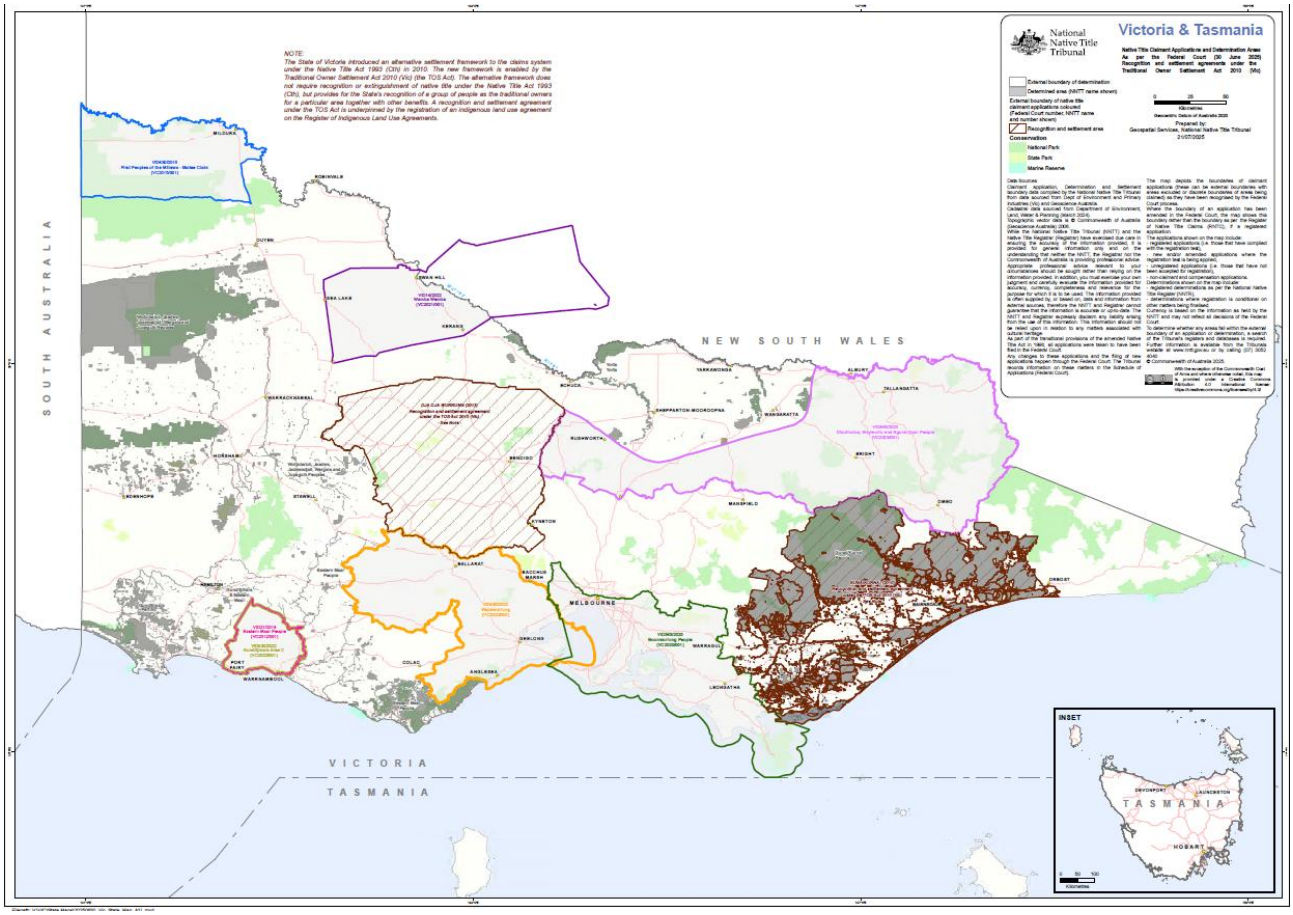


Figure 5-44: ILUAs within the State of Victoria/ Tasmania (Source: NNTT, 2025)

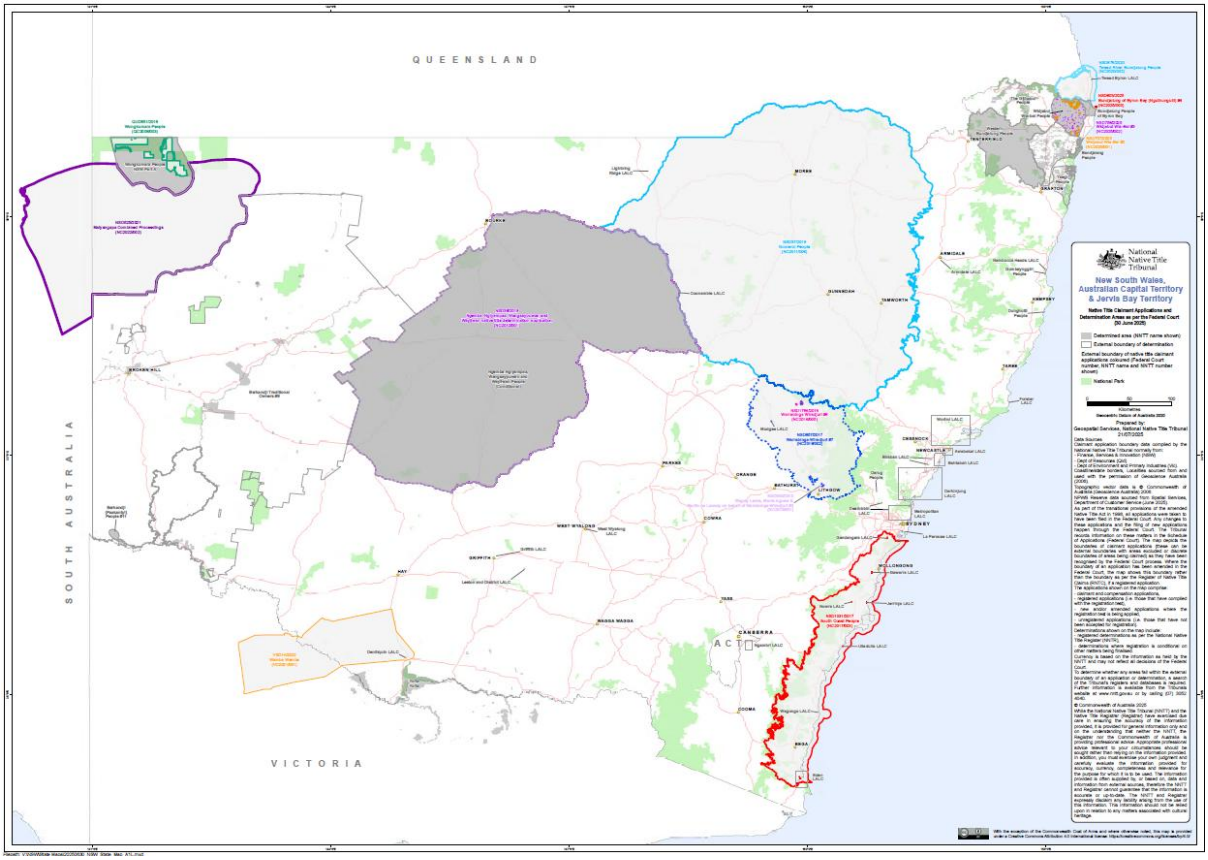


Figure 5-45: ILUAs within the State of New South Wales (Source: NNTT, 2025)

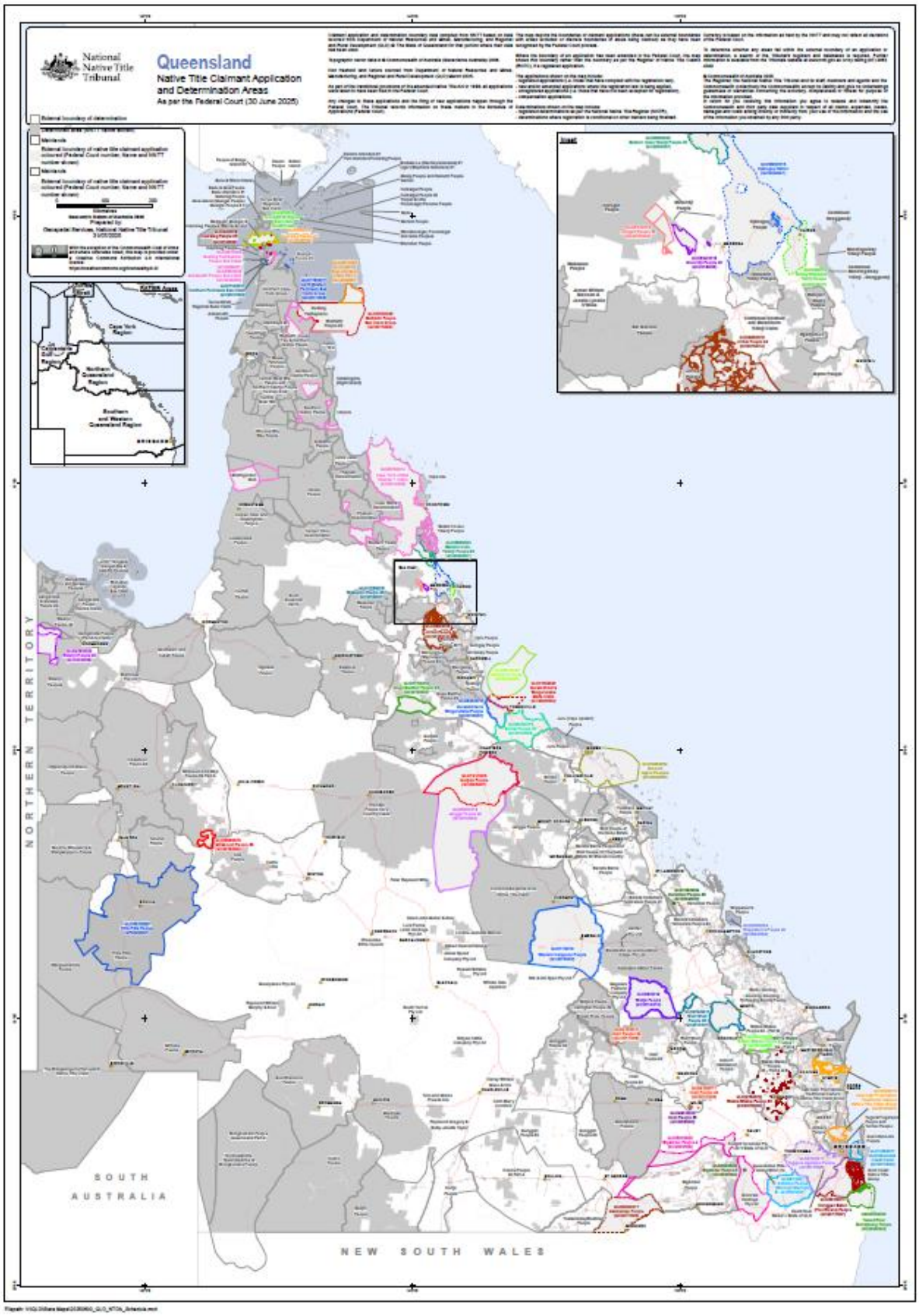


Figure 5-46: ILUAs within the State of Queensland (Source: NNTT, 2025)

5.6.1.7 Native Title

Native Title is the recognition of First Nations people's rights to their traditional lands and waters, recognised by law (Native Title Act 1993). First Nations groups can make a native title claim that claims they hold native title rights and interests in an area according to their traditional laws and customs. Only once a native title is granted, or determined, that First Nations group/s will have recognised rights to the area which are specific to each determination.

There are current Native Title determinations, with non-exclusive Native Title established, in areas of the Victorian, northern New South Wales, and southern Queensland coast, within the Environmental Sectors (Figure 5-47).

There are also further Native Title registered claims along sections of the coast within the Environmental Sectors (Figure 5-48)

Native Title Determination – Otway

In the Otway, existing native title includes:

- VCD2023/001 - Eastern Maar People. Eastern Maar Aboriginal Corporation Registered Native Title Body Corporate (RNTBC)
- VCD2011/001 - Gunditjmara & Eastern Maar. Gunditj Mirring Traditional Owners Aboriginal Corporation RNTBC, Eastern Maar Aboriginal Corporation RNTBC
- VCD2007/001 - Gunditjmara - Part A. Gunditj Mirring Traditional Owners Aboriginal Corporation RNTBC.

No existing South Australian Native Title determinations occur within the Otway Environmental Sector.

Native Title Determination – Bass Strait

In the Bass Strait Environmental Sector, existing native title includes:

- VCD2010/001 - Gunai/Kurnai People. Gunaikurnai Land & Waters Aboriginal Corporation RNTBC.
- VCD2023-001 - Eastern Maar People
- VCD2024/001 - Eastern Maar People
- **Native Title Determination – Gippsland**

In the Gippsland Environmental Sector, existing native title includes:

- VCD2010/001 - Gunai/Kurnai People. Gunaikurnai Land & Waters Aboriginal Corporation RNTBC.

Native Title Determination – NSW and Queensland

A large number of Native Title determinations held across the Environmental Sectors in NSW and Queensland with none held in Tasmania. These include:

- NCD2013/001 - Bandjalang People #1
- NCD2013/002 - Bandjalang People #2
- NCD2019/001 - Bundjalung People of Byron Bay #3
- NCD2019/001 - Bundjalung People of Byron Bay #3
- NCD2015/002 - Yaegl People #1
- NCD2015/003 - Yaegl People #2

- NCD2015/003 - Yaegl People #2
- NCD2017/003 - Yaegl People #2 (Part B)
- QCD2011/001 - Quandamooka People #1
- QCD2011/001 - Quandamooka People #1
- QCD2011/001 - Quandamooka People #1
- QCD2011/001 - Quandamooka People #1
- QCD2011/002 - Quandamooka People #2
- QCD2011/002 - Quandamooka People #2
- QCD2011/002 - Quandamooka People #2
- QCD2011/002 - Quandamooka People #2
- QCD2013/008 - Gold Coast Native Title Group
- QCD2014/015 - Butchulla People #2
- QCD2014/015 - Butchulla People #2
- QCD2015/001 - Yugara/Yugarapul People and Turrbal People
- QCD2017/010 - Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People
- QCD2019/007 - Quandamooka People #4
- QCD2019/007 - Quandamooka People #4
- QCD2019/007 - Quandamooka People #4
- QCD2019/008 - Butchulla People Land & Sea Claim #2
- QCD2019/008 - Butchulla People Land & Sea Claim #2
- QCD2024/002 - Kabi Kabi First Nation Traditional Owners Native Title Claim Group
- QCD2024/002 - Kabi Kabi First Nation Traditional Owners Native Title Claim Group.

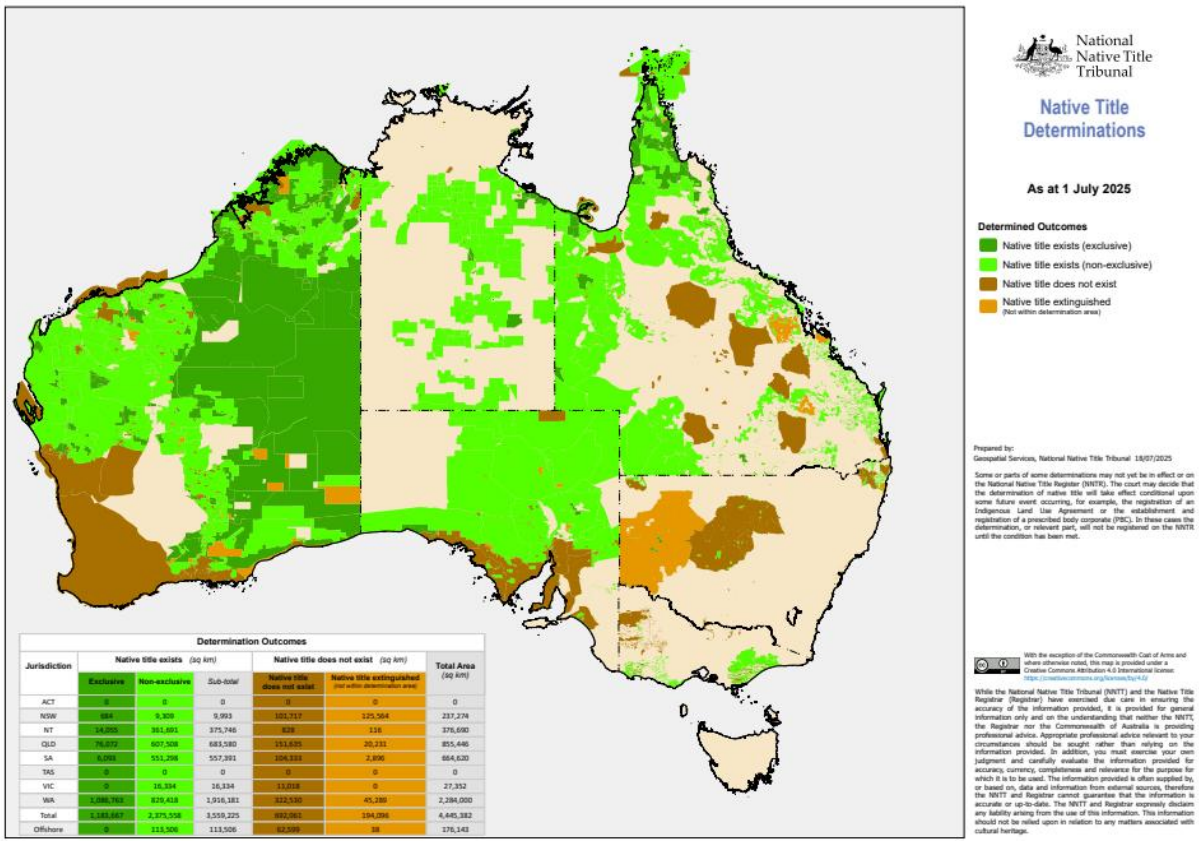


Figure 5-47: Native Title Determinations (Source: Map reproduced with the kind permission of NNTT, 2025)

Native Title Claims

There are also a number of Native Title claims along the coastal regions of South Australia, Victoria, NSW and Queensland. These include:

- SC2017/002 - First Nations of the South East - South Australian Native Title Services
- SC1998/004 - Ngarrindjeri and Others Native Title Claim
- VC2012/001 - Eastern Maar People
- VC2022/002 - Wadawurrung
- NC2017/003 - South Coast Peoples
- QC2018/007 - Kabi Kabi First Nation Traditional Owners Native Title Claim
- QC2017/007 - Danggan Balun (Five Rivers) People
- QC2017/004 - Quandamooka Coast Claim
- QC2017/007 - Danggan Balun (Five Rivers) People.
- It is also noted the Boonwurrung People (VID363/2020) native title claim over Wilsons Promontory has not been registered by the NNTT (ABMC, 2025).

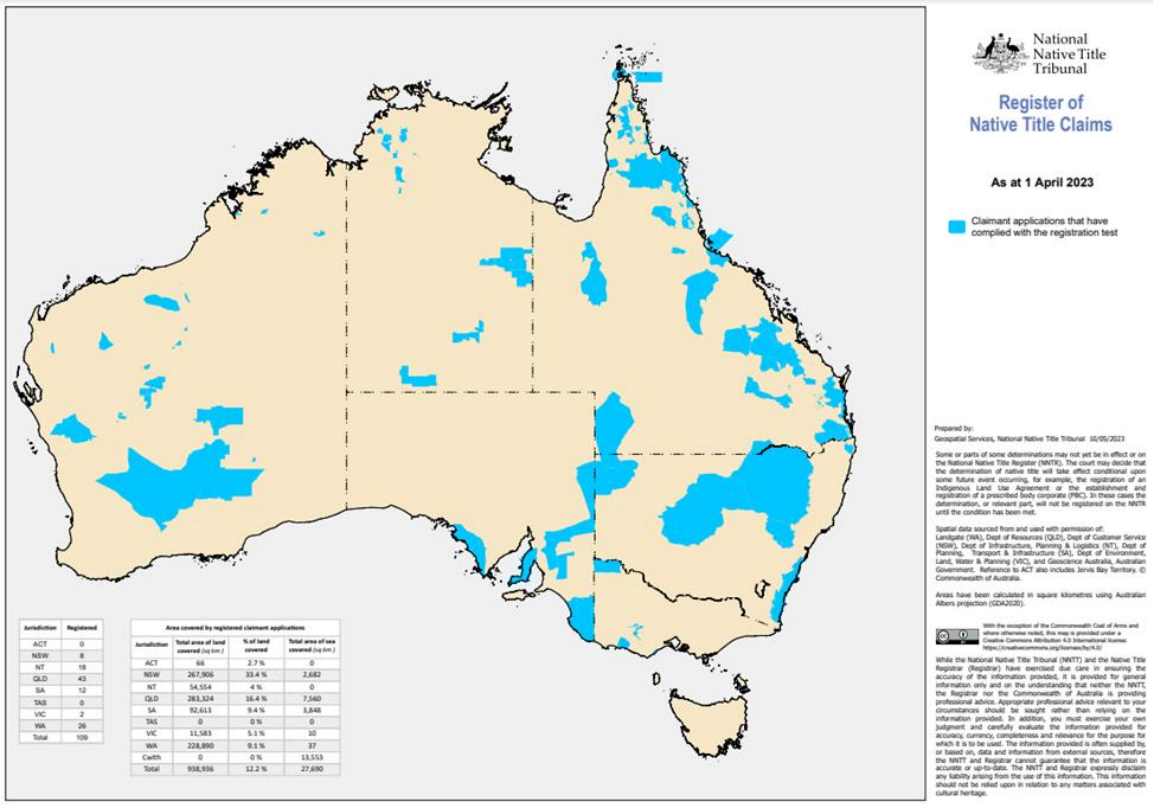


Figure 5-48: Native Title Registered Claims (Source: Map reproduced with the kind permission of the National Native Title Tribunal, 2023)

5.6.1.8 Indigenous Protected Areas (IPAs)

IPAs are a key element of Australia's National Reserve System (parks, reserves and protected areas) designed to protect the nation's biodiversity. IPAs protect cultural heritage, provide employment opportunities, education and training for Indigenous people. The program strengthens the conservation and protection of marine and coastal environments. On 7 May 2022 (DCCEEW, 2025) numerous sea country IPA consultation projects were announced to support Indigenous-led consultation with Traditional Owners and other stakeholders, management planning, and on-sea/on-land management with three of these included within the Otway, Bass Strait and Gippsland Environmental Sectors as shown in Figure 5-49.

Figure 5-49: Sea Country Indigenous Protected Areas Programs - Consultation Projects Source: (Source: DCCEEW, 2025)

Indigenous Protected Areas – Otway Environmental Sector

Indigenous land and sea management projects on coastal areas in the Otway Environmental Sector as shown by the National Indigenous Australians Agency include:

- Deen Maar IPA – sand dunes, limestone ridges, river, lake and wetlands proximate to Yambuk.

Indigenous Protected Areas – Gippsland Environmental Sector

Indigenous land and sea management projects on coastal areas in the Bass Strait Environmental Sector as shown by the National Indigenous Australians Agency include:

- Babel Island IPA – mutton bird rookery and cultural resource on the east of Flinders Island.
- Badger Island IPA – former indigenous community with current boxthorn control program west of Flinders Island.
- Great Dog Island IPA – mutton birding island south of Flinders Island.
- lungatalanana (Clarke Island) IPA – study of fire regrowth with strong links to the Tasmanian Aboriginal community.
- Mount Chappell Island IPA – mutton bird rookery with native revegetation and weed control west of Flinders Island.

Indigenous Protected Areas – Central NSW Environmental Sector

Indigenous land and sea management projects on coastal areas in the Central NSW Environmental Sector as shown by the National Indigenous Australians Agency include:

- Gumma IPA – diverse aquatic interface habitats south of Nambucca Heads on the north coast of NSW.

Indigenous Protected Areas – SE Queensland

Indigenous land and sea management projects on coastal areas in the SE Queensland Environmental Sector as shown by the National Indigenous Australians Agency include:

- Minyumai IPA – floodplain wetlands and rainforests in northern NSW.
- Ngunya Jargoon IPA – Wildlife corridors and refuge for biodiversity within a fragmented landscape on the northern coast of NSW.
- Guanaba IPA – Rainforest reserve located at the foot of Mount Tamborine near the Queensland-New South Wales border.

Indigenous Protected Areas – SE Tasmania

Indigenous land and sea management projects on coastal areas in the South-east Tasmania Environmental Sector as shown by the National Indigenous Australians Agency include:

- Risdon Cove and putalina IPA – cultural and spiritual sites for the Tasmanian aboriginal community either side of Hobart.

Indigenous Protected Areas – Sorell Environmental Sector

Indigenous land and sea management projects on coastal areas in the Sorell Environmental Sector as shown by the National Indigenous Australians Agency include:

- Preminghana IPA – 524 hectares of land in the north-west of Tasmania protecting historic Aboriginal engraving sites and the endangered Preminghana daisy.

In 2022, GlaWAC signed an agreement with the Federal Government to start the process of establishing a Sea Country IPA from Nanjet east of Wilsons Promontory, to Mallacoota, on the Vic/NSW Border.

5.6.1.9 Values and Sensitivities

The cultural features of the environment may include heritage sites, and values relating to First Nations people's traditional culture and customs (NOPSEMA, 2024). Values and sensitivities associated with cultural features of the environment have been identified based on the presence of heritage sites and First Nations people's values of Country in the Environmental Sectors.

First Nations cultural heritage values and sensitivities are defined as follows:

- Values are the core principles, concerns and goals that guide First Nations people's way of life (Victorian Aboriginal Heritage Council, 2021; Smyth and Bahrdt Consultants, 2004; Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023; Eastern Maar Aboriginal Corporation, 2014; Gunaikurnai Land and Waters Aboriginal Corporation, 2015).
- Sensitivities comprise objects and places or 'areas of cultural heritage sensitivity' herein termed heritage sites:
  - Objects as defined in the Burra Charter, are physical materials that contribute to the cultural significance of a place.
  - Places as defined in the Burra Charter, area geographically defined areas. They may include elements, objects, spaces and views. Place may have tangible (physical or material) and intangible (spiritual connection to place) dimensions.
  - 'Areas of cultural heritage sensitivity' are defined in the Victorian Aboriginal Heritage Regulations 2018 as landforms and soil types where First Nations cultural heritage places are more likely to be located (First Peoples – State Relations, 2021).

5.6.1.10 Cultural Features of the Environment related to First Nations People's Heritage Sites and Values

First Nations people are considered Amplitude Energy's primary source for identifying relevant First Nations cultural heritage sites and values. Consultation with First Nations organisations has informed identification of particular values and sensitivities, as well as consultation with First Nations peoples, participation in cultural experiences and training led by Gunditjmara Guide on Gunditjmara Country. Where direct communication has not been possible, publications produced by / in conjunction with First Nations people have been used as secondary sources.

Secondary sources include First Nations people Country Plans developed by RAPs that have application areas within the Environmental Sectors and The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia ICOMOS Burra Charter, 2013).

First Nations cultural heritage values are as diverse as the Victorian First Nations groups themselves. The cultural features of the environment relating to First Nations people's intangible heritage values (including principles, concerns, responsibilities) proximal to Amplitude Energy's offshore title areas are described in Table 5-8. These values are specific to the Gunditj Mirring Traditional Owners Aboriginal Corporation (Gunditjmara), Eastern Maar Aboriginal Corporation (Eastern Maar), Gunaikurnai Land and Waters Aboriginal Corporation (Gunaikurnai), Wadawurrung Traditional Owners Aboriginal Corporation (Wadawurrung), and Bunurong Land Council Aboriginal Corporation (Bunurong).

Table 5-8: Cultural features of the environment relating to First Nations people's intangible heritage values proximal to Amplitude Energy Offshore Title Areas

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	**Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values**	**Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)**	**Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)**	**Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)**	**Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)**	**Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)**
Sea Country	RAPs have defined area boundaries which extend to coastal waters. However, Sea Country is considered to extend beyond the formally defined Registered Aboriginal Party (RAP) area to include sea and submerged lands to the edge of the continental shelf (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023; Eastern Maar Aboriginal Corporation, 2014; Gunaikurnai Land and Waters Aboriginal Corporation, 2015). Sea Country is an intrinsic value to First Nations people. It includes parts of open ocean, beaches, land and freshwater on the coast, habitats and	Defined as Nyamat Mirring, is a mosaic of private and public land with various governance and management arrangements. It is noted that the Gunditjmara view water as part of their traditional lands and believe it should be recognised and protected as such. Bonney Upwelling is a dominant feature of Country that supports many culturally significant species.	Defined as Sea Country, extends well beyond the current shoreline to the edge of the continental shelf. The oceans nourished Eastern Maar Ancestors and while this area is under the sea today, it was occupied for thousands of years and rising sea levels have not washed away the history, physical evidence, or connection. The Eastern Maar Country Plan describes the continued use of nearby coastal resources including collection of tucker such as abalone and crayfish.	The Gunaikurnai state "we see our land (Wurruk), waters (Yarnda), air (Watpootjan) and every living thing as one. All things come from Wurruk, Yarnda and Watpootjan and they are the spiritual life-giving resources, providing us with resources and forming the basis of our cultural practices". (Gunaikurnai Land and Waters Aboriginal Corporation, 2015). The Gunaikurnai are recognised as Traditional owners over ~1.33 M ha of Country from west Gippsland near Warragul, east to the	Wadawurrung Warre (Sea Country) includes Pt. Phillip Head and Pt. Addis Marine National Parks which extend along 9 km of Wadawurrung coastline. This area is east of Anglesea to Bells Beach abutting the Great Otway National Park. Barwon Bluff Marine Sanctuary, Pt. Lillias to Pt. Wilson to Kirk Pt, Wedge Point (Port Phillip coast) and Clifton Springs on the Bellarine Peninsula coast include saltmarshes and seagrass beds.	Within the bounds of the Bunurong RAP, there are a total of 677 registered shell midden sites, within two hundred meters of the shoreline (Biosis, 2023). This infers knowledgeable exploitation of marine resources and an understanding of Sea Country (Biosis, 2023).

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values	Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)	Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)	Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)
	encompasses all living things, beliefs, values, creation spirits and cultural obligations connected to an area (The University of Adelaide, 2023; Wadawurrung Traditional Owners Aboriginal Corporation, 2020).			Snowy River, north to the Great Dividing Range and out to 200 m offshore.		
Creation/ Dreaming sites, songlines, sacred sites and Ancestral beings	Stories and Songlines link First Nations people to ancestors, culture, and Country. Dreaming stories further reinforce the memories and Songlines relating to the flooding and significant connection to Sea Country. Dreamtime Songlines link tribal kings such as Umbarra or King Merriman to Wallaga Lake, and Borun the pelican who created Songlines and storylines	Deen Maar holds deep spiritual significance for Gunditjmara, as part of the creation story and a place where the spirits of our Ancestors rest.	Eastern Maar see Country as their spiritual homeland where peace, direction and purpose is found. Eastern Maar believe spirits reside in waterways and water bodies. Sites important for Dreaming include Deen Maar where Ancestors leave the earth.	Gunaikurnai creation story, of Borun (the pelican) and Tuk (the musk duck), explains the bonds to Country. Country provides spiritual nourishment to the Gunaikurnai.	Spirits connect Wadawurrung to Country and each other, which gives Wadawurrung ongoing respect for obligation to care for Country.	Country holds all stories of Bunurong Grandmothers and Grandfathers and spiritual connections to Country (Bunurong Land Council Aboriginal Corporation, 2024).

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values	Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)	Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)	Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)
	as he walked through Gunaikurnai Country. First Nations People maintain strong spiritual ties to Country. Spiritual connection to Country includes: how Country provides spiritual life-giving resources places where the spirits of Ancestors rest (Deen Maar) or where spirits reside including water bodies; where peace, direction and purpose originates (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023; Gunditj Mirring Traditional Owners Aboriginal Corporation – briefing and correspondence, 2024; Eastern Maar Aboriginal Corporation, 2014; Gunaikurnai Land and					

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values	Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)	Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)	Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)
	Waters Aboriginal Corporation, 2015).					
Cultural obligations to care for Country	First Nations People may be culturally obligated and inherently responsible to care, protect and heal Country for present and future generations (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023; Eastern Maar Aboriginal Corporation, 2014; Gunaikurnai Land and Waters Aboriginal Corporation, 2015). The roles held relating to taking care of Country and knowledge holding vary amongst individuals and within clans and family groups. Roles include taking care of culturally	Gunditjmara have responsibility in managing Kooyang (short-finned eel) habitats given short-finned eels hold an important place in the culture of Gunditjmara people. Protection of Karntubul (whale) species is paramount to Gunditjmara spiritual, physical wellbeing. Koorn Moorn (seals) feature in song and dance of Gunditjmara and are used as a food source. "Gunditjmara carry out our enduring responsibility to care	Eeling and the methods of eel farming taught by Eastern Maar Ancestors are still in use today. Eastern Maar have had responsibility to care for Country for thousands of years, so that Country can stay healthy and keep providing. Eastern Maar's goal in their Country Plan: "Our Country is healthy, and our natural resources are managed and used sustainably".	Gunaikurnai have cultural responsibility to ensure all Gunaikurnai land, waters, air and everything living as one is looked after. Gunaikurnai's whole-of-Country principles includes "It is our inherent responsibility to look after Country – to heal damage of the past and protect it for future generations".	Wadawurrung live by lore to care for Country and all things living as Wadawurrung ancestors have always done. It is Wadawurrung cultural obligation to look after Country. Sea Country values include kelp forests which provide habitat for food resources including rock lobster and abalone; and marine mammals including whales and seals.	Bunurong aims to preserve and protect the sacred lands and waterways of our ancestors, their places, traditional cultural practices, and stories (Bunurong Land Council Aboriginal Corporation, 2024).

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values	Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)	Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)	Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)
	significant species or habitats of significant species known to be important food resources, and culturally significant landscapes and places.	for Nyamat Mirring (Sea Country), so our children thrive, see their Country heal and know their stories." Gunditjmara's principles defined in their Country Plan: "Country is protected for present and future generations" and "Managing Country is a cultural responsibility".				
Knowledge Systems	First Nations peoples ecological, spiritual, traditional and cultural knowledge is passed through the generations using cultural practices (Dreaming stories, ceremony, song and dance) where knowledge holders (Elders) are the custodians of knowledge. This knowledge includes sea and landscape	Gunditjmara Elders and families need access to Country for events and Ceremonies which are critical for intergenerational knowledge sharing and cultural practice. Places critical for intergenerational knowledge sharing include:	Knowledge of the sacred sites and resources of Country, the values and stories associated with important places, languages and secret ceremonial practices have been passed from Eastern Maar Ancestors to Elders, to Eastern Maar young people.	Gunaikurnai Elders provide advice and guidance to the Gunaikurnai community and pass on cultural knowledge and practices. 10,000 years ago, Victoria was connected to Tasmania by a land bridge. At this time, the marine parks and reserves around	Wadawurrung Elders pass on knowledge to the next generation of Wadawurrung to look after Country and culture, spiritual and familial links with Country.	Wilsons Promontory area contains registered places including shell midden sites, Aboriginal Ancestral Remains Burial/Reinternment, which suggests the Wilsons Promontory area to be inhabited by Bunurong ancestors. Places critical for intergenerational

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values	Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)	Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)	Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)
	features that hold dreamtime and creation stories or are events and ceremonial places critical for intergenerational knowledge sharing and cultural practice. Knowledge holders have responsibility for traditions, observances, customs or beliefs associated with specific areas (Victorian Aboriginal Heritage Council, 2021a). In terms of potential environmental impacts to Country, cultural practices associated with years of observation of Country guides how Country is cared for and managed sustainably including incorporating contemporary scientific data into management of Country (Gunditj Mirring Traditional Owners	• The Convincing ground • Deen Maar • Discovery Bay Coastal Park	Places critical for intergenerational knowledge sharing include: • Deen Maar	Wilsons Promontory were terrestrial habitats, inhabited by our ancestors. Places critical for intergenerational knowledge sharing include: -Wilsons Promontory complex (Brataualung Country)		knowledge sharing include: • Wilsons Promontory

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values	Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)	Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)	Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)
	Aboriginal Corporation, 2023; Eastern Maar Aboriginal Corporation, 2014; Gunaikurnai Land and Waters Aboriginal Corporation, 2015).					
Connection to Country	First Nations people may maintain strong spiritual ties to Country. Spiritual connection to Country includes how Country provides spiritual life-giving resources for species and landscapes, places where the spirits of Ancestors rest (Deen Maar) or where spirits reside including water bodies; where peace, direction and purpose originate. If First Nations peoples cannot access areas of Sea Country that they typically do access, this may affect Traditional Owners connection to	"Our Nyamat Mirring (Sea Country) holds values that are fundamental to our wellbeing and benefit Gunditjmara and other people who live on Country. Our customary obligations to Country, Ceremony, our language (Wurrung), Lores, relationships, and identities as Gunditjmara are inter-connected with Nyamat Mirring (Sea Country)." (Gunditj Mirring Traditional Owners	"It is the way we feel, the way we live and the connection that holds and defines us. When the health of our Country declines, so does the health of our citizens – we are all inextricably linked. If our waters are polluted or lands degraded, we will feel unwell." (Eastern Maar Aboriginal Corporation, 2014)	"Our Country is the land, the rivers and the ocean, the people and the stories, the past and the future. All of it is connected. All of it is important to us. Country heals us and connects us to our ancestors, our culture and history. We can be healthy if our Country is looked after… Our mob cannot be healthy when our Country is sick…" (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	"We are connected to our land, our skies, our waterways, and our coastal areas, keeping them healthy keeps our People and Culture healthy." (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Aboriginal communities in Victoria maintain strong connections to their traditional lands, waters and their cultures (Biosis, 2023).

Identified Cultural Features of the Environment relating to First Nations People's Heritage Sites and Values	Intrinsic link between Cultural Features and First Nations People's Heritage Sites and Values	Gunditjmara (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023)	Eastern Maar (Eastern Maar Aboriginal Corporation, 2014)	Gunaikurnai (Gunaikurnai Land and Waters Aboriginal Corporation, 2015)	Wadawurrung (Wadawurrung Traditional Owners Aboriginal Corporation, 2020)	Bunurong (Biosis 2023; Bunurong Land Council Aboriginal Corporation, 2024)
	Country. In the case of Deen Maar, access could be visual or physical access. (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023; Wadawurrung Traditional Owners Aboriginal Corporation, 2020; Eastern Maar Aboriginal Corporation, 2014; Gunaikurnai Land and Waters Aboriginal Corporation, 2015; Bunurong Land Council Aboriginal Corporation, 2024).	Aboriginal Corporation, 2023)				

First Nations People's Tangible Cultural Heritage and Habitats and species

Cultural features of the environment that are related to First Nations people's heritage sites (objects and places) include (PV, 2019):

- known coastal/ island places and objects
- known submerged sites
- ancestral remains
- middens
- Flaked stone tools, ground edge axes, axe-grinding grooves and griding stones.
- Historic and contemporary cultural harvesting of marine fauna and flora, i.e. eel and fish traps.
- Sea and landscape features that hold Songlines, Dreaming and Creation stories, such as offshore islands (Deen Maar) and lava flows. Associated evidence of habitation and connection.

Locations and landforms where Aboriginal burials may have been more likely to occur include sandy lunettes and alongside water, sand dunes near beaches, aboriginal middens, in bushland, near trees or rock shelters (Parks Victoria, 2019). Earth features include mounds, rings and hearths which are the result of First Nations people living in particular places of the landscape. Stone arrangements comprise a construct of stones of boulders resulting in a place of cultural significance and are usually found in volcanic areas of Victoria. These include stone houses, fish or eel traps, ceremonial arrangements and rockwells (Parks Victoria, 2019).

Middens are shell deposits that have built up over time, often as a result of Indigenous people gathering and eating shellfish and molluscs (Parks Victoria, 2019). They can be found near water sources throughout Victoria and may be present alongside bones, grinding stones, charcoal and ancestral remains (Parks Victoria, 2019). Coastal shell middens, charcoal and hearth stones from fires, and items such as bone and stone artefacts are typically located within sheltered positions in the dunes, coastal scrub and woodlands, within rock shelters or on exposed cliff tops with good vantage points (Aboriginal Victoria, 2008). Coastal shell middens are found as layers of shell exposed in the side of dunes, banks or cliff tops or as scatters of shell exposed on eroded surfaces. Threats to coastal shell middens include exposure by wind and water erosion; degradation by human or animal interference; burrowing animals; people destabilizing ground using unregulated tracks or off-road vehicles.

Stone tools are flakes of stone shaped into tools such as scrapers, blades or spears. These are found everywhere across Victoria and were made in many forms from many types of stone. Ground edge axes are stone axe-heads made from large flakes of hard stone. Axe-grinding grooves occur from the sharpening and shaping of stones axes along stone platforms or outcrops. They can be found in many places across Victoria, especially near water. Griding stones are large slabs of abrasive rocks often left at camps. used (Parks Victoria, 2019).

Within their Sea Country Plan, and during consultation, GMTOAC shared stories of the creation of significant landscape features such as the Tyrendarra lava flow associated with the World Heritage listed Budge Bim aquaculture system (GMTOAC, 2023). This lava flow begins at Mt Eccles and extends across coastal plains and offshore 5-10 km to the east of Portland at Julia Reef (Builth, 2004). Julia Reef is a popular spot for recreational fishing, particularly yellowtail kingfish (VFA, 2022)

The potential for intangible sites such as lava flows within Amplitude Energy's operated offshore Otway acreage was investigated by evaluating high-quality 3D seismic imagery. The review of 3D seismic imagery has indicated there is no geological evidence of volcanic or hydrothermal flow

events within the sedimentary record of the past 500,000 years within Amplitude Energy's operated offshore Otway acreage. Several crater complexes and lava flows are present within the greater onshore region, however, are unlikely to extend into the Amplitude Energy acreage. Their mapped limits are at least 40 km from the nearest boundary of Amplitude Energy's offshore acreage.

Known tangible sites are generally constrained to the shoreline and near shore limits, within state coastal waters (ACHRIS, 2023). In 2023, ConocoPhillips commissioned Biosis to develop an Otway Exploration Cultural heritage desktop assessment (Biosis, 2023). The study area for the Otway Exploration Cultural heritage desktop assessment is highly representative of the Victorian coastline and is therefore used to provide details on tangible First Nations cultural heritage sites across Victoria. The desktop assessment included a search of the Victorian Aboriginal Heritage Register undertaken by Biosis on the 21 December 2022 which identified 5,636 recorded Aboriginal places across the Victorian coastline (Biosis, 2023). The dominant Aboriginal places located in the study area are shell middens (46.82%), artefact scatters (39.21%) and low-density artefact distribution (LDADs) (5.70%).

Review of the 5,636 recorded Aboriginal places found 5 First Nations cultural heritage places within Victoria that are significantly mentioned within relevant Country Plans:

- The Convincing Ground
- Deen Maar
- Discovery Bay Coastal Park
- Land Bridge and Submerged Landscapes
- Wilsons Promontory.

The Convincing Ground

The 'Convincing Ground' in Allestree at Portland Bay, approximately 10 km from Portland, is a significant site of early conflict on Gunditjmara Country (Biosis, 2023). Whalers and sealers visited Gunditjmara shores as early as 1810 leading to the establishment of one of Victoria's first whaling stations in Portland in 1829. Conflict arose when a whale beached at the site. The Kilcarer Gunditj clan gathered at the beached whale and whalers used the gathering to murder approximately 60 people, leaving only 2 surviving members of the clan. The exact date of the massacre is unknown but is estimated to have occurred between 1832 and 1833 (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023). This conflict may be the first recorded massacre of First Nations people. It is believed that the Convincing Ground will always hold the spirits of the Kilcarer Gunditj who were murdered there and as such is considered deeply significant for the Gunditjmara and other clans throughout south-west Victoria (Victorian Heritage Database, 2006). Prior to the arrival of settlers, the site of the Convincing Ground held social values for association with Country as a place where Gunditjmara would gather and feast (Heritage Council Victoria, 2010).

In 2006 the site was officially listed as a Heritage Place on the Victorian Heritage Register (VHR #H2079). Several land parcels at the site have since been returned to the Gunditjmara with an aim of creating a landscape for the space which adequately reflects the significance for the area. The Convincing Ground remains a place of ceremony for the Gunditjmara who gather at the site annually to reflect on the ongoing impacts of colonisation on their people (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023).

Deen Maar

Deen Maar Island holds deep significance for the Gunditjmara and Eastern Maar peoples, who jointly hold native title to the island and its surrounding waters (see Section 5.6.1.7).

The site is featured in the Gunditjmara creation story and is significant both spiritually and ecologically. As such, the site is considered a priority Nyamat Mirring location. Deen Maar is considered a dreaming place for the Gunditjmara as a resting place for the spirits of their Ancestors. As an island, Deen Maar connects Sea Country with other types of Country while hosting abundant resources of fish and coastal vegetation and is regarded as a place for Gunditjmara to access and practice culture (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023).

On the coast opposite Deen Maar, a cave 'Tarn Weerreeng' marks a path between Deen Maar and the mainland and serves as a burial place where bodies are wrapped in grass and placed inside the cave. When the grass is found at the mouth of Tarn Weerreeng, the body and its belongings are thought to have been carried to Deen Maar and the spirit carried to the clouds (Biosis, 2023; DTP, 2021).

The Eastern Maar often bury their people facing Deen Maar with the belief that after death, their spirits go to Deen Maar before going to the stars, as Bunjil had done (Eastern Maar Aboriginal Corporation, 2014).

Discovery Bay Coastal Park

Discovery Bay is an example of the continuous, connected landscape between Nyamat Mirring and Gunditjmara Country. The dune systems of Discovery Bay hold numerous cultural heritage sites such as middens which are under increasing threat from vehicle disturbance, including those associated with the commercial and recreational pipi fishery as well as recreational 4WDs. The remoteness of the area poses a challenge in protecting the area by making surveillance difficult and possibly lowering the level of compliance with regulations (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023).

Discovery Bay Coastal Park is currently managed by Parks Victoria with an aim to establish a governance model enabling Gunditjmara to lead management as a priority Nyamat Mirring location (Gunditj Mirring Traditional Owners Aboriginal Corporation, 2023).

Further details on the ecological and tourism values of Discovery Bay are provided in Appendix 2.

Land Bridge and Submerged landscapes

Between ~18,000 and ~12,000 years ago, the Bassian Land Bridge joined Tasmania with the mainland of Australia during periods of low sea level and potentially facilitated mass movement of Tasmanian Aboriginal (Palawa) people between these regions (Figure 5-50; Adeleye et al., 2021; Hamacher et al., 2023). It is estimated that rising sea levels at the end of the Ice Age (~14,000 years ago) flooded most of the Bassian Land Bridge, leaving the shallowest crossing readily passable on foot in an area east of Wilsons Promontory in Victoria and north of Hogan Island (located outside of the Otway Basin, in the Bass Strait). Based on bathymetric and topographic data of the land and seafloor of the Bass Strait, ~12,000 years ago, the Bassian Land Bridge was estimated to be completely submerged.

The original surface of the Land Bridge is likely to have been eroded and removed, with any remaining artefacts likely buried beneath sediment deep below the ocean (Biosis, 2023). Rising sea levels following the last glacial maximum and the known sea states of the Otway Coast (water depths and velocities) would make preservation of any "recently" buried anthropogenic structures or sites highly unlikely.

The area of the Land Bridge is also culturally significant to the Gunaikurnai peoples particularly as a place of intergenerational knowledge sharing (Gunaikurnai Land and Waters Aboriginal Corporation, 2015;). Dreaming stories further reinforce the memories and Songlines relating to the flooding and significant connection to Sea Country (Biosis, 2023; Nunn and Reid, 2016). These stories also serve as

a testament to the longevity and significance of oral tradition in a global context (Nunn and Reid, 2016).

Within their Sea Country Plan, and during consultation, GMTOAC shared stories of the creation of significant landscape features such as the Tyrendarra lava flow associated with the World Heritage listed Budge Bim aquaculture system (GMTOAC, 2023). This lava flow begins at Mt Eccles and extends across coastal plains and offshore 5-10 km to the east of Portland at Julia Reef (Builth, 2004). Julia Reef is a popular spot for recreational fishing, particularly yellowtail kingfish (VFA, 2022)

Known cultural heritage sites are generally constrained to the shoreline and near shore limits, within state coastal waters (ACHRIS, 2023). Evaluation of high-quality 3D seismic imagery has indicated there is no geological evidence of volcanic or hydrothermal flow events within the sedimentary record of the past 500,000 years within Amplitude Energy's operated offshore Otway acreage. Several crater complexes and lava flows are present within the greater onshore region, however, are unlikely to extend into the Amplitude Energy acreage. Their mapped limits are at least 40 km from the nearest boundary of Amplitude Energy's offshore acreage.

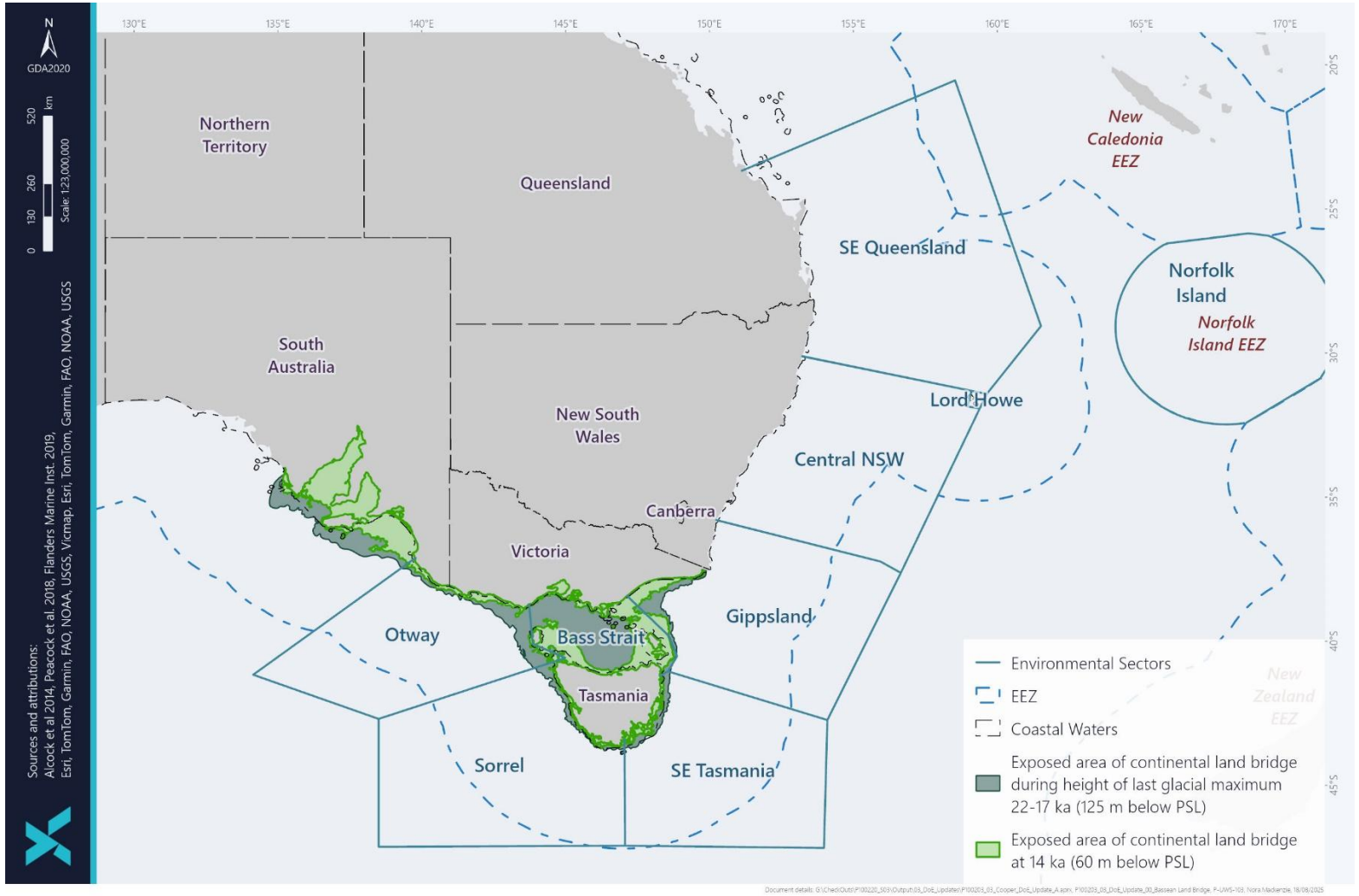


Figure 5-50: Exposed Area of Continental Land Bridge

Wilsons Promontory

According to the Victorian Aboriginal Heritage Register, the area of Wilsons Promontory contains 384 registered sites which are predominantly comprised of shell middens, artefact scatters and earth features (Biosis, 2023). Shell middens are scattered along the coast or otherwise near flowing water, with the largest cluster totalling 163 middens occurring along the western coast of the Promontory. Artefact scatter sites primarily follow water sources inland (Biosis, 2023).

Wilsons Promontory is also significant as a place of passing on cultural knowledge and practices and is thought to be a critical place for intergenerational knowledge sharing for the Gunaikurnai and Bunurong peoples.

Gunaikurnai inhabited the area of Wilsons Promontory from at least 6,500 years ago including what were previously terrestrial habitats prior to the inundation of the Bassian Land Bridge. A spirit called Loän (or Kŭlŭngrŭk) protected its inhabitants from invasions. Prior to sea level rise, Gunaikurnai would have hunted and gathered terrestrial and aquatic animals, fruits, yams and eggs according to seasonal abundance. Bark canoes were used to harvest fish and travel around the area once the sea level rise began (Gunaikurnai Land and Waters Aboriginal Corporation, 2015).

The modern-day terrestrial and marine protected areas of Wilsons Promontory recognise the significant natural and cultural values of the area. The Gunaikurnai aim to propose alternative management models to improve natural and cultural outcomes while providing benefits to Gunaikurnai people (Gunaikurnai Land and Waters Aboriginal Corporation, 2015). Further information regarding the ecological and tourism values of Wilsons Promontory is provided in Appendix 1.

Habitats and species relevant to First Nations people's sites and values include:

- Culturally significant species such as different marine and avian species that hold deep connections to lore and represent ancestors, spiritual emblems or totems:
  - Cetaceans: Karntubul (whales) in Sea Country hold deep cultural significance to the Gunditjmara and feature in Dreaming stories, ceremony, song and dance traditions. Whale migration is associated with the belief that whales are ancestors to some First Nations peoples and arrive to the coast, annually. Key whale species which would relate to 'calling in' are the southern right whale, which reproduce close to shore, and are often observable from shore. Multiple whale species have the potential to beach in the region, including, though not limited to the southern right whale, pygmy blue whale, and humpback whale. Whale beaching events may be of significance to First Nations people, as parts of deceased whales were, and can still be used as a resource. Multiple whale species have the potential to beach in the region, including, though not limited to the southern right whale, pygmy blue whale, and humpback whale.
  - Pinnipeds: Koorn Moorn (seals) are culturally significant for Gunditjmara people. They feature in song and dance and were collected as a food resource in traditional times by Gunditjmara women along the coast. The Australian sea-lion, southern elephant seal, New-Zealand fur seal, and Australian fur seal are known to occur within the Environmental Sectors including a large colony of Fur Seals at Deen Maar Island that haul out on the island's rocky shores.
  - Seabirds: Different avian species hold deep connections to lore and represent spiritual emblems or totems. Magpie gees and Cape Barren geese were harvested for food from wetland habitats. Wetland habitat loss has reduced numbers of these species and harvesting not permitted in Victoria.
- Species that are food resources include:

  - Shellfish such as mussels and oysters located in rocky shorelines and marine/coastal wetlands (Section 3.1and Appendix 2 -).
  - Crustaceans such as crayfish and yabbies located in marine/coastal wetlands (Appendix 2 -).
  - Fish such as the short-finned eel used as a food resource (Section 3.14).
  - GMTOAC have highlighted short-finned eels (Kooyang) as of particular significance to Gunditjmara people, who developed complex aquaculture systems to trap and store eels. The aquaculture systems were engineered from the volcanic formations associated with the Tyrendarra Lava flow to create Budj Bim. The eels which are a valued source of food, were captured, fattened up, harvested, smoked and traded, and continue to hold cultural significance for Gunditjmara. Today there are cultural tours at Budj Bim, run by Gunditjmara peoples. The short-finned eel species migrates through State waters and Commonwealth Marine Area of the Otway Region between freshwater systems in Victoria including within Gunditjmara Country, to / from spawning grounds in the Coral Sea, thousands of km to the north. Based on the observed migratory route of short-finned eels, short-finned eels in adult and glass eel forms may pass the Gippsland, Otway, and Bass Strait Environmental Sectors during seasonal migrations. During late summer and autumn adult eels will enter the Otway Basin and Bass Strait to commence their migration to the Coral Sea. During mid-winter to late spring, the short-finned eel in larvae and glass eel forms will enter Victorian estuaries to complete the upstream migration. Upon entering the marine environment, eels disperse widely; individuals' migratory paths are known to diverge widely, and timing of arrival in the Coral Sea is also variable.

- Key Ecological Feature (Section 4.6): The Bonney Upwelling is a dominant feature of this region and brings cold nutrient water to the surface which feeds phytoplankton and sustains the food web and is of significance to the Gunditj Mirring people (Section 4.6). The Bonney upwelling is a large-scale oceanographic system and key ecological feature that influences the Otway coast (Appendix 3); the feature is active in Autumn and Summer depending on the strength and frequency of alongshore winds (Butler et al., 2002). The area is significant as one of the largest and most predictable upwellings in south-eastern Australia, and most prominent upwelling system driven by prevailing south-easterly winds.
- Water quality (Section 2.0): Water including freshwater and marine, may be of particular cultural significance to First Nations people as an integral part of songs, ceremonies, hunting and collecting, and other activities that bind people to Country and each other. First Nations communities in Victoria may maintain strong connections to water and culture. Increased pollution from coastal communities, agriculture and industry, changes sea hydrology and impacts marine species and harms Country. Water is an intrinsic value to First Nations people.
- Benthic habitats (Section 3.6): Nearshore reefs provide habitat for many culturally significant species such as macroalgal communities, fish, sharks and rays. Julia Reef is within sea country adjacent to Gunditj Mirring RAP and is an extension of the volcanic feature connected to Budj Bim. Julia Reef marks the seaward extent of the Tyrendarra lava flow, ending approximately 15 km offshore and 10-15km east of Portland (Builth, 2004). Julia Reef is a preferred fishing spot for recreational fishers (VFA, 2022).
- Intertidal communities and shorelines (Section 3.3, Appendix 1 and Appendix 2): Intertidal communities and shorelines include mangroves, macroalgae, seagrass, coastal saltmarsh, rocky and sandy shorelines. Intertidal reefs and sandy shorelines are important cultural heritage sites and are important habitats for marine fauna and culturally significant species such as seabirds

and migratory shorebirds, fish, sharks, rays, eels, and pinnipeds. Sea Country for Wadawurrung people includes coastal habitats such as seagrass and saltmarsh.

- Australian Marine Parks, wetlands, and State parks and reserves (Sections 4.3.1, 4.4, and 4.5): The nearby First Nations people residents have strong cultural associations with Sea Country and may have cultural responsibilities of the waters and Marine Parks and Reserves that are located within Country. Some First Nations groups including the Gunaikurnai people have joint management over the Marine Parks and reserves within Country. Marine parks and reserves around Wilsons Promontory and Ninety Mile Beach National Park were inhabited Gunaikurnai ancestors. Marengo Reef Marine Park holds cultural significance for the Eastern Maar people. The marine park includes rocky features with high structural diversity, and provides for numerous filter-feeding organisms, such as tube worms and barnacles, and are surrounded by bull kelp. Islands within the park are known as a haul out site for fur seals. Wadawurrung Country covers the Avalon Coastal reserve.

5.6.1.11 Registered Heritage Findings

Interrogation of registers associated with Aboriginal cultural heritage sites, objects and intangible underwater cultural heritage was undertaken in 2025. The findings (ABMC, 2025) included:

- Victoria: The Victorian Aboriginal Heritage Register is not publicly accessible. Access had been requested, with no results of that search forthcoming at the time of writing.
- Tasmania: Results from a search of the Tasmanian Aboriginal Heritage Register identified records of approximately 500 sites on Flinders Island and the west coast of Tasmania. These consisted of shell middens, rock shelters, hut depressions, rock markings, stone arrangements, artefact scatters and isolated artefacts.
- South Australia: Results from the search of Register of Aboriginal Sites and Objects revealed 21 Aboriginal sites as significant or potentially significant.
- New South Wales: Results from the search of the Aboriginal Heritage Information Management Systems identified 105 Aboriginal sites and places. 103 of these were of an archaeological nature, with the remaining two (both associated with Barunguba (Montague Island) off Narooma), relating to the island's importance as a ceremonial, teaching and food-gathering site for the Yuin People.

This is not an exhaustive record of cultural heritage locations as First Nations Peoples may choose to not register certain heritage sites.

5.6.2 Maritime Heritage

In Australia, sunken aircraft, wrecks (>75 years old) and other underwater cultural heritage is protected within waters inside or outside Australian waters under the *Underwater Cultural Heritage Act 2018* (Cth). The Act is administered in collaboration between the Commonwealth and the States, Northern Territory and Norfolk Island.

No historic shipwrecks were identified on the Australian National Shipwreck Database (DEE, 2017x) within VIC/L24, VIC/P44, VIC/L23, VIC/RL16 or VIC/L32. However, the database indicates lists the coordinates of the Barque shipwreck as being located within VIC/RL13. Further consultation with DAWE in 2020 (as part of the BMG closure project) resolved that the resting location of the Barque is unknown. The closest known historic shipwrecks within the Gippsland Environmental Sector are:

- VIC/L23 (Sole): approximately 29 km southwest to S.S Selje

- VIC/RL16 (Patricia Baleen pipeline): approximately 7 km south to Anne and Mary and, 9 km north to Level Lass
- VIC/L32 (Sole) approximately 15 km southwest to Commissioner
- VIC/RL13 (BMG): approximately 20 km southeast to Level Lass, and 28 km northwest to AHO 6528 – Unknown.

The western Victorian coastline is known as the 'Shipwreck Coast' due to the number of wrecks present with most wrecked during the late nineteenth century. The strong waves, rocky reefs and cliffs of the region contributed to the loss of these ships. The wrecks represent significant archaeological, educational and recreational (i.e., diving) opportunities for tourism and local enjoyment.

One shipwreck <75 years old, Alfred (ID 11052) is identified as proximal to Amplitude Energy assets (VIC/P76) within the Otway Environmental Sector:

- Latitude: -38.68
- Longitude: 142.79

However, these listed coordinates for Alfred are incorrect; the Alfred is a small lighter wreck that was purposely scuttled to form a jetty at Middle Island Light station (DCCEEW, 2024q), approximately 40km ENE of the location given within the Cultural Heritage Database. Coordinates of heritage listed within the Australasian Underwater Cultural Heritage Database are not necessarily the known coordinates. The actual location of the heritage may be some distance from the location attributed on the heritage database.

Additional known historic shipwrecks within proximity to the Amplitude Energy Otway permits include:

- VIC/L24 (Casino): approximately 16 km west to S.S Selje, and 16 km to south of several shipwrecks off Peterborough coast.

Numerous shipwrecks records exist across the Environmental Sectors (Figure 5-51 and Figure 5-52). Some historic shipwrecks lie within protected or no-entry zones. These zones cover an area around a wreck site, ensures that a fragile or sensitive historic shipwreck is actively managed. Seven of these protected zones do occur within inshore coastal waters of the Environmental Sectors (Figure 5-52).

The search resulted in the identification of a handful of submerged aircrafts and a large number of historic (>75 years) and non-historic (<75 years) shipwrecks, within the Bass Strait and Gippsland Environmental Sectors (Figure 5-51).

However, coordinates of heritage listed within the Australasian Underwater Cultural Heritage Database are not necessarily the known coordinates. Where records are incomplete, general coordinates are assigned which may give a nominal location within the region (e.g., where the ship was last observed or understood to be sailing through or to). As in the case of the Alfred, the actual location of the heritage may be some distance from the location attributed on the heritage database.

For conservation, management or public safety reasons certain shipwrecks within Australia have additional protection zones than that established under the Underwater Cultural Heritage Act 2018 (Cth). Those within the Bass Strait Environmental Sector include:

- SS Glenelg (1900) – 500 m radius
- Clonmel (1841) – 50 m radius

- SS Alert (1893) – 500 m radius (DCCEEW, 2021d).

Additional known historic shipwrecks within the Gippsland Environmental Sector include:

- SS Federal (1901) – 800 m radius.

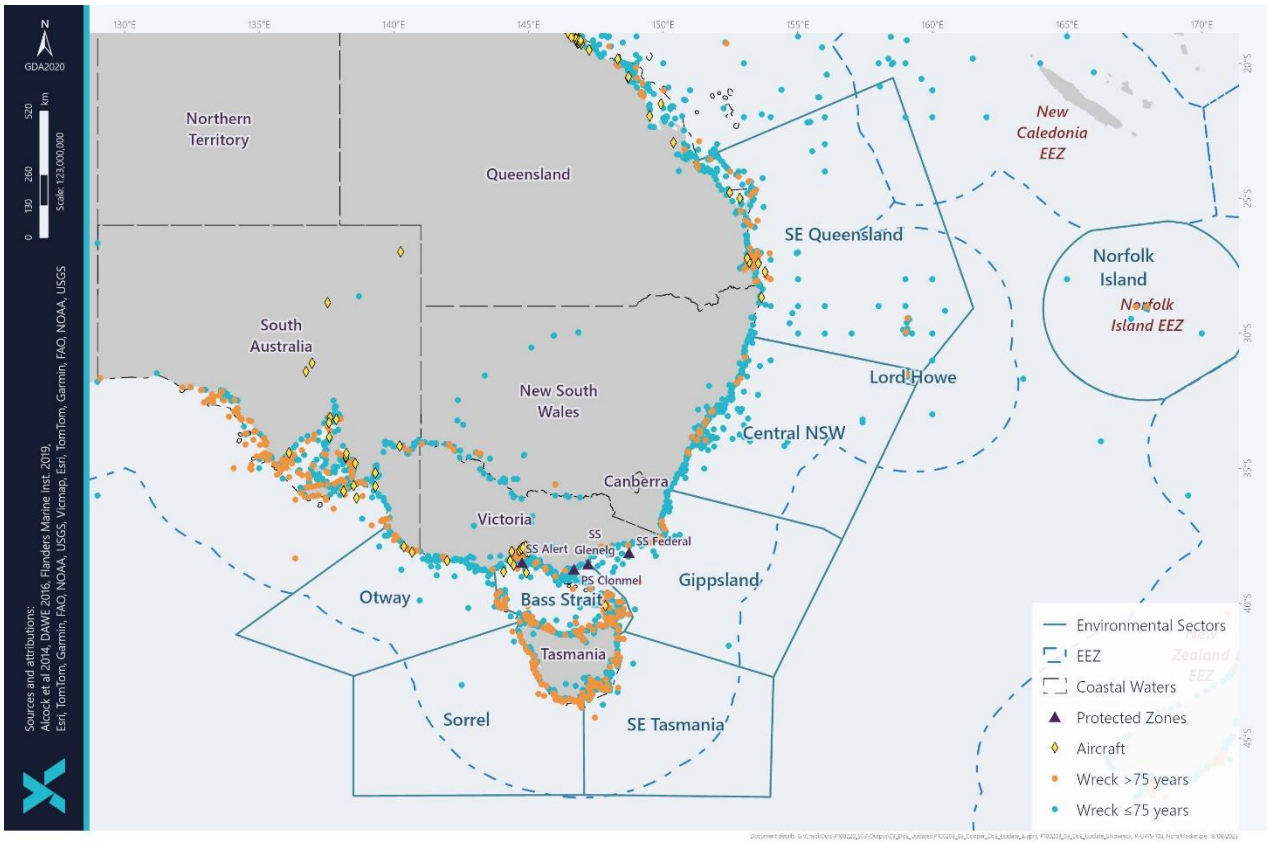


Figure 5-51: Locations of Historic Shipwrecks within the Environmental Sectors

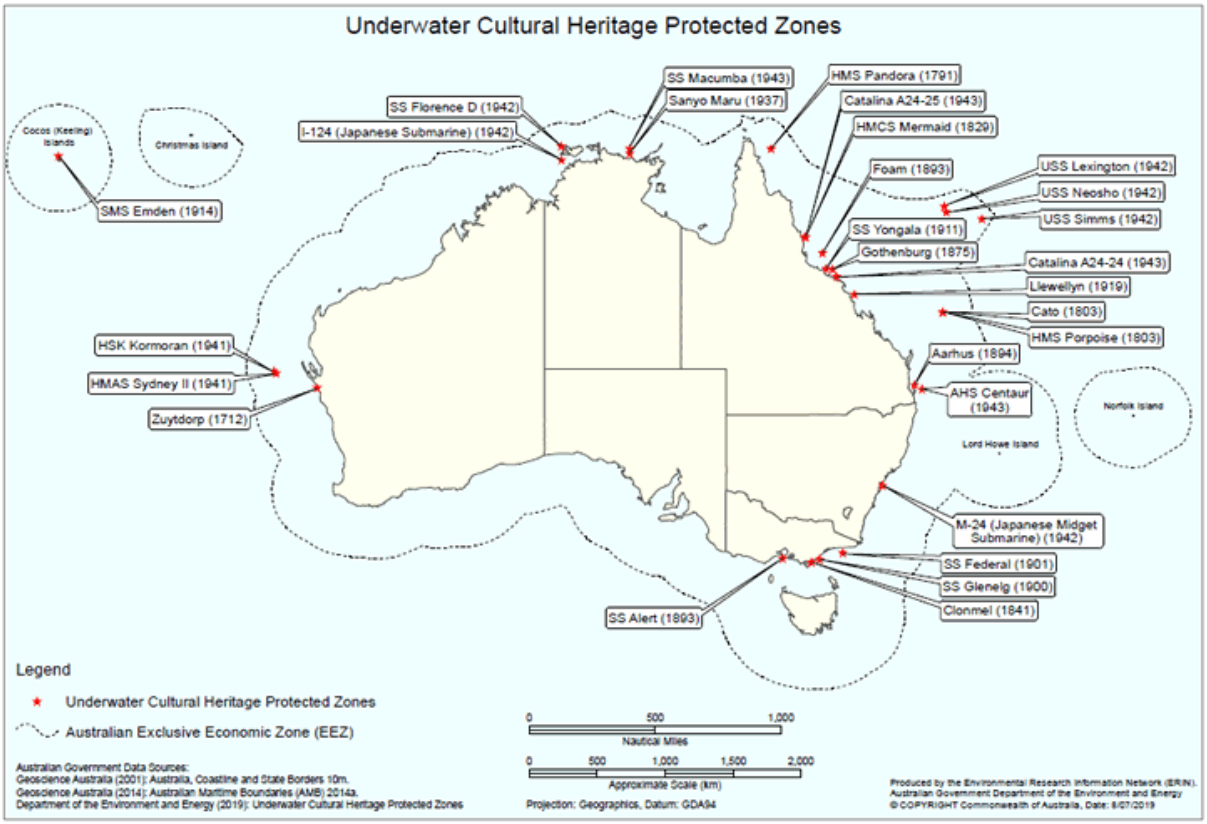


Figure 5-52: Commonwealth Historic Shipwrecks with Protected Zones (Source: CoA, 2019)

5.6.3 Heritage Places

Commonwealth heritage places are owned or controlled by the Australian Government that are of Indigenous, historic or natural heritage. Places may also be connected to defence, maritime safety, communications, customs or other government activities that reflect Australia's development as a nation. Several Commonwealth Heritage Places are located along the coastline and nearshore waters of Victoria, Tasmania, NSW and South Australia.

There are 30 Commonwealth Heritage Places, and 24 National Heritage places with a marine or coastal interface boundary located within the Environmental Sectors (Table 5-9). This includes places that have been listed for natural, historic and indigenous features. One Commonwealth Historic Listed Place, the Arched Building, Longridge is located within the Norfolk Island Environmental Sector. However, this Listed Place has been excluded as the boundary of this Listed Place does not intersect marine or coastal areas.

Listed World Heritage Properties are described in Section 4.1.

Table 5-9: Heritage Places with Coastal Interfaces Within the Environmental Sectors (DCCEEW, 2025f)

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Commonwealth Heritage Places										
Admiralty House Garden and Fortifications	Admiralty House Garden and Fortification is historically and culturally significant as the long-term Sydney residence of the Governor General, formerly home to Royal Navy Commanders-in-Chief and prominent private owners. The garden, with its 19th-century design, notable plantings, and fortifications, provides an important visual landmark on Sydney Harbour. It holds aesthetic value through its harbour views and complementary setting to the Italianate residence, and social value as a venue for official and public functions. The associated Kirribilli Point barracks and battery, built in the 1850s, are a rare surviving example of mid-19th century harbour defences, adding to the site's historic importance. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Aesthetic characteristics, Social Value, Significant People.						✓			
Beecroft Peninsula	The Beecroft Peninsula is the best example of a Permian cliffed coast in New South Wales. The area supports a high diversity of vegetation types within a small area including mangroves, saltmarsh, freshwater swamps, heathland, eucalypt forest and subtropical and littoral rainforest. Beecroft Peninsula retains the largest area of heath remaining on the south coast of New South Wales. This floristically rich vegetation provides important habitat for a variety of bird species, including the vulnerable ground parrot. Beecroft Peninsula occurs near the southern boundary of the Hawkesbury Sandstone geological unit. Accordingly, the place has a high number of flora and fauna species at the limit of their distribution. • Listed: 2004						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	• Class: Natural • Criterion: Processes, Rarity, Research, Characteristic values, Aesthetic characteristics • Other: includes indigenous heritage areas at Crocodile Head and Currarong Rock shelters.									
Cascade Reserve	Cascade Reserve is historically significant as one of Norfolk Island's first European landing sites, established in 1788, and as the location of Phillipsburgh village during the First Settlement period. It was central to early flax production, agriculture, and trade, later serving as a key landing and watering place for ships. The Reserve also retains archaeological evidence from both convict settlement periods (1788–1814 and 1825–1855). Particularly around Cascade Creek, roads, and the jetty area. It holds social value for the Norfolk Island community as a place of connection, recreation, and heritage, with significant features including the jetty area, former whaling station, Cascade Creek, waterfalls, and lookouts. • Listed: 2022 • Class: Historic • Criterion: Processes, Research, Social Value.									✓
Chowder Bay Barracks Group	Chowder Bay Barracks Group, built in the early 1890s, is a highly significant military complex associated with Sydney Harbour's late 19th-century defences and the Submarine Mining Corps, which introduced advanced military technology and the earliest use of electricity in defence. The site retains rare and possibly unique features, including an extant mine laboratory, and is the only depot of its kind in NSW. Its buildings, workshops, magazines, and other structures demonstrate the character of a submarine mining depot, with original fabric contributing to its heritage value. The place is also significant for its association with defence experts Sir William Jervois and Lt Col Peter Scratchley and remains a distinctive maritime landmark on Sydney Harbour. • Listed: 2004						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	• Class: Historic • Criterion: Processes, Rarity, Characteristic Values, Aesthetic Characteristics, Technical Achievement, Significant People.									
Crocodile Head Area	This site is located on Beecroft Peninsula near Crocodile Head and is listed within the Beecroft Peninsula Commonwealth Heritage Property. • Listed: 2004 • Class: Indigenous.						✓			
Defence site - Georges Heights and Middle Head	The Defence Site at Middle Head and Georges Heights is of outstanding heritage significance for its long history of Aboriginal occupation, its central role in the defence of Sydney Harbour from the early 19th century to the 1960s, and its contribution to the cultural landscapes of Sydney Harbour. The area contains a wide range of defence-related sites, structures and complexes including barracks, fortifications, gun batteries, housing and naval facilities which illustrate the evolution of military technology, strategy and training in Australia under Imperial, Colonial and Commonwealth policies. It is associated with key figures such as Sir William Jervois, Lt Col Peter Scratchley, Lt Col J Gordon and Colonial Architect James Barnet, and retains rare and innovative features including submarine mining facilities and early examples of camouflage. The headland also has strong social and aesthetic values, forming part of the iconic Sydney Harbour foreshores, valued for its scenic landscapes, recreational use, and symbolic importance in Sydney's cultural identity. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Research, Characteristic Values, Aesthetic Values, Technical Achievement, Social Value, Significant People, Indigenous Tradition.						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Fort Queenscliff	Fort Queenscliff, established from 1860, is of outstanding historical significance as the first and principal defence site for Port Phillip Bay and a command centre for surrounding fortifications, making the bay the most heavily defended British port in the southern hemisphere. It demonstrates the evolution of coastal defence and military technology through its magazines, gun emplacements, walls, barracks, parade ground and associated structures, and is notable for rare features such as its massive landward wall, keep and large-scale unreinforced concrete works. Closely associated with defence experts Lt Col Peter Scratchley and Sir William Jervois, the Fort later became the central instructional college for army officers and remains an active defence site with strong social value for the military and the local community. Its prominent coastal setting, lighthouse and distinctive wall and keep contribute significant aesthetic and townscape values. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Characteristic Values, Aesthetic Values, Technical Achievement, Social Value, Significant People.		✓							
Fort Wallace	Fort Wallace is nationally significant as a key element of the Newcastle Fortress Area, developed to protect Newcastle Harbour and its vital industries. During World War One, Newcastle was a critical coal export hub for Australia and the Allied Nations, and in World War Two it became a major steel producer. The fort's importance increased in World War Two with the installation of 9.2-inch guns, making it the primary counter-bombardment facility for the region. Fort Wallace demonstrates three consecutive phases in coastal defence technology: the late nineteenth to early twentieth century 6-inch guns operated manually; the 9.2-inch guns supported by hydraulic and electrical power, radar, aircraft, computers, and communications systems; and post-1950s tactical air support, reflecting the shift from fixed land guns to airborne defence. It is rare in Australia for one site to contain all three phases, and uniquely, Fort Wallace was the only installation to house						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	both 6-inch and 9.2-inch guns along with associated infrastructure such as plotting rooms and observation towers. The fort also stands out as one of the few defence sites to remain active after World War Two, with the Inner Fort Precinct and Plotting Room Precinct holding particular heritage value. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Research.									
Garden Island Precinct	The Garden Island Precinct is of outstanding historical and cultural significance, being associated with the earliest days of British settlement and later developing into Australia's principal naval base. From its role as a vital source of fresh produce in 1788, the island evolved through the nineteenth century as a key Royal Navy station and, since the early twentieth century, has served as the Royal Australian Navy's main fleet base and dockyard, central to Australia's naval history and participation in global conflicts. It is rare for retaining such a unified group of fine nineteenth century naval buildings alongside unique elements including 1788 carvings, specialised machinery, and the early Oil Tank, all of which demonstrate technological and historical interest. Architecturally, the precinct showcases significant naval buildings in Victorian and Federation styles, many designed by NSW Colonial Architect James Barnet, and it remains socially significant to naval personnel and the wider Sydney community. With its distinctive blend of historic naval structures, maritime features, and industrial and landscaped areas, Garden Island is also a highly prominent and aesthetically valued landmark on Sydney Harbour. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Characteristic Values, Aesthetic Characteristics, Social Value, Significant People.						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
HMAS Cerberus Marine and Coastal Area	The Sandy Point/HMAS Cerberus area is one of the largest spit systems on the Victorian coast and one of the State's most dynamic shorelines. The area extends east from Somers on the western shore of Western Port which is a Ramsar wetland. The area contains a diverse range of marine and coastal habitats, including tidal channels, fast tidal currents, tidal mudflats, mangroves, saltmarshes and sand beaches resulting in high biodiversity of marine species including marine invertebrates and migratory and resident shorebirds. EPBC listed seabirds such as the Shy Albatross, and the Southern Giant Petrel also utilise the area. • Listed: 2004 • Class: Natural • Criterion: Processes, Rarity, Research It is possible that cultural values, both Indigenous and non-Indigenous, of national estate significance may exist in this place, however none have currently been identified within publicly available literature.		✓							
HMAS Penguin	The HMAS Penguin site comprises a series of defence-related buildings and areas and includes the waterfront areas (and jetty complex). HMAS Penguin is highly valued by the Mosman community for its symbolic, cultural and social associations. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Aesthetic characteristics, Social value.						✓			
HMS Sirius Shipwreck	The archaeological remains of HMS Sirius represent a tangible link to the most significant vessel associated with early migration of European people to Australia. HMS Sirius was guardian of the first fleet during its epic voyage to Australia between 1787 and 1788, which brought the convicts, soldiers and sailors who became Australia's first permanent European settlers.									✓

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	• Listed: 2011 • Class: Historic • Criterion: Processes, Rarity, Research, Social value, Significant people.									
Jervis Bay Territory	The Commonwealth owned Jervis Bay Territory, occurs near the southern boundary of the Hawkesbury Sandstone. Accordingly, it has a high diversity of plants and represents a northern or southern distribution limit for 33 species of plants. Dominant vegetation types include forests, woodlands, heathlands and shrublands. The place includes well preserved examples of mangrove, saltmarsh and littoral rainforest communities. The area is home to the Koori people of Wreck Bay who have always lived in, and have strong cultural ties to, the area. The place contains a large number of prehistoric Aboriginal sites. Rock shelters, stone-flaking sites and axe-sharpening grooves and shell middens demonstrate the length of Aboriginal occupation of the area. Ceremonial BUNAN or BORA grounds, used for initiation, are known only from the immediate hinterland of Wreck Bay, and nearly all known grinding groove sites are in the catchments of Mary and Summercloud Bays. These sites demonstrate past cultural practices and are important to the Wreck Bay community. • Listed: 2004 • Class: Natural • Criterion: Processes, Rarity. Research, Characteristic values, Aesthetic characteristics • Other: includes indigenous heritage areas at Crocodile Head and Currarong Rock shelters.						✓			
Kingston and Arthurs Vale Commonwealth Tenure Area	• This property is World Heritage Listed, with values described in Section 4.1									✓
Kirribilli House Garden & Grounds	The gardens and grounds of Kirribilli House, developed from the 1850s, are historically and socially significant for their association with Sydney's harbourside development, the						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	lifestyle of prominent residents, and their continuous use as the Prime Minister's Sydney residence since 1957. They have hosted visiting overseas dignitaries and are linked to early campaigns to conserve foreshore open space. The grounds reflect both Victorian landscape design and later adaptations to suit Prime Ministerial functions, including a 1956 redesign by Professor E.G. Waterhouse, a leading figure in Australian garden history. The gardens are notable for their Victorian Rustic Gothic style, mature plant specimens, and strong visual relationship with the Gothic house and Sydney Harbour. Together with neighbouring Admiralty House, they form an important harbourside garden backdrop. The site's aesthetic value is enhanced by its visibility from the harbour and its aged tree canopies. The grounds also contain one of the oldest surviving harbourside bathing pools in Sydney, though in a ruinous state. The property holds community value, being well known through its prominence on the harbour and occasional public open days. • Listed: 2004 • Class: Historic • Criterion: Processes, Aesthetic characteristics, Social Value, Significant People.									
Lady Elliot Island Lightstation	Lady Elliot Island Lightstation, built in 1873 with a timber-framed substructure and cast-iron cladding, is significant for its rare timber-framed staircase, its historical evolution reflecting changes in lighthouse technology and associated buildings, and its role in establishing navigational aids along the Queensland coast. It is also a prominent landmark marking the southern end of the Great Barrier Reef Marine Park and illustrates the development of Queensland's coastal regions after separation from New South Wales. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Characteristic Values, Aesthetic Characteristics, Technical Achievement.							✓		

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Lord Howe Island Group	This property is World Heritage Listed, with values described in Section 4.1.								✓	
Macquarie Lighthouse Group	The Macquarie Lightstation, built in 1883, is significant as the site of Australia's first lighthouse and the longest continuously operating navigational beacon in the country. It is associated with Governor Lachlan Macquarie and colonial architects Francis Greenway and James Barnet. The site has outstanding landscape value at the entrance to Sydney Harbour, with nineteenth century buildings displaying harmony in form, scale, materials, and textures. It illustrates the challenges of early colonial construction, including site isolation and on-site quarrying, and provides evidence of the changing living and working conditions of lighthouse keepers and their families, forming an early maritime community. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Aesthetic Characteristics, Technical Achievement, Significant People.						✓			
Malabar Headland	Malabar Headland contains two significant bushland remnants: representing one of the largest areas of essentially unmodified bushland in Sydney's eastern suburbs. The bushland is a significant part of one of two semi-natural corridors between Botany Bay and Port Jackson. The vegetation communities of Malabar Headland are of scientific and educational significance because they contain rare examples of coastal communities growing on Pleistocene sand deposits within the Sydney region. These communities have different species composition to those found elsewhere in the Sydney region. • Listed: 2004 • Class: Indigenous • Criterion: Processes, Rarity, Research, Social value, Indigenous tradition.						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Nepean Island Reserve	Nepean Island reserve is an important component of the Norfolk Island Group protected area system. Many of the public reserves provide an important habitat for a variety of sea and terrestrial birds and contains regenerative native vegetation. Nepean Island is the main breeding site within the Norfolk Islands for the masked booby *(Sula dactylatra).* • Listed: 2004 • Class: Natural • Criterion: Processes, rarity.									✓
Phillip Island	Phillip Island is a striking feature in the Norfolk Island seascape, with its steep terrain and exposed geology. The island supports significant seabird populations. It is the northernmost breeding site for the Australasian gannet (*Morus serrator*) and hosts one of Australia's largest breeding colonies of the red-tailed tropicbird (Phaethon rubricauda). It also lies within the restricted breeding ranges of the providence petrel (*Pterodroma solandri*), Kermadec petrel (*Pterodroma neglecta*), and white-necked petrel (*Pterodroma cervicalis*). • Listed: 2004 • Class: Natural • Criterion: Processes, Rarity, Research, Aesthetic Characteristics.									✓
Point Cook Air Base	Point Cook Air Base is historically significant as the site of the establishment of Australia's military aviation forces in 1913, including the Central Flying School and the Australian Flying Corps, and later as the focus of the newly formed RAAF under Sir Richard Williams. The base illustrates the development of Australia's air force, reflecting British-influenced planning with clear separation of functions and social hierarchy, and includes seminal buildings from 1914 to 1939 such as hangars, training facilities, officers' and airmen's quarters, the Officers Mess, headquarters, parade ground, and seaplane structures. The site played a role in pioneering flights, including the first transcontinental flight to Darwin		✓							

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	(1920), the first round-Australia flight (1924), and the first non-stop flight to Perth (1928). Architecturally, it demonstrates the Commonwealth Vernacular and Moderne styles and retains strong aesthetic, social, and symbolic value for RAAF members and the wider community, as well as an association with Sir Richard Williams and the formation of the RAAF. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Research, Characteristic Values, Social Value, Significant People.									
Point Perpendicular Lightstation	Point Perpendicular Lightstation, built in 1899, is historically significant as a relatively intact group of substantial Victorian lighthouse buildings and the first in New South Wales constructed from pre-cast concrete blocks using locally quarried stone. The Lightstation reflects the evolution of coastal navigational aids and the economic development of the surrounding region and is associated with Public Works Department designer Charles Assinder Harding, being one of three lighthouses he designed. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Research, Characteristic Values, Significant People.						✓			
Point Wilson Defence Natural Area	Point Wilson is an important part of the Western Port Phillip Bay Ramsar Area, an internationally significant wetland that provides habitat for many migratory and resident wading birds and waterfowl. It is one of the most important sites in Australia for the Double-banded Plover, regularly attracting a large population in winter. Point Wilson is also visited during winter by the endangered Orange-bellied Parrot. Other birds often recorded at the place in large numbers include Pacific Golden Plovers, Ruddy Turnstones, Curlew Sandpipers, Sharp-tailed Sandpipers and Pied Oystercatchers. The low rainfall regime of the place and the adjoining Murtcaim Wildlife Area produces dry coastal salt		✓							

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	marshes atypical of any other coastal salt marshes in Victoria. These dry salt marshes are located very close to wet salt marshes and, where these two forms coincide, they produce the most structurally and floristically diverse salt marshes in Victoria. The Point Wilson Defence Natural Area is an important cultural site for the Wathaurong people. The cultural significance of the place arises from sites and artefacts recorded there, the land on which they rest and the ecological values of the area. • Listed: 2004 • Class: Natural • Criterion: Processes, Rarity, Characteristic values, Social value.									
Royal Australian Naval College	HMAS Creswell, founded in 1911, is historically significant as the first Australian Naval College based on Royal Navy training principles and for its ongoing use in naval training, including World War Two and post-war rehabilitation activities. Architecturally, the College demonstrates early twentieth century military planning with a geometric layout, formal and informal precincts, and integration with its parkland bay-side setting in Jervis Bay. The site features high-quality Federation and Federal Capital style buildings, including the Quarterdeck, Clock Tower, Messes, residential blocks, waterfront facilities, and landscaped gardens, reflecting both British naval traditions and 'Garden City' design principles. Creswell retains strong aesthetic and cultural significance, with its picturesque bay views, preserved historic buildings, and landscaped setting, while also being associated with notable naval officers and Commonwealth architect J.S. Murdoch. The precinct is valued for its unity of design, integrity of form and materials, and its rich cultural and military heritage. • Listed: 2004 • Class: Historic • Criterion: Processes, Characteristic Values, Aesthetic Characteristics, Technical Achievement, Significant People.						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Selwyn Reserve	Selwyn Reserve, along with other public reserves, makes up an important component of the protected area system on Norfolk Island. Many of the public reserves, including Selwyn Reserve, are situated on the coast and provide important habitat for a variety of sea and land birds as well as for native vegetation. • Listed: 2004 • Class: Natural • Criterion: Processes, Aesthetic Value, Social Value.									✓
Swan Island Defence Precinct and Swan Island and Naval Waters	Swan Island is the largest emergent sand accumulation feature in Port Phillip Bay. The island, which has been built principally by wave actions rather than by aeolian forces, has played a major role in determining the pattern of sedimentation in Swan Bay and preserves geomorphological evidence of changing Quaternary sea levels. The eastern and northern shores of the eastern arm of Swan Island are of regional significance as an example of active coastal depositional and erosional processes. The patterns of erosion and accretion on these shores provide a good indicator of sand movements into Port Phillip Bay. Swan Island and Naval Waters is an integral part of Swan Bay, an internationally significant wetland which is important as wader and waterfowl habitat and provides important habitat for 46 water bird species: of which 26 species are listed under the Japan-Australia and China-Australia migratory bird agreements; and 8 species are listed under the Bonn Convention on Migratory Species. Swan Island Defence Precinct • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Research, Characteristic values, Technical Achievement, Significant People.		✓							

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Swan Island and Naval Waters • Listed: 2004 • Class: Natural • Criterion: Processes, Rarity, Research, Characteristic values. A number of historic shipwrecks are known to have occurred within the vicinity of Swan Island, 6 of which are known within the Naval Waters. The area also contains a highly significant historic cultural landscape, as the Swan Island Defence Precinct, a network of defensive fortifications, was built for Victoria's protection by the Colonial government in 1879.									
Swan Island Lighthouse	Swan Island Lighthouse, completed in 1845, is significant as the oldest lighthouse in Bass Strait and one of four pre-1850 lighthouses in Tasmania, forming part of the mid-nineteenth century Bass Strait navigation network. Built using convict labour, it reflects both the ongoing role of convicts in government projects and early intercolonial cooperation in maritime safety. The lighthouse is associated with Sir John Franklin, Lieutenant Governor of Van Diemen's Land, and demonstrates distinctive construction with a rendered rubble base and freestone capital. Intact 1930s buildings show its continued development, and the tower remains a prominent landmark with notable aesthetic and historic significance. • Listed: 2004 • Class: Historic • Criterion: Processes, Rarity, Aesthetic Characteristics, Technical Achievement, Significant People.		✓							
Tasmanian Seamounts Area	The Tasmanian pinnacle seamounts support intact benthic communities that differ markedly from the sediment dwelling faunas of the surrounding deep-sea floor. The seamounts are dominated by cold-water coral species and characterized by a relatively high species richness and endemism. They can be regarded as oases of comparative				✓	✓				

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	productivity in the open ocean, with the coral matrix which provides habitat otherwise lacking in the dark and deep abyssal waters and dense schools of seamount-associated fish. The seamounts communities are very vulnerable to disturbance being dominated by long-lived species with low growth rates. Research on the Tasmanian seamounts has already substantially contributed to the nation's knowledge of deep-sea organisms and has potential to continue to do so. They are regionally unusual ecosystems that represent the principal characteristics of seamounts as species-rich, deep-sea communities. • Listed: 2006 • Class: Natural • Criterion: Processes, Rarity, Research, Characteristic values.									
Wide Bay Military Reserve	The Wide Bay Military Reserve contains a diverse range of plant communities, including estuarine areas, coastal marshes, patches of rainforest, wetlands, heath, shrublands, woodlands, and open forests. It features a representative example of the coastal lowland complex known as 'Wallum' (Coaldrake, 1961) and includes valuable remnants of coastal rainforest. The reserve lies at the northern and southern range limits for several flora and fauna species and serves as a key refuge for palaearctic migratory birds, including species listed under the Japan-Australia Migratory Bird Agreement. Its intertidal zones form part of the Great Sandy Strait, one of Queensland's most important habitats for waders. Over 250 bird species have been recorded, a high number by Australian standards. Wide Bay also provides critical habitat for the endangered Ground Parrot (Pezoporus wallicus) in Queensland. The area forms a continuous natural corridor with Fraser Island and Cooloola National Park. • Listed: 2008 • Class: Natural • Criterion: Processes, rarity, characteristic values.							✓		

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
National Heritage Places										
Bondi Beach	Bondi Beach is an urban beach cultural landscape of waters and sands, where the natural features have been altered by development associated with beach use and consisting of promenades, parks, sea baths, the surf pavilion and pedestrian bridges. The predominant feature of the beach is the vastness of the open space within an urban setting. Bondi Beach is significant in the course of Australia's cultural history as the site of the foundation of Australia's first recognised surf lifesaving club in 1907. Bondi Beach is one of the world's most famous beaches and is of important social value to both the Australian community and to visitors. • Listed: 2008 • Class: Historic • Criterion: Events, Processes, Social value • Other: includes the Bondi Beach Surf Pavilion.						✓			
Coal Mines Historic Site	The Coal Mines Historic Site (1833–1848) is a penal colliery and probation station on the Tasman Peninsula, reflecting British convict transportation and the exploitation of natural resources in an isolated setting. At its peak, it housed up to 500 convicts and over 100 guards and family members. The site demonstrates the harsh realities of convict life, with ruins of barracks, solitary cells, a chapel, semaphore structures, and guard houses, alongside industrial features such as coal seams, adits, pit machinery, inclined planes, wharves, and jetties. It illustrates the hierarchy of officers' and prisoners' accommodation, support industries, and coal transport, and provides rare evidence of the severe punishment and moral concerns of the probation system. The intact landscape, including dormitories, solitary cells, and convict apartments, offers high archaeological potential to reveal convict working conditions, technical skills, penal					✓				

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	administration, and mining technologies, highlighting the convicts' contribution to the colony's economic development. • Listed: 2007 • Class: Historic • Criterion: Events, Processes, Rarity, Research.									
Darlington Probation Station	The Darlington Precinct is the most intact convict probation station in Australia and holds significant cultural and historical value. Operating from 1842 to 1850, it exemplifies the uniquely Australian probation system developed under Lieutenant Governor Sir John Franklin, which aimed to provide both punishment and opportunities for reform, in contrast to the earlier assignment system criticized in Britain. The site includes thirteen buildings and structures associated with the station's operation, such as convict barracks, separate apartments, a chapel, bakehouse, cookhouse, officers' quarters, oast/hop kilns, and mill foundations. Set within a largely natural environment, the precinct provides a vivid sense of life during the convict era. • Listed: 2007 • Class: Historic • Criterion: Events, Processes, Significant People.					✓				
Governors' Domain and Civic Precinct	The Governors' Domain and Civic Precinct in Sydney is of outstanding national heritage value for its direct connections to early Australian history, including interactions between Indigenous people and British colonisers, and the development of civic institutions and democratic processes. Its ensemble of buildings, parks, and gardens illustrates key events such as the establishment of Parliament, the Supreme Court, and early suffrage, while rare archaeological material provides exceptional research potential on colonisation and Indigenous contact. The precinct demonstrates the transformation of an early penal settlement into a permanent town under the influence of figures like Governors Macquarie, Phillip, and Bligh, Elizabeth Macquarie, Bennelong, and architect Francis						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Greenway, reflecting improvements in civic amenity, public institutions, and the shaping of Sydney's physical and civic character. • Listed: 2021 • Class: Historic • Criterion: Events, Processes, Rarity, Research, Creative or Technical Achievement, Significant People.									
Great Barrier Reef	This property is World Heritage Listed, with values described in Section 4.1.							✓		
Great Ocean Road and Scenic Environs	The geomorphological features of the Port Campbell Limestone Coast are rare in their diversity, and it is the definitive place in Australia to observe limestone geomorphology and coastal erosion processes on rocky coasts. The Cretaceous coast of the Otway's displays geomorphological processes that are contributing to research into the origins of significant shore platforms that illustrate the environment prior to the breakup of Gondwana. Recreational tourism was among the purposes for the road's construction, and the cultural and natural tourism experiences it offers, including the iconic Twelve Apostles and the treacherous Shipwreck Coast, are greatly valued by the Australian community. The iconic Bells Beach is valued by Australia's surfing community for its place in Australian surfing. It was the world's first Surfing Recreation Reserve and remains the location of the world's longest running international surfing carnival and home to one the most prestigious trophies in surfing. • Listed: 2011 • Class: Historic • Criterion: Events, Processes, Rarity, Research, Principal characteristics of a class of places, Aesthetic characteristics, Social value, Significant people.	✓	✓							

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
HMVS Cerberus	The HMVS Cerberus is important as evidence of the development of Australia as a nation and as part of the British Empire. The British Parliament passed the Colonial Naval Defence Act 1865 giving the colonies the power to make laws to provide for their own naval defence. The construction of HMVS Cerberus (1867-1870) reflects a period in Australia's history when the colonies were thought vulnerable to coastal attack and invasion. • Listed: 2005 • Class: Historic • Criterion: Events, Processes, Rarity.		✓							
HMS Sirius Shipwreck	The archaeological remains of HMS Sirius represent a tangible link to the most significant vessel associated with early migration of European people to Australia. HMS Sirius was guardian of the first fleet during its epic voyage to Australia between 1787 and 1788, which brought the convicts, soldiers and sailors who became Australia's first permanent European settlers. • Listed: 2011 • Class: Historic • Criterion: Processes, Rarity, Research, Social value, Significant people.									✓
Kamay Botany Bay: botanical collection sites	Kamay Botany Bay holds outstanding national heritage value as the site of the Endeavour's first landing in 1770, where Sir Joseph Banks and Dr Daniel Solander collected numerous Australian plant specimens, including type-specimens of high scientific and research significance. These collections both symbolically and practically integrated Australian flora into Western science, revolutionised systematic biology internationally, shaped European perceptions of Australia, and provided a foundational benchmark for subsequent botanical studies of the continent. • Listed: 2017						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	• Class: Historic • Criterion: Events, Processes.									
Kingston and Arthurs Vale Historic Area	This property is World Heritage Listed, with values described in Section 4.1									✓
K'gari (Fraser Island)	This property is World Heritage Listed, with values described in Section 4.1							✓		
Ku-ing-gai Chase National Park, Lion, Long and Spectacle Island Nature Reserves	Ku-ring-gai Chase National Park and Long Island, Lion Island and Spectacle Island Nature Reserves contain an exceptional representation of the Sydney region biota, a region which is recognised as a nationally outstanding centre of biodiversity. The place contains a complex pattern of 24 plant communities, including heathland, woodland, open forest, swamps and warm temperate rainforest, with a high native plant species richness of over 1000 species and an outstanding diversity of bird and other animal species. This diversity includes an outstanding representation of the species that are unique to the Sydney region, particularly those restricted to the Hawkesbury Sandstone landform. • Listed: 2006 • Class: Natural • Criterion: Events, Processes.						✓			
Kurnell Peninsula Headland	Kurnell Headland (comprising Botany Bay National Park and the Sydney Water land at Potter Point), Kurnell Peninsula, is of outstanding heritage value to the nation as the site of first recorded contact between Indigenous people and Britain in eastern Australia. The Meeting Place Precinct, including Captain Cook's Landing Place, features memorials and landscape plantings celebrating the events. Attributes specifically associated with its Indigenous values include the watering point and immediate surrounds, and the physical evidence of Indigenous occupation in the area broadly encompassed by the watering place and the landing stage. The story of Cook's first landing on the east coast of						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Australia is nationally important and an integral part of Australian recorded history and folklore. • Listed: 2004 • Class: Historic • Criterion: Events, Processes, Rarity, Social value, Significant people.									
Lord Howe Island Group	• This property is World Heritage Listed, with values described in Section 4.1.						✓		✓	
North Head (Sydney)	North Head is important as the northern expression of the seaward entrance to Sydney Harbour (Port Jackson) and played a major role in the cultural and military life of the colony of New South Wales, following the arrival of the First Fleet in 1788. The 'Heads', have signified arrival and departure at Port Jackson since 1788 and are recognised as important, iconic, national landmarks. • Listed: 2006 • Class: Historic • Criterion: Events, Processes, Rarity, Research, Principal characteristics of a class of places, Aesthetic characteristics.						✓			
Point Cook Air Base	RAAF Base Point Cook, established in 1913 as Australia's first military flying school, is the birthplace of the RAAF in 1921 and played a central role in training Australia's first military airmen. It is the only remaining World War One military airfield in Australia, containing the oldest and most extensive collection of military aviation buildings, including rare seaplane facilities and hangars. The 1917 master plan established the functional layout, social hierarchy, and organisation of the RAAF, influencing later Australian air bases. The base has strong associations with notable RAAF figures, including Richard Williams, regarded as the father of the RAAF, and Thomas Walter White. Continuously operational until 1992, Point Cook also hosts an aviation museum,		✓							

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	supporting research, restoration, and commemorative activities, and holds enduring cultural and historical significance for RAAF veterans and Australian military aviation. • Listed: 2007 • Class: Historic • Criterion: Events, Processes, Rarity, Research, Principal Characteristics of a Class Of Places, Significant people									
Point Nepean Defence Sites and Quarantine Station Area	Point Nepean is the site of the oldest, surviving, purpose-built, barracks-style, quarantine accommodation buildings in Australia, as well as fortifications demonstrating the primary importance of coastal defence to the Australian colonies. Point Nepean is an historic landscape, which features a range of values relating to both Victorian and national quarantine processes from the 1850s and to the history of coastal defence from the 1870s. • Listed: 2006 • Class: Historic • Criterion: Events, Processes, Rarity, Research, Principal characteristics of a class of places, Significant people.		✓							
Port Arthur Historic Site	Port Arthur Historic Site is a nationally significant and highly intact convict site demonstrating Britain's transportation system to Australia, particularly the secondary punishment system, and the evolution of penal management from 1830–1877. It illustrates the Probation System unique to Tasmania, including solitary punishment at the Separate Prison and rehabilitation at Point Puer for boys. After transportation ceased, the site transitioned to social welfare uses, exemplified by the rare Port Arthur Asylum (1868). The site is a rich cultural landscape combining convict-era structures, town and park developments, and natural beauty, with formal layouts, ruins, and English plantings creating a picturesque setting that contrasts with its history of confinement and punishment. The 1996 mass shooting adds a modern layer of tragic significance.					✓				

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Port Arthur demonstrates key characteristics of Australian convict sites, including classification and segregation, authority and religion, accommodation for convicts and officials, governance, punishment, and industrial and agricultural activities. Its integrity, documentary records, structures, and archaeological potential make it invaluable for research into convict life and penal administration. The site is associated with significant figures in penal philosophy, administration, and reform, including Governors Arthur, Sir John and Lady Franklin, Commandants Booth and Champ, the Royal Engineers, and reformers like Jeremy Bentham, Joshua Jebb, and notable prisoners such as William Smith O'Brien and John Frost. • Listed: 2005 • Class: Historic • Criterion: Events, Processes, Rarity, Research, Principal Characteristics of a Class Of Places, Aesthetic Characteristics, Social Value, Significant People.									
Recherche Bay (North East Peninsula) Area	The north-east peninsula of Recherche Bay has an important association with the French scientific and exploratory expedition of Rear Admiral Bruni D'Entrecasteaux. It stopped at Recherche Bay in 1792 and in 1793 for about seven weeks in total. The relatively extensive, well-documented encounters on the coast of the north-east peninsula of Recherche Bay, compared to those in other places and involving other expeditions, between the expedition members and the Tasmanian Aborigines, provided a very early opportunity for meetings and mutual observation. The recordings, from the French perspective, of these encounters, are important observations of the lives of the Tasmanian Aboriginal people. • Listed: 2005 • Class: Historic • Criterion: Events, Processes, Research, Creative or technical achievement, Social value, Significant people.				✓					

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Royal National Park and Garawarra State Conservation Area	Royal National Park (Royal NP) and Garawarra State Conservation Area (Garawarra SCA) are nationally significant for their exceptional biodiversity, hosting over 1,000 temperate plant species and a rich variety of birds, reptiles, and butterflies, exemplifying the Hawkesbury Sandstone environment. Royal NP, established in 1879 as the second national park in the world and the first in Australia, marks the start of Australia's National Park system and the conservation movement. Its creation as a recreational area reflects growing public appreciation for the natural environment and helped foster broader environmental awareness and protection in Australia. • Listed: 2006 • Class: Natural • Criterion: Events, Processes.						✓			
Sydney Harbour Bridge	The Sydney Harbour Bridge is nationally significant as a major historical, economic, and engineering achievement, symbolising Australia's progress, optimism, and collective pride during the Great Depression. Opened in 1932, it transformed Sydney's development, contributed to the nation's transport infrastructure, and remains an iconic aesthetic landmark inspiring countless artistic works. Technically, it is one of the world's greatest arch bridges, notable for its size, load capacity, and innovative construction using the natural advantages of Sydney's sandstone. The bridge is also closely associated with John Job Crew Bradfield, one of Australia's most renowned engineers. • Listed: 2007 • Class: Historic • Criterion: Events, Processes, Aesthetic Characteristics, Creative or Technical Achievement, Social Value, Significant People.						✓			
Sydney Opera House	This property is World Heritage Listed, with values described in Section 4.1.						✓			

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Tasmanian Wilderness	This property is World Heritage Listed, with values described in Section 4.1.				✓					
The Battle of the Coral Sea Site	The Battle of the Coral Sea Site was listed for its outstanding value for its connection with the strategically important battle that took place in the Coral Sea during World War II and the subsequent strengthening of Australia's security relationship with the United States. It was significant as the four-day battle was the first naval engagement fought using aircraft carriers without opposing ships making contact, marking the beginning of the Allied victory in the Pacific, which was a turning point in World War II. The Battle of the Coral Sea Site includes the location of known shipwrecks within Australia's Exclusive Economic Zone (EEZ), the *USS Lexington, USS Neosho* and *USS Sims*. These locations are representative of a much larger area where the battle was fought that extends outside of Australia's EEZ, and is located between Australia, Papua New Guinea, and the Solomon Islands. Within this larger area, there are other shipwrecks associated with the battle including the Japanese light carrier *Shoho*, and other underwater cultural heritage including numerous (> 160) aircraft lost by both sides, many of which remain undiscovered. • Listed: 2025 • Class: Indigenous • Criterion: Events, Processes, Research.							✓		
Western Tasmania Aboriginal Cultural Landscape	The Western Tasmania Aboriginal Cultural Landscape represents the best evidence of an Aboriginal economic adaptation which included the development of a semi-sedentary way of life with people moving seasonally up and down the north-west coast of Tasmania. This way of life began approximately 1 900 years ago and lasted until the 1830s. Dotted along the wind-swept coastline of the Western Tasmania Cultural Landscape are the remains of numerous hut depressions found in Aboriginal shell middens. These huts and middens are the remnants of an unusual, specialised and more				✓					

Name	Description	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	sedentary Aboriginal way of life which was based on the hunting of seals and land mammals, and the gathering of shellfish. • Listed: 2013 • Class: Indigenous • Criterion: Events, Processes.									

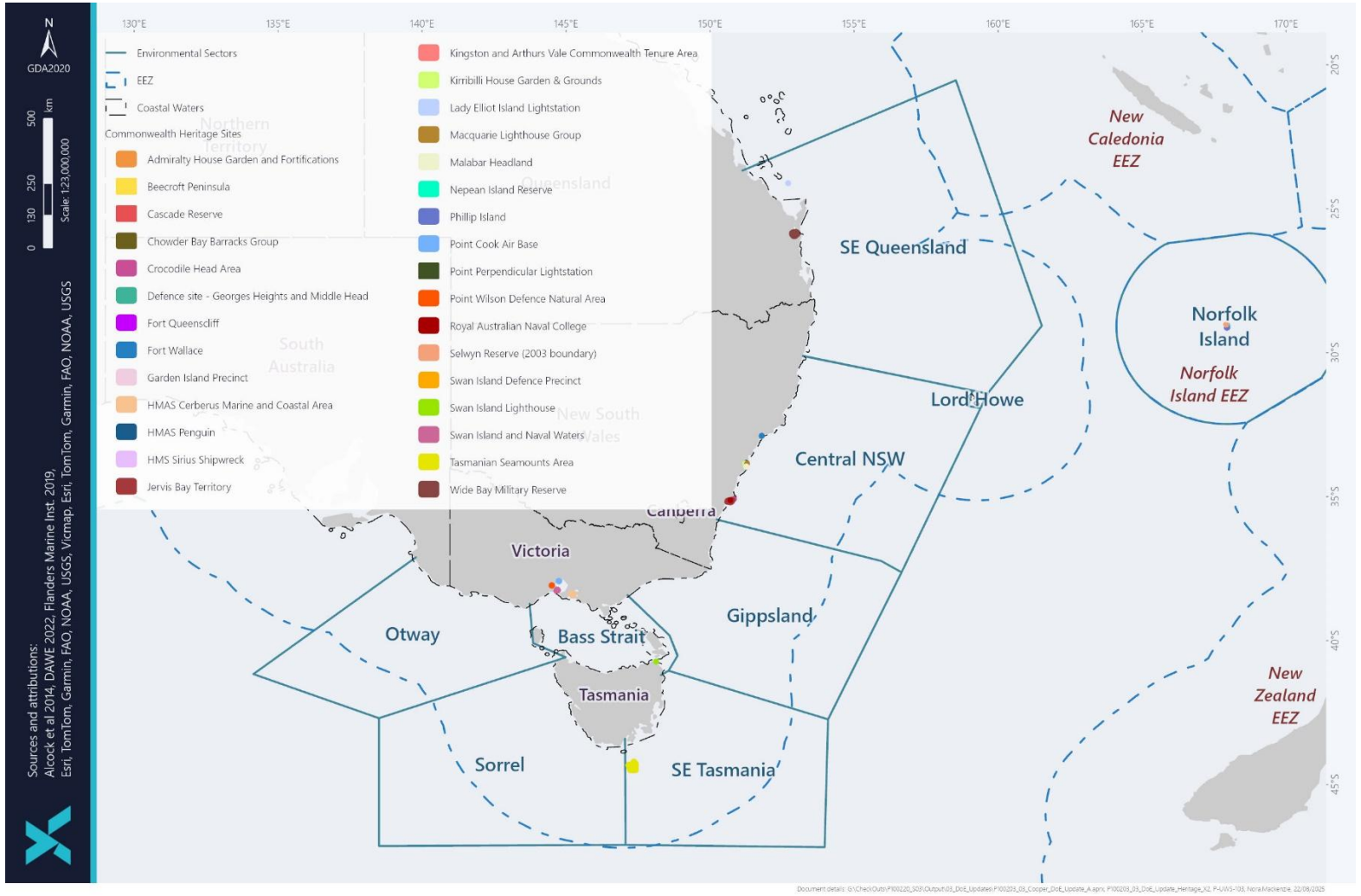


Figure 5-53: Commonwealth Heritage Areas within the Environmental Sectors

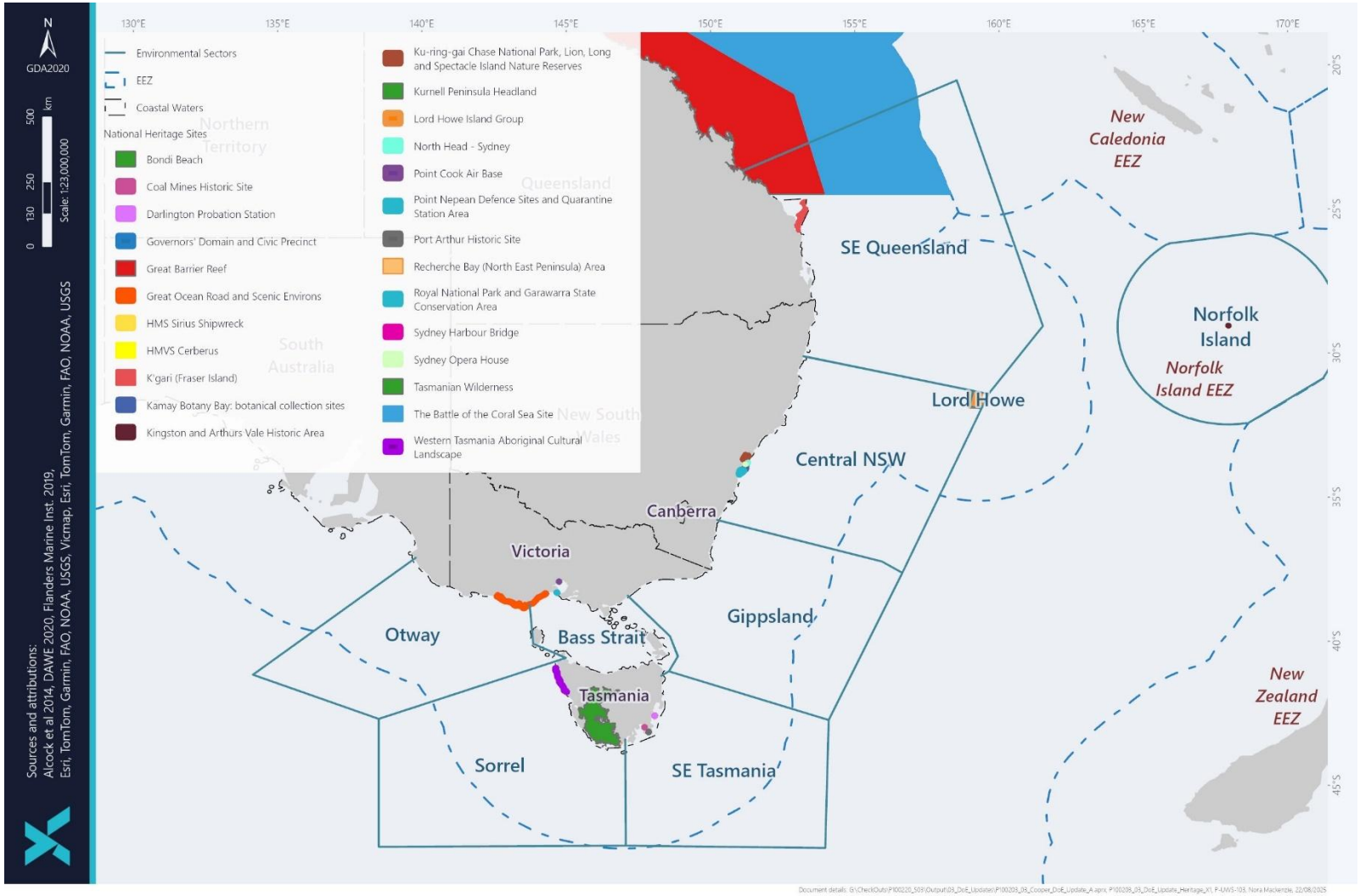


Figure 5-54: National Heritage Places within the Environmental Sectors

6.0 Summary

The following tables show the presence of ecological (Table 6-1) and social (Table 6-2) receptors that may occur within each of the Environmental Sectors (*Figure 1-1*).

Examples of values and sensitivities associated with each of the ecological or social receptors have been included in the tables. These values and sensitivities have been identified based on:

- presence of listed threatened or migratory species, or threatened ecological communities
- presence of BIAs
- presence of important behaviours (e.g. foraging, roosting or breeding) by fauna, including those identified in the EPBC Protected Matter searches
- provides an important link to other receptors (e.g. nursery habitat, food source, commercial species), or
- provides an important human benefit (e.g. community engagement, economic benefit).

For a summary of the receptors present within Amplitude activities operational areas and EMBAs, refer to the relevant Environment Plans.

Table 6-1: Presence of Ecological Receptors within the Environmental Sectors

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Habitat	Shoreline	Cliff	Foraging habitat (e.g. birds) Nesting or Breeding habitat (e.g. birds)		✓		✓	✓	✓	✓	✓	✓
		Rocky	Foraging habitat (e.g. birds) Nesting or Breeding habitat (e.g. birds, pinnipeds) Haul-out sites (e.g. pinnipeds)	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Gravel/Cobble	Foraging habitat (e.g. birds) Nesting or Breeding habitat (e.g. birds, pinnipeds) Haul-out sites (e.g. pinnipeds)	✓	✓		✓	✓	✓	✓		
		Sandy	Foraging habitat (e.g. birds) Nesting or Breeding habitat (e.g. birds, pinnipeds, turtles) Haul-out sites (e.g. pinnipeds)	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Muddy	Foraging habitat (e.g. birds)		✓		✓	✓				
		Tidal Flat	Foraging habitat (e.g. birds)		✓	✓	✓	✓	✓	✓	✓	✓
		Artificial structure	Community engagement Economic benefit	✓	✓	✓	✓	✓	✓	✓	✓	
	Mangroves	Mangrove strands	Nursery habitat (e.g. crustaceans, fish)		✓			✓	✓	✓	✓	

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Saltmarshes	Saltmarsh Ecosystems	Nursery habitat (e.g. crustaceans, fish)	✓	✓	✓	✓	✓	✓	✓	✓	
			Threatened Ecological Community	✓	✓	✓	✓	✓	✓	✓		
	Coastal Vine Thicket	Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Threatened Ecological Community			✓			✓	✓		
	Soft Sediment	Unvegetated soft sediment substrates	Key habitat (e.g. benthic invertebrates)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Seagrass	Seagrass meadows	Nursery habitat (e.g. crustaceans, fish) Food source (e.g. dugong, turtles)	✓	✓	✓	✓	✓	✓	✓	✓	
			Threated Ecological Community						✓			
	Algae	Benthic Microalgae	Food source (e.g. gastropods)	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Macroalgae beds	Nursery habitat (e.g. crustaceans, fish) Food source (e.g. birds, fish)	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Threated Ecological Community		✓			✓				
	Coral	Hard and soft coral communities	Nursery habitat (e.g. crustaceans, fish) Breeding habitat (e.g. fish)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marine Fauna	Plankton	Phytoplankton and zooplankton assemblages	Food Source (e.g. whales, turtles)	✓	✓	✓	✓	✓	✓	✓	✓	✓

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Seabirds and Shorebirds	Seabirds and Shorebirds	Listed Marine Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Threatened Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Migratory Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			BIA – Aggregation	✓	✓		✓	✓				
			BIA – Breeding	✓	✓	✓	✓	✓	✓	✓	✓	✓
			BIA – Foraging	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Behaviour - Breeding	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Behaviour - Foraging	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Behaviour - Roosting	✓	✓	✓	✓	✓	✓	✓		✓
	Marine Invertebrates	Benthic and pelagic invertebrate communities	Food Source (e.g. whales, turtles) Commercial Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Threatened Species				✓	✓				
	Fish	Fish	Threatened Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Commercial Species	✓	✓	✓	✓	✓	✓	✓	✓	✓

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
		Sharks and Rays	Threatened Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Migratory Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			BIA – Aggregation						✓	✓		
			BIA – Breeding		✓	✓			✓	✓		
			BIA – Distribution	✓	✓	✓	✓	✓	✓	✓		
			Behaviour - Breeding		✓	✓			✓			
			Behaviour – Congregation/Aggregation							✓		
			Behaviour - Foraging	✓			✓	✓				
		Syngnathids	Listed Marine Species	✓	✓	✓	✓	✓	✓	✓	✓	
	Marine Reptiles	Turtles	Listed Marine Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Threatened Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Migratory Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			BIA – Foraging							✓		

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			BIA – Internesting							✓		
			BIA – Nesting							✓		
			Behaviour - Breeding	✓		✓	✓	✓	✓	✓		
			Behaviour – Foraging	✓	✓	✓			✓	✓		
		Sea snakes	Listed Marine Species						✓	✓		
		Crocodiles	Listed Marine Species							✓		
			Migratory Species							✓		
	Marine Mammals	Pinnipeds	Listed Marine Species	✓	✓	✓	✓	✓	✓	✓		
			Threatened Species	✓			✓					
			BIA – Foraging	✓								
			Behaviour - Breeding	✓	✓	✓	✓					
			Behaviour - Foraging	✓	✓	✓	✓	✓				
		Sirenians	Listed Marine Species					✓	✓			

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			Migratory Species					✓	✓			
		Whales	Listed Marine Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Threatened Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			Migratory Species	✓	✓	✓	✓	✓	✓	✓	✓	✓
			BIA – Aggregation	✓								
			BIA – Breeding					✓		✓		
			BIA – Connecting Habitat		✓		✓	✓				
			BIA - Distribution									
			BIA – Foraging	✓	✓	✓	✓	✓				
			BIA – Migration	✓	✓	✓			✓	✓		
			Behaviour - Breeding	✓						✓		
			Behaviour - Foraging	✓	✓	✓	✓	✓	✓	✓		
		Dolphins	Listed Marine Species	✓	✓	✓	✓	✓	✓	✓	✓	✓

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			Migratory Species	✓	✓	✓	✓	✓	✓	✓		
			BIA – Breeding							✓		
			BIA – Calving							✓		
			BIA – Foraging							✓		
			Behaviour - Breeding							✓		
		Porpoise	Listed Marine Species					✓	✓			
			Migratory Species					✓	✓			

Table 6-2: Presence of Social Receptors within the Environmental Sectors

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
	Commonwealth Parks	Key Ecological Features	Various; e.g. high productivity, aggregations of marine life	✓	✓	✓	✓	✓	✓	✓	✓	

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Natural System			Refer to Section 4.6for specific values and sensitivities associated with each KEF									
		Australian Marine Park	Various; e.g. migration route, foraging areas, heritage sites Refer to Section 4.3 for values and sensitivities associated with each AMP	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Commonwealth National Park	Various; e.g. breeding areas, cultural sites Refer to Section 4.3.2 for values and sensitivities associated with National Park						✓			
	State Parks and Reserves	Marine Protected Areas	Various; e.g. foraging or breeding areas	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Terrestrial Protected Areas	Various; e.g. shorelines	✓	✓	✓	✓	✓	✓	✓		
	Wetlands	International (Ramsar) Importance	Various; e.g. high biodiversity, habitat for threatened species Refer to Section 4.4.1for values and sensitivities associated with each wetland	✓	✓	✓		✓	✓	✓		
		National Importance	Various; e.g. high biodiversity, habitat for threatened species Refer to Section 4.4.2for values and sensitivities associated with each wetland	✓	✓	✓	✓	✓	✓	✓		

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
Human System	Commercial Fisheries	Commonwealth-managed	Economic benefit	✓	✓	✓	✓	✓	✓	✓		✓
		State-managed	Economic benefit	✓	✓	✓	✓	✓	✓	✓		
	Recreational Fisheries		Community engagement	✓	✓	✓	✓	✓	✓	✓		
	Coastal Settlements		Community engagement Economic benefit	✓	✓	✓	✓	✓	✓	✓		✓
	Recreation and Tourism		Community engagement Economic benefit	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Industry	Shipping	Community engagement Economic benefit	✓	✓	✓	✓	✓	✓	✓	✓	
		Oil and Gas Exploration and/or Operation	Economic benefit	✓	✓	✓	✓	✓	✓			
		Submarine Cables and Pipelines	Economic benefit		✓				✓			
		Military	Protection and surveillance		✓				✓			
	Heritage	Maritime	Shipwrecks	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Cultural	Commonwealth Heritage Places World Heritage Properties National Heritage Places	✓	✓	✓	✓	✓	✓	✓		✓
		Indigenous	Indigenous use or connection Native Title	✓	✓	✓	✓	✓	✓	✓	✓	

Receptor Group	Receptor Type	Receptor Description	Values and Sensitivities	Otway	Bass Strait	Gippsland	Sorell	SE Tasmania	Central NSW	SE Queensland	Lord Howe	Norfolk Island
			Indigenous Land Use Agreements									

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Appendix 1 - Marine/Coastal Wetlands of International importance

The classification of a 'marine/coastal wetland' is extensive and includes those wetlands that while predominantly based inland have some form of connection with the coast and/or marine waters. The Ramsar classification for 'marine/coastal wetlands' includes:

- A — Permanent shallow marine waters in most cases less than six metres deep at low tide; includes sea bays and straits.
- B — Marine subtidal aquatic beds; includes kelp beds, sea-grass beds, tropical marine meadows.
- C — Coral reefs.
- D — Rocky marine shores; includes rocky offshore islands, sea cliffs.
- E — Sand, shingle or pebble shores; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.
- F — Estuarine waters; permanent water of estuaries and estuarine systems of deltas.
- G — Intertidal mud, sand or salt flats.
- H — Intertidal marshes; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.
- I — Intertidal forested wetlands; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.
- J — Coastal brackish/saline lagoons; brackish to saline lagoons with at least one relatively narrow connection to the sea.
- K — Coastal freshwater lagoons; includes freshwater delta lagoons.
- Zk(a) —Karst and other subterranean hydrological systems, marine/coastal.

The key features of the wetland sites, as described within the Australian Wetland Database, are provided in Table 7-1.

Table 7-1: Key Features of Internationally Important Wetlands

Wetland	Key Features
South Australia	
Piccaninnie Ponds Karst Wetlands	The Piccaninnie Ponds Karst Wetlands Ramsar Site is located in south-east South Australia, near Mount Gambier. The Piccaninnie Ponds Karst Wetlands are an example of karst spring wetlands, with the largest and deepest of the springs reaching a depth of more than 110 m. The majority of the water comes from an unconfined regional aquifer and is consistently 14-15°C. The karst springs support unique macrophyte and algal associations, with macrophyte growth extending to 15 m below the surface as a result of exceptional water clarity. A number of different wetland types exist on the site, including a large area of peat fens. There are four distinct areas of the Ramsar site. Piccaninnie Ponds (also known as Main Ponds) consists of three interconnected bodies of water - First Pond, The Chasm and Turtle Pond - rounded by an area of shrub dominated swamp. Western Wetland consists of dense closed tea-tree and paperbark shrubland over shallow dark clay on limestone soils. Eastern Wetland includes the spring-fed Hammerhead Pond. Pick Swamp, on the extreme west of the site, includes areas of fen, marshes and sedgelands as well as the spring-fed Crescent Pond on peat soils. The system is an important remnant of an extensive system of wetlands that once occupied much of the south-east of South Australia. The major groundwater discharge points are Main

Wetland	Key Features
	Ponds, Hammerhead Pond and Crescent Pond. Water principally leaves the site via Outlet Creek and the Pick Swamp drain outlet, which connect the site to the sea. There are a number of fresh groundwater beach springs located on the site. The geomorphic and hydrological features of the site produce a complex and biologically diverse ecosystem which supports considerable biodiversity, including a significant number of species of national and/or international conservation value. These include the Orange-bellied Parrot, Australasian Bittern and Yarra Pygmy Perch. The site attracts 20,000 visitors annually for cave diving, snorkelling, bushwalking, educational activities and birdwatching. The site also has spiritual and cultural value. The Traditional Owners of the land, the Bunganditj (Boandik) and local Indigenous people have a strong connection with the site. Traditionally the site provided a good source of food and fresh water, and evidence of previous occupation still exists. Reference Department of Agriculture, Water and the Environment. Piccaninnie Ponds Karst Wetlands, in Australian Wetlands Database. Department of Agriculture, Water and the Environment. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=66**. Accessed July 2025.
Victoria	
Corner Inlet	The Corner Inlet Ramsar (marine embayment and tidal mudflat system) site is located on the southeast coast of Victoria. It is bound to the west and north by the South Gippsland coastline, in the southeast by a series of barrier islands and sandy spits lying end to end and separated by narrow entrances, and to the south by the hills of Wilsons Promontory. Corner Inlet includes the chain of barrier islands, multiple beach ridges, lagoons and swamps, tidal creeks, tidal deltas, and tidal washovers. The mainland coast and several sandy islands are covered with mangroves, saltmarshes, sandy beaches and very extensive intertidal mudflats. The area contains the only extensive bed of the Broad-leafed Seagrass in Victoria. The islands of Corner Inlet, although not rich in plant diversity, are of high biogeographical significance as a result of their geological history and connectivity to the mainland during ice

Wetland	Key Features
	ages. The islands also contain significant areas of saltmarsh and mangroves, both of which are communities of very limited distribution. Corner Inlet supports more than 390 species of marine invertebrates and 390 species of native flora. The Ramsar site also has a high diversity of bird species with thirty-two wader species recorded. Corner Inlet provides extensive tidal flats that are exposed at low tide, which are important feeding areas for waders. It is estimated that nearly 50 per cent of the overwintering migratory waders in Victoria occur in Corner Inlet. The nationally threatened species utilising the Ramsar site include the Orange-bellied Parrot, Growling Grass Frog, Australian Grayling and Swift Parrot. Corner Inlet was used traditionally by Indigenous people, and many archaeological sites including scarred trees, burial sites, artefact scatters, shell middens and camps have been found. Currently, the Ramsar site is used for biological conservation, ports with servicing facilities for offshore oil and natural gas exploration, commercial fishing, recreational fishing, and other recreational activities. Diving is popular around the numerous shipwreck sites in Corner Inlet and around the barrier islands. Reference Department of the Environment and Energy. 2017. Corner Inlet, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=13**. Accessed July 2025.
Gippsland Lakes	The Gippsland Lakes Ramsar site is located approximately 300 km east of Melbourne on the low-lying South East Coastal Plain bioregion. Covering a vast area, the lakes are a series of large, shallow, coastal lagoons approximately 70 km in length and 10 km wide, separated from the sea by sand dunes. The surface area of the lakes is approximately 364 km^2 and the three main water bodies are Lakes Wellington, Victoria, and King. The Gippsland Lakes together form the largest navigable inland waterway in Australia and create a distinctive regional landscape of wetlands and flat coastal plains of considerable environmental significance.

Wetland	Key Features
	The Mitchell Delta of the Ramsar site is a classic form of digitate delta and ranks as one of the finest examples of this type of landform in the world. The silt jetties of the delta extend almost eight kilometres into the lake as low, narrow tongues of sediment that were formerly bordered by a wide zone of reedswamp. The Ramsar site contains 11 Ramsar wetland habitat types including most notably, coastal lagoons, subtidal seagrass and algal beds, and a range of saline, brackish and freshwater marsh environments. The site supports a broad range of ecosystem services including nationally and internationally threatened wetland species, waterbird breeding and fish spawning sites. Cultural and socio-economic values are equally diverse, noting the particular importance of the site in a regional context in terms of recreational activities such as boating, recreational fishing and holiday tourism. The Gippsland Lakes support three nationally vulnerable and endangered wetland-associated flora species (Dwarf Kerrawang, Swamp Everlasting and Metallic Sun-orchid), and the nationally threatened Growling Grass Frog and Green and Golden Bell Frog. The bird diversity of the Ramsar wetland is high with 86 species of waterbirds being recorded including large numbers of the Red-necked Stint, Black Swan, Sharp-tailed Sandpiper, Chestnut Teal, Musk Duck, Fairy Tern and Little Tern. Currently, parts of the Lakes system are heavily used for commercial and recreational fisheries and boating activities, while the immediate hinterland has been developed for agricultural use and limited residential and tourism purposes. Reference Department of the Environment and Energy. 2017. Gippsland Lakes, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=21**. Accessed July 2025.
Glenelg Estuary and Discovery Bay Wetlands	The Glenelg Estuary and Discovery Bay Ramsar Site is situated in western Victoria. It covers approximately 22,289 hectares and comprises portions of the Lower Glenelg National Park, the Discovery Bay Coastal Park and the Nelson Streamside Reserve. The Glenelg River estuary is the longest in the bioregion, extending 75 kilometres. The Ramsar site comprises three broad systems that support different wetland types: freshwater wetlands, the Glenelg Estuary and the beach and dune system. The site contains several regionally (and internationally) rare wetland types: intact fen peatlands and a humid dune slack system. The site: • supports the nationally vulnerable coastal saltmarsh ecological community and eight nationally / internationally listed threatened flora and fauna species. • provides habitat for 95 waterbird species including 24 species listed under international agreements: CAMBA (24), JAMBA (24), ROKAMBA (21), BONN (21). Beach nesting birds such as hooded plover (*Thinornis rubricollis*) and red-capped plover (*Charadrius ruficapillus*) are regularly recorded nesting on the dunes of the Discovery Bay Coastal Park. • supports 14 species of native fish which are diadromous, migrating between habitats for part of their lifecycle by providing food, spawning grounds and nurseries. It also acts as a migration path on which diadromous fishes of the region depend. • provides habitat for obligate aquatic species in the permanent wetlands of the Long Swamp complex and Bridgewater Lakes when the surrounding landscape is dry and during drought conditions. • supports > 1% of the population of the wetland dependent invertebrate species the Ancient greenling (*Hemiphlebia mirabilis*) in the Baumea sedgelands.

Wetland	Key Features
	 The area is popular for recreational and tourism activities, including sightseeing, walking, camping, and recreational fishing. Importantly, the Gunditjmara Indigenous people have a living association with the Ramsar site, which has great cultural significance for them, as it is part of their Koonang (sea) and Bocara Woorrowarook (river forest) country. The ecological character of the site is defined by 10 critical components, processes and services: • Components: – Hydrology – Vegetation type and extent – Fish diversity and abundance – Waterbird diversity and abundance • Process: – Stratification • Services: – Special features (dune slacks) – Supports a diversity of wetland types – Supports threatened species – Provides physical habitat for waterbirds – Ecological connectivity. <u>Reference</u> Department of Agriculture, Water and the Environment. 2021. Glenelg Estuary and Discovery Bay Wetlands in Australian Wetlands Database. Department of Agriculture, Water and the Environment, Canberra. Available from: **https://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=67** Accessed July 2025.
Port Philip Bay (Western Shoreline) and Bellarine Peninsula	The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site is located in the western portion of Port Phillip Bay, near the city of Geelong in Victoria. The site comprises six distinct areas that include Point Cook/Cheetham, Werribee/Avalon, Point Wilson/Limeburners Bay, Swan Bay, Mud Islands, and the Lake Connewarre Complex.

Wetland	Key Features
	The Ramsar site is a low-lying area and a natural discharge point for the rivers draining southern central Victoria. The tidal amplitude within the bay is reduced compared with Bass Strait due to the narrow opening of the Bay (Port Phillip Heads). Port Phillip Bay (Western Shoreline) and Bellarine Peninsula support a variety of wetland types ranging from shallow marine waters to seasonal freshwater swamps and extensive sewage ponds. Wetland areas include freshwater lakes, estuaries, some with White Mangrove, saltmarshes, intertidal mudflats and seagrass beds. The Ramsar site supports some plants species threatened in Victoria, such as Small Scurf-pea and Rare Bitter-bush. This Ramsar site is the sixth most important area in Australia for migratory waders and the most important in Victoria. Large numbers of bird species including Pied Oystercatchers, Banded Stilts, Red-necked Stint, Sharp-tailed Sandpiper, Fairy Tern, Australasian Shoveler, Red-necked Avocets, Blue-billed Duck, and Freckled Duck, have been recorded at the site. Furthermore, the Melbourne Water Corporation Sewage Farm and Western Treatment Plant at Werribee support many waterbirds on its retention ponds. Port Phillip Bay (Western Shoreline) and Bellarine Peninsula provide important habitat for threatened species such as the Little Tern and Striped Legless Lizard. In particular, large numbers of the nationally threatened Orange-bellied Parrot utilise Port Phillip Bay during the winter after their summer migration to Tasmania to breed. Swan Bay and Limeburners Lagoon are also valuable fish breeding grounds for many of the commercial species caught in Port Phillip Bay. There are a number of important indigenous sites within the wetlands, including burial sites, middens and artefacts, with the oldest midden in the area being at least 5,000 years old. Currently over three million people live around Port Phillip Bay, which is used intensively for recreation, nature conservation, sewage treatment, aquaculture, fishing, and salt production. Reference Department of the Environment and Energy. 2017. Port Phillip Bay (Western Shoreline) and Bellarine Peninsula, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=18** . Accessed July 2025.
Western Port	Western Port is a large bay in southern Victoria incorporating around 260 km of coastline, connected to Bass Strait by a wide channel between Flinders and Phillip Island, and a narrow channel between San Remo and Phillip Island. Six rivers from the north and east of the catchment flow into the northern and eastern shores of Western Port and several minor rivers and creeks on the eastern slopes of the Mornington Peninsula drain into the western shores.

Wetland	Key Features
	 The Ramsar site has a wide variety of habitat types, ranging from deep channels, seagrass flats, intertidal mudflats, extensive mangrove thickets and saltmarsh vegetation. The white mangrove communities within Western Port are the most well-developed and extensive in Victoria and are the only large communities situated so far from the Equator. Threatened plant species that are found within the Ramsar site include Dense Leek-orchid, Creeping Rush, and Tiny Arrow Grass. Western Port is one of the three most important areas for waders in Victoria, and the site supports numerous migratory species listed under international migratory bird conservation agreements. High numbers of Eastern Curlew, Whimbrel, Bar-tailed Godwit, Grey-tailed Tattler, Greenshank and Terek Sandpiper have been recorded at the site. Nationally threatened species that utilise Western Port include the Orange-bellied Parrot, Swift Parrot, Helmeted Honeyeater, Little Tern, Southern Right Whale, and listed migratory Humpback Whale. The site supports the globally threatened Fairy Tern which is listed as vulnerable on the IUCN Red List of Threatened Species. A number of Indigenous cultural heritage sites on the shores of Western Port have been identified. Currently, Western Port is used for commercial fishing and recreational activities such as boating, swimming and fishing. Reference Department of the Environment and Energy. 2017. Western Port, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=18**. Accessed July 2025.
Tasmania	
East Coast Cape Barren Island Lagoons	The East Coast Cape Barren Island Lagoons Ramsar site is located on the east coast of Cape Barren Island, one of the Furneaux Group of islands which lie in Bass Strait to the north-east of Tasmania. The site extends from just north of Tar Point down to Jamieson's Bay and extends westwards from the coast for a distance varying from one to four kilometres.

Wetland	Key Features
	 It comprises a complex of freshwater, brackish, saline and sometimes hypersaline lagoons, wetlands and estuaries that owe their existence to a dune system which has been slowly developing in an easterly direction, leaving shallow sandy soils, depressions and intermittently flowing water courses. The vegetation of the site is characterised by a tussock grassland of the exotic species Marram Grass on the foredunes, with a closed-scrub of Coastal Wattle, Prickly Moses and Marram Grass stabilising the hind dunes. Coastal Wattle, Silver Banksia and Southern Grass Tree form an open scrub on the sand plains behind these dunes, with further inland areas dominated by Manna Gum, Swamp Gum and Smithton Peppermint. This extensive system of shallow coastal lagoons contains a number of species that are considered to be of special botanical interest, including the Scarce Centrolepis which is rare at both a state and national level. Pointed Centrolepis, Sharpleaf Rush, Water Milfoil, Sago Pondweed, and Round-leaf Wilsonia are also found within the site. Locally significant numbers of duck species for the Flinders bioregion utilise this area. In addition, the Ramsar site is of great importance for the Hooded Plover. This area is of cultural importance to the local Indigenous community, who manage the freehold title to part of Cape Barren Island, including the Ramsar site. Access is currently restricted, keeping the site largely undisturbed, with a single bush track for 4WD vehicles providing access for duck hunters to Flyover Lagoon. Reference Department of the Environment and Energy. 2017. East Coast Cape Barren Island Lagoons, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=8**. Accessed July 2025.
Flood Plain Lower Ringarooma River	The Flood Plain Lower Ringarooma River Ramsar site is located on the far north-east coast of Tasmania, between Cape Portland and Waterhouse Point. The site is situated on the sandy flood plain of the Lower Ringarooma River which encompasses extensive marshlands and a number of shallow lagoons: Shantys Lagoon, Blueys Lagoon and Bowlers Lagoon. The Ringarooma River drains out into Ringarooma Bay.

Wetland	Key Features
	The hydrology of this site is influenced by tidal flows, river flows and local groundwater. The bulk of the wetland area is above the tidal limit and is largely controlled by inflows from the Ringarooma River. The Ramsar site is dominated by scrub and tussock grassland vegetation and includes substantial areas of freshwater marsh habitat in the flood plain. The varieties of habitats support the following vegetation communities: Saltmarsh, Coastal grass and herbfield, Lowland Sedgy heathland, Wet heathland, Coastal heathland, Coastal scrub, *Allocasuarina verticillata* forest and Eucalyptus coastal forest. The Flood Plain Lower Ringarooma River is considered to be a good foraging area for dabbling ducks and other waterbirds due to the large area of shallow water. A number of bird species listed under international migratory conservation agreements have also been recorded at the site. These include: Cattle Egret, Great Egret, Latham's Snipe, Curlew Sandpiper, Red-necked Stint, Bar-tailed Godwit, Caspian Tern and Greenshank. Australasian Shoveler, Little Tern, Hooded Plover and Fairy Tern are also known to breed within the Ramsar site. The Ramsar site also provides habitat for threatened species, including four wetland-dependent species: • green and gold frog; • dwarf galaxias; • fairy tern; and • Australian grayling. The Flood Plain Lower Ringarooma River was traditionally used by Indigenous people. It also has a history of European occupation and mining exploitation since the early 1800s. Currently, the Ramsar site is used for duck hunting and cattle grazing. Reference Department of the Environment and Energy. 2017. Flood Plain Lower Ringarooma River, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=9** . Accessed July 2025.
Lavinia	The Lavinia Ramsar site's estuary and associated sand plains, coastal swamps, and lagoons is located on the north-east coast of King Island, Tasmania. The boundary of the site forms the Lavinia State Reserve, with major wetlands in the reserve including the Sea Elephant River estuary area, Lake Martha Lavinia, Penny's Lagoon, and the Nook Swamps. The shifting sands of the Sea Elephant River's mouth have caused a large back-up of brackish water in the site, creating the saltmarsh which extends up to five kilometres inland. The present landscape is the result of several distinct periods of dune formation.

Wetland	Key Features
	 The extensive Nook Swamps, which run roughly parallel to the coast, occupy a flat depression between the newer parallel dunes to the east of the site and the older dunes further inland. Water flows into the wetlands from the catchment through surface channels and groundwater and leaves mainly from the bar at the mouth of the Sea Elephant River and seepage through the young dune systems emerging as beach springs. The Lavinia State Reserve is one of the few largely unaltered areas of the island and contains much of the remaining native vegetation on King Island. The vegetation communities present on the site include Succulent Saline Herbland, Coastal Grass and Herbfield, Coastal Scrub and King Island Eucalyptus globulus Woodland. The freshwater areas of the Nook Swamps are dominated by swamp forest. Nook Swamps and the surrounding wetlands contain extensive peatlands. The site is an important refuge for a collection of regional and nationally threatened species, including the nationally endangered Orange-bellied Parrot. This parrot is heavily dependent upon the samphire plant, which occurs in the saltmarsh, for food during migration. They also roost at night in the trees and scrub surrounding the Sea Elephant River estuary. Several species of birds which use the reserve are rarely observed on the Tasmanian mainland, including the Dusky Moorhen, Nankeen Kestrel, Rufous Night Heron and the Golden-headed Cisticola. The site is currently used for conservation and recreation, including boating, fishing, camping and off-road driving. There are artefacts of Indigenous Australian occupation on King Island that date back to the last ice age when the island was connected to Tasmania and mainland Australia via the Bassian Plain. Reference Department of the Environment and Energy. 2017. Lavinia, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=5**. Accessed July 2025.
Logan Lagoon	The Logan Lagoon Ramsar site is enclosed within the Logan Lagoon Conservation Area and is located on the south-east corner of Flinders Island in Bass Strait, Tasmania. The site is an

Wetland	Key Features
	excellent, regionally representative example of a coastal estuarine wetland system and includes Logan, Syndicate and Wilsons Lagoons, Pot Boil Point and part of Planters Beach. The catchment of Logan Lagoon is low lying, with the water table very close to the soil surface, and water flows into the lagoons mainly from groundwater. The water level in Logan Lagoon fluctuates seasonally with rainfall, generally being high during winter and spring and low during late summer and autumn. Only one small natural watercourse, Pot Boil Creek, flows directly into Logan Lagoon. In extended dry periods the lagoon dries out and water is only contained in the southernmost section of the lagoon. The dominant vegetation communities present within the site are saline aquatic herbland, saline sedgeland and rushland, succulent saline herbland, coastal grass and herbfield and Acacia longifolia coastal scrub. When full, the lagoon provides feeding and resting habitat for a number of migratory waders including the Red-necked Stint, Common Greenshank, Eastern Curlew, Bar-tailed Godwit and Double-banded Plover. The wetland is an important part of the East Asian - Australasian Flyway, and twenty migratory bird species listed under internationally agreements use the site. The Ramsar site is used for conservation, education, research, and recreation such as walking, sightseeing, bird watching, off-road vehicle driving and beach fishing. Reference Department of the Environment and Energy. 2017. Logan Lagoon, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=4** . Accessed July 2025.
Moulting Lagoon	Moulting Lagoon is situated on the central east coast of Tasmania, between the townships of Swansea and Bicheno and approximately six kilometres north-west of the township of Coles Bay. The lagoon is a large estuary at the mouths of the Swan and Apsley Rivers. The estuary lies at the head of Great Oyster Bay where the Freycinet Peninsula extends offshore to the south. The lagoon formed with the partial closure of the mouths of the Swan and Apsley Rivers, due to the creation of a bayhead spit and associated dunefield between 10,000 and 6,000 years ago. The lagoon contains areas of both shallow and deep water and is surrounded by periodically exposed mudflats and saltmarsh. The plant communities around Moulting Lagoon reflect the

Wetland	Key Features
	wide diversity of terrain and consequent soil drainage patterns. Aquatic vegetation in the estuary is largely composed of seagrasses. Succulent saline herbland and saline sedgeland and rushland, both saltmarsh communities, surround the lagoon. Vegetation in the shallower areas, mainly Beaded Grasswort and Sea Rush, provides an important nesting, roosting and feeding habitat for the numerous resident waterfowl. The Ramsar site is an important breeding area for Black Swan and an important staging area for all the other species of waterfowl in Tasmania, with particularly large summer concentrations of Australian Shelduck and Chestnut Teal. It also supports the largest known Tasmanian flocks of Greenshank. Moulting Lagoon is part of the Moulting Lagoon Game Reserve. The area historically was used for the harvest of waterfowl and their eggs by Indigenous people who lived around the lagoon. Current use of the Ramsar site includes recreational activities such as fishing and hunting, and commercial activities such as aquaculture and tourism. Reference Department of the Environment and Energy. 2017. Moulting Lagoon, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=3**. Accessed July 2025.
Pitt Water-Orielton Lagoon	The Pitt Water-Orielton Lagoon Ramsar site is located on the south-east coast of Tasmania, approximately 20 km east of the city of Hobart, between the towns of Cambridge and Sorell. Pitt Water is a tidal salt water lagoon, dominated by a wave barred estuary with extensive intertidal flats, saltmarshes, and sandy shorelines with a narrow entrance to Frederick Henry Bay. Orielton Lagoon is separated from Pitt Water by a causeway constructed in 1868. The whole area is protected from the open sea by a large mid-bay spit and associated dunefield. Most of the Ramsar site is open water fringed by saltmarsh communities, mudflats and rocky shores. The large areas of tidal mud and sand flats leave extensive areas exposed as suitable feeding areas for wading birds and is one of the only two sites in Tasmania included in the East-Australasian Flyway Network. The vegetation communities present include succulent saline herbland, saline sedgeland/rushland and coastal grassland. The site provides breeding habitat for a number of beach-nesting shorebirds including the Caspian Tern and Red-capped Plover. Migratory birds that utilise the Ramsar wetland include the Eastern Curlew, Bar-tailed Godwit, Common Greenshank, Curlew Sandpiper, Double-banded Plover and Red-necked Stint. Threatened species listed in Tasmania recorded at the site include the Great-crested Grebe, Fairy Tern and Little Tern. Pitt Water-Orielton Lagoon was traditionally used by Indigenous people of the area and the Ramsar site contains some middens and other evidence of Indigenous occupation. Currently the area has a diversity of land uses including pastureland grazing, forestry, irrigated cropland, residential development, shellfish aquaculture, recreation and nature conservation. Reference Department of the Environment and Energy. 2017. Pitt Water-Orielton Lagoon, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=6**. Accessed July 2025.
New South Wales	
Hunter Estuary Wetlands	The Hunter Estuary Wetlands Ramsar site is comprised of two components, Kooragang and Hunter Wetlands Centre Australia. The Kooragang component of the Hunter Estuary Wetlands Ramsar site is located in the estuary of the Hunter River, approximately seven kilometres north of Newcastle on the coast of NSW. Hunter Wetlands Centre Australia is 2.5 km from Kooragang. Although the sites are not contiguous, they have significant linkages, both hydrologically and by a wildlife corridor consisting of Ironbark Creek, the Hunter River and Ash Island.

Wetland	Key Features
	The Kooragang component includes Kooragang Island and Fullerton Cove, two areas that lie in the estuarine section of the Hunter River. Kooragang Island originally consisted of seven islands that were mostly separated by narrow mangrove lined channels. In the 1950s these islands were reclaimed and became "Kooragang Island". Habitat types within the Reserve include mangrove forests dominated by Grey Mangrove, Samphire saltmarsh, Paperbark and Swamp she-oak swamp forests, brackish swamps, mudflats, and sandy beaches. Hunter Wetlands Centre Australia is a small but unique complex of wetland types surrounded by urban development along three boundaries. Previously degraded, this urban wetland has been restored. Habitat types at the Hunter Wetlands Centre Australia include restored semi-permanent/seasonal freshwater ponds and marshes, natural semi-permanent/seasonal brackish ponds and marshes, freshwater swamp forests and a coastal estuarine creek. The Hunter Estuary Wetlands Ramsar site is extremely important as both a feeding and roosting site for a large seasonal population of shorebirds and as a waylay site for transient migrants. Over 250 species of birds have been recorded within the Ramsar site, including 45 species listed under international migratory conservation agreements. In addition, the Ramsar site provides habitat for the nationally threatened Green and Golden Bell Frog, Red Goshawk and Australasian Bittern. The Ramsar site was traditionally used by the Worimi, Awabakal and Pambalong peoples. There are numerous middens and campsites scattered throughout the lower Hunter River, particularly within the dunes along Stockton Bight. The Hunter Wetlands Centre Australia also contains an archaeological site that is believed to have been an area for the production of stone tools. Currently, the Kooragang component is used for recreational and nature-based activities. The Hunter Wetlands Centre Australia actively promotes wetland conservation and wise use through communication and education, passive recreation and community involvement. Reference Department of the Environment and Energy. 2017. Hunter Estuary Wetlands, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=24**. Accessed July 2025.
Myall Lakes	The Myall Lakes Ramsar wetland is located within the Myall Lakes National Park, approximately 75 km north of Newcastle on the central coast of NSW. Myall Lakes National Park comprises four main lakes (the Bombah Broadwater, Boolambayte, Two Mile and Myall Lakes), together with the lesser areas of Nerong Creek, sections of the Upper and Lower Myall River, Boolambayte Creek, Fame Cove Inlet and Broughton Island. The Ramsar site incorporates a number of distinct wetlands associated with the waterways and dune systems. The waters of the Myall Lake system are shallow and of roughly uniform depth (2.4–3.7 m) and lake level fluctuations are associated with rainfall rather than tidal influences. The main input of fresh water to the lake system is from the Myall and Crawford Rivers. The Myall Lakes comprise a series of fresh, saline and brackish water bodies of differing depths and associated vegetation types. Myall Lakes support a high plant diversity with 968 species of plants and ten TECs. The major vegetation communities associated with Myall Lakes are: swamp, swamp forest, wet heath, fringe forest and Lepironia swamp. Similarly, the animal species diversity is high and over 300 species have been recorded, with approximately two thirds being bird species. The wetlands regularly support large numbers of waterbirds and waders including ducks, swans, egrets and terns. In addition, Myall Lakes provide habitat for state-listed threatened species such as Masked Owl, Powerful Owl, Black-necked Stork, Wompoo Fruit-Dove, Turquoise Parrot, Little Tern, Little Bent-wing Bat, Tiger Quoll, Eastern Chestnut Mouse and Wallum Froglet. Myall Lakes National Park contains numerous middens, which are the major items of indigenous heritage. No canoe trees have been identified to date, although canoes were obviously used to reach Broughton and Little Broughton Islands.

Wetland	Key Features
	Contemporary use of the Ramsar site is mostly recreational activities such as sailing, swimming, power boating, canoeing, bush walking, four-wheel driving and bird watching. The area is also popular with commercial and recreational fishers. Reference Department of the Environment and Energy. 2017. Myall Lakes, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=52**. Accessed July 2025.
Towra Point Nature Reserve	Towra Point Nature Reserve lies on the northern side of Kurnell Peninsula, forming the southern and eastern shores of Botany Bay, and is approximately 16 km from the Sydney city centre in NSW. It is the largest wetland of its type in the Sydney Basin region and represents vegetation types that are now rare in the area. It is an estuarine complex comprising a mixture of spits, bars, mudflats, dunes and beaches. The Ramsar site consists of a variety of habitats such as seagrass meadows, mangroves, saltmarshes, dune woodlands, Casuarina forest, small occurrences of littoral rainforest and sand dune grasslands. The vegetation within Towra Point Nature Reserve is regionally significant, with the reserve containing around 40% of the remaining mangrove communities and 60% of the remaining saltmarsh communities in Sydney. Furthermore, almost 300 plant species have been recorded within the Ramsar site including the threatened Magenta Cherry. Towra Point Nature Reserve is an important area for bird species, with approximately 200 species recorded in the area. This includes 34 species listed under international migratory bird conservation agreements. Large numbers of Eastern Curlew, Lesser Golden Plover, and Ruddy Turnstone have also been recorded within the Ramsar site. The state-listed threatened Little Tern and Pied Oystercatcher are known to breed within the Reserve. Middens, rock shelters, engravings, burial sites and other items of indigenous heritage have been found within Towra Point Nature Reserve. Captain James Cook anchored in Botany Bay in 1770, and Towra Point was explored, mapped and used as a source of freshwater. It was here where the ship's botanist, Sir Joseph Banks, took the first recognised botanical and zoological samples of Australian flora.

Wetland	Key Features
	The Ramsar site is part of a dedicated Nature Reserve, with activities restricted to nature-based recreation such as bird-watching and fishing. Reference Department of the Environment and Energy. 2017. Towra Point Nature Reserve, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=23**. Accessed July 2025.
Queensland	
Great Sandy Strait (including Great Sandy Strait, Tin Can Bay and Tin Can Inlet)	The Great Sandy Strait Ramsar site is located in south-eastern Queensland and includes Great Sandy Strait, Tin Can Bay, Tin Can Bay Inlet, parts of Fraser Island (K'gari) and the mainland. It is a sand passage estuary between the mainland and the World Heritage-listed Fraser Island. Fraser Island has formed sufficiently close to the mainland to block the flow of a substantial river system, creating a double-ended estuary with a shifting (though relatively stable) pattern of mangroves, sand banks and mud islands. Great Sandy Strait is a large area of tidal swamps consisting of intertidal sand and mud flats, extended seagrass beds, mangrove forests, salt flats and saltmarshes, and often contiguous with freshwater Paperbark wetlands and Coastal Wallum swamps. The mangrove communities within the Strait represent a transition between essentially temperate and tropical species. The rare patterned fens have also been recorded along Great Sandy Strait. The coastal wetlands of Great Sandy Strait are also of international significance for migratory birds, with 18 species listed under international migratory bird conservation agreements recorded within the Ramsar site. The Strait is also utilised by turtle species, Dugong and Humpback Whales. Threatened fish such as Oxleyan Pygmy Perch and Honey Blue-eye are also known to inhabit the area. Great Sandy Strait holds significant cultural heritage values for local indigenous groups. Evidence of occupation in the area dates back 5,500 years and middens are frequently found in the site. The Ramsar site is currently highly valued for commercial fishing, recreational fishing, boating and tourism related activities.

Wetland	Key Features
	Reference Department of the Environment and Energy. 2017. Great Sandy Strait (including Great Sandy Strait, Tin Can Bay and Tin Can Inlet), in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=51**. Accessed July 2025.
Moreton Bay	The Moreton Bay Ramsar site is located in and around Moreton Bay, north-east, east and south-east of the city of Brisbane, in the state of Queensland, Australia. It is located approximately mid-way along the east coast of Australia at a latitude of between 27 and 28 degrees south. The site is in a semi-enclosed basin, bounded on its eastern side by large sand islands and a deltaic coast on the western side, where large rivers discharge to the bay from a combined catchment of approximately 22,000 km2. The bay is approximately 110 km long from north to south and 35 km at its widest east to west axis. The site meets all nine criteria for the designation of wetlands of international importance. It is notable for its large size, diversity of wetland habitats, connectivity between wetland types, as well as diverse flora and fauna that includes threatened species and ecological communities. It contains seagrass, sandy and muddy tidal flats and subtidal areas, saltmarsh, mangroves and coral communities, freshwater wetlands, as well as ocean beaches and dunes. The site includes one of the most extensive intertidal areas of seagrass, mangrove and saltmarsh communities on the eastern coast of Australia, and is valuable for supporting fisheries resources, waterbirds and marine megafauna of conservation significance. The site regularly supports more than 50,000 waterbirds, representing at least 43 species of shorebirds and at least 28 migratory shorebird species. The site is recognised as a network site under the East Asian-Australasian Flyway Partnership (site code EAAF013) and supports over 1% of the estimated flyway population of at least nine migratory shorebird species, including eastern curlew (*Numenius madagascariensis*) and curlew sandpiper (*Calidris ferruginea*), which are listed as critically endangered under national environmental legislation. The site further supports a range of internationally, nationally, state and locally significant species including the Oxleyan pygmy perch (*Nannoperca oxleyana*) fish, four species of acid frogs, the water mouse (*Xeromys myoides*), Illidge's ant-blue butterfly (*Acrodipsas illidgei*), and several freshwater invertebrates. In addition to its environmental values, the site provides important cultural, social, economic and recreational values. Reference Department of Agriculture, Water and the Environment. 2021. Moreton Bay in Australian Wetlands Database. Department of Agriculture, Water and the Environment, Canberra. Available from: **https://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=41** Accessed July 2025.
External Territories	
Elizabeth and Middleton Reefs Marine National Nature Reserve	Elizabeth and Middleton Reefs Marine National Nature Reserve is located in the northern Tasman Sea, in Australia's East Marine Region. It is 630 km east of Coffs Harbour, NSW, and 690 km east-south-east of Brisbane, Queensland. Elizabeth and Middleton Reefs are remote coral reef atolls that occur atop isolated, oceanic sea mounts, 50 km apart from each other.

Wetland	Key Features

They are the most southerly open ocean platform reefs in the world and their coral reef communities are influenced both by tropical and temperate ocean currents. As isolated oceanic wetlands with no permanent dry land, the Reef perimeters provide the only buffer to high-energy impacts of ocean swells and waves and thus provide for remote sheltered wetland habitats within a vast region of oceanic waters of the western Pacific Ocean.

Reef building corals and algae form the dominant components of habitat complexity and ecological features of the site. Elizabeth and Middleton Reefs support several coral species at or near their northern or southern limits of distribution, and species which can self-recruit to the same reef. Seagrass occurs only as scattered plants on the sheltered sandy lagoons at both reefs.

The fish communities include seven undescribed fishes and a number of species with specialised habitats and relatively restricted geographic distributions. The Elizabeth and Middleton Reefs populations of the Galapagos Reef Shark form a single genetic stock, which is distinct from the only other Australian population, 173 km further south at Lord Howe Island. Threatened species known to utilise the site include the Green Turtle, Leatherback Turtle, and Wandering Albatross and listed migratory Humpback Whale.

At least 30 ships have been recorded wrecked on the Reefs, dating back to the late 18th Century, making the area of considerable marine archaeological significance. Except for the remains of more recent wrecks, which are a conspicuous feature of the Ramsar site, the majority of wrecks have not been accurately located. The wreck Fuku Maru on Middleton Reef supports a small breeding colony of Sea Terns, which due to lack of suitable dry land, otherwise would not occur at the Ramsar site.

Currently, Elizabeth and Middleton Reefs are mainly use for nature conservation and scientific research, with limited recreational diving and fishing also occurring.

Reference

Department of the Environment and Energy. 2017. Elizabeth and Middleton Reefs Marine National Nature Reserve, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=60#**. Accessed July 2025.

Appendix 2 - Marine and Coastal Zone Wetlands of National Importance

The classification of a 'Marine and Coastal Zone wetlands' is extensive and includes those wetlands that while predominantly based inland have some form of connection with the coast and/or marine waters. The category for 'Marine and Coastal Zone wetlands' includes:

1. Marine waters - permanent shallow waters less than six metres deep at low tide; includes sea bays, straits.
2. Subtidal aquatic beds; includes kelp beds, seagrasses, tropical marine meadows.
3. Coral reefs.
4. Rocky marine shores; includes rocky offshore islands, sea cliffs.
5. Sand, shingle or pebble beaches; includes sand bars, spits, sandy islets.
6. Estuarine waters; permanent waters of estuaries and estuarine systems of deltas.
7. Intertidal mud, sand or salt flats.
8. Intertidal marshes; includes salt-marshes, salt meadows, saltings, raised salt marshes, tidal brackish and freshwater marshes.
9. Intertidal forested wetlands; includes mangrove swamps, nipa swamps, tidal freshwater swamp forests.
10. Brackish to saline lagoons and marshes with one or more relatively narrow connections with the sea.
11. Freshwater lagoons and marshes in the coastal zone.
12. Non-tidal freshwater forested wetlands.

The key features of the wetland sites, as described within the Australian Wetland Database, are provided in Table 7-2.

Table 7-2: Key Features of Nationally Important Wetlands

Wetland	Key Features
South Australia	
Piccaninnie Ponds Karst Wetlands	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
South East Coastal Salt Lakes	***Site description*** A series of four separate lakes of various depth, situated in the interdune corridor between the present and relict coastal dunes. Lake Robe (399 ha), Lake Eliza (4,683 ha) and Lake St. Clair (2,566 ha) are shallow lakes with a fringe of vegetation. Lake George is a deep estuarine lake intermittently connected to the sea, with a surface area of 5916 ha and is surrounded by a fringe of vegetation. Small freshwater ephemeral wetlands exist around the lakes. ***Physical features*** Landform: The wetlands occur on the coastal flat between a low, well-vegetated coastal dune ridge to the west and a relict coastal dune ridge to the east. Geology: Unconsolidated calcareous sands from the Pleistocene uncomfortably lay over Tertiary formed calcrete. Soils: Lake beds consist of black friable loams covered by mud, clay, sand or shellgrit; the dunes surrounding the lakes support deep calcareous sands and shallow red sandy loams. ***Ecological features*** Ecological role: A group of coastal wetlands that act as a refuge for waterbirds in summer or drought. The lakes and the fresh groundwater soaks provide a diverse selection of vegetation structures and wetland habitats for waterbirds. Lake George is a spawning area for two marine fishes, the Yellow-eye Mullet and Flounder. Plant structural formations: Tea-tree scrub, samphire flat, sedgelands and coastal closed scrub.

Wetland	Key Features
	Significance Lake George and Lake Eliza are two of the remaining wintering grounds in the south east of the State for the Orange-bellied Parrot, and Lake George is an important wintering ground for the Double-banded Plover. ***Social and Cultural values*** Cultural: The coastal lakes are rich in Aboriginal heritage with many occupation sites such as middens, rock shelters and open-air campsites at the lake margins. Reference *Department of the Environment and Energy. 2017. South East Coastal Salt Lakes - SA062, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=SA062**.*
Victoria	
Anderson Inlet	***Site description*** Anderson Inlet is one of the largest estuaries on the Victorian coast. ***Physical features*** Geological setting: Quaternary sediment between Tertiary hills and Devonian ridge. A series of spits developed across a former embayment to create the inlet which has infilled with estuarine sediment. Large areas of mudflats are exposed at low tide. ***Ecological features*** The inlet is of high value for its fauna. ***Significance*** (No data) ***Social and Cultural values*** Recreation: Anderson Inlet is very popular for recreational line-fishing. Sailing, powerboating, waterskiing, bait collection and duck hunting are other popular water-based activities here. Research: The Australian Wader Study Group traps, measures and bands migratory and nomadic wading birds in the inlet for biological studies. Reference *Department of the Environment and Energy. 2017. Anderson Inlet - VIC062, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC062**.*
Corner Inlet	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Glenelg Estuary	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Lake Bunga	***Site description*** Lake Bunga is a narrow freshwater lagoon and is the former entrance to the Gippsland Lakes. This lake is fed by Bunga Creek and is rarely open to the sea. ***Physical features*** Geological setting: Quaternary lacustrine and paludal sediments overlying Quaternary marine sediments and Tertiary sediments of the Sale/Seaspray Group. ***Ecological features*** This wetland is of high value for its avifauna. ***Significance*** Lake Bunga is a high value wetland for its geological, geomorphological, botanical and ornithological features. ***Social and Cultural values*** (No data) Reference

Wetland	Key Features
	*Department of the Environment and Energy. 2017. Lake Bunga - VIC085, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC085**.*
Lake Connewarre State Wildlife Reserve	***Site description*** The Lake Connewarre State Wildlife Reserve consists of an extensive estuarine and saltmarsh system drained by the Barwon River. It includes a large permanent freshwater lake, a deep freshwater marsh, several semi-permanent saline wetlands and an estuary. ***Physical features*** Geological setting: Quaternary alluvial sediments on Quaternary coastal and aeolian sediments, basalt flows of the Newer Volcanics and sediments of the Tertiary Moorabool Viaduct Formation. ***Ecological features*** The Lake Connewarre State Game Reserve consists of a wide variety of wetland habitats which support a large and diverse waterbird population and contain a significant area of natural vegetation in this part of the South East Coastal Plain. ***Significance*** Lake Connewarre State Game Reserve is a high value wetland for its ecological, recreational and scientific features. Lake Connewarre State Game Reserve is the largest area of native vegetation remaining on the Bellarine Peninsula. Reedy Lake is the largest natural freshwater lake in central Victoria and has outstanding significance due to its large size, floristic richness and structural diversity. The lower two thirds of the estuary is essentially unmodified. ***Social and Cultural values*** Recreation: The Reserve is used for duck hunting and is a good fishing area for Jewfish which has a limited distribution. Windsurfing and boating are popular activities on the river, especially in the estuary. Education: The wetlands are used extensively for teaching purposes. Aboriginal culture: A large oyster midden exists on Campbell Point at Lake Connewarre. <u>Reference</u> *Department of the Environment and Energy. 2017. Long Swamp - VIC030, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC070**.*
Lake King Wetlands	***Site description*** The Lake King Wetlands consist of two large coastal lagoons and associated channels with surrounding salt marshes and brackish to fresh marshes. ***Physical features*** Geological setting: Quaternary lacustrine and paludal sediments on Quaternary alluvial and marine sediments overlying Tertiary sediments of the Sale/Seaspray Group. Lake King contains several islands. ***Ecological features*** These wetlands are of high value for fauna and part of a major drought refuge. ***Significance*** The Lake King Wetlands are high value for ecological, recreational, scientific, cultural and landscape features. They are fine examples of a large coastal lagoon system. The Lake King Wetlands contain two sites of geological/ geomorphological significance: the Mitchell River silt jetties (international) which are on the Register of the National Estate and the Tambo River Delta (state). Mullacky Swamp, two kilometres east of Ocean Grange, is listed as a site of special botanical significance. The Mitchell River Delta silt jetties are one of the finest examples of a

Wetland	Key Features
	digitate delta in the world, these silt jetties almost separate Jones Bay from Lake King. The Tambo River Delta is a major example of the processes of delta growth. ***Social and Cultural values*** (No data) Reference *Department of the Environment and Energy. 2017. Lake King Wetlands - VIC071, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC071**.*
Lake Tyers	***Site description*** Lake Tyers is a branched inlet formed by marine submergence of incised valleys. It has a well-developed tidal delta with marshy islets. ***Physical features*** Geological setting: Quaternary lacustrine and paludal sediments overlying Quaternary marine sediments and Tertiary sediments of the Sale/Seaspray Group. ***Ecological features*** This wetland is of high value for its fauna. ***Significance*** Lake Tyers is a high value wetland for its ecological, recreational, scientific, cultural and scenic features. Lake Tyers is of scenic value for its forested shores and unspoilt character. ***Social and Cultural values*** Recreation: Lake Tyers is popular for camping, fishing, sailing and power boating. Tourism: Large numbers of holiday makers arrive in summer and are exposed to the Little Tern Management Program and commercially chartered boat trips (private) with a naturalist aspect. Aboriginal culture: 18 sites of Aboriginal archaeological significance were recorded in and around Lake Tyers. The local Aboriginal community borders Lake Tyers. Reference *Department of the Environment and Energy. 2017. Lake Tyers - VIC086, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC086**.*
Lake Victoria Wetlands	***Site description*** Lake Victoria is a large coastal lagoon with fringing saltmarsh. It is part of the Gippsland Lakes system. ***Physical features*** Geological setting: Quaternary lacustrine and paludal sediments on Quaternary coastal and aeolian sediments. ***Ecological features*** These wetlands are of high value for their fauna. ***Significance*** Lake Victoria comprises wetlands highly valued for their ecological, recreational, tourist, scientific, educational, cultural and landscape features. Lake Victoria and Blond Bay support a highly productive fish community. This also makes the lakes very important for piscivorous birds such as pelicans, cormorants and terns. Blond Bay State Game Reserve encompasses one of the largest remaining area of natural vegetation on the shores of the Gippsland Lakes. Lake Victoria has thick Swamp Paperbark scrub/closed forest fringing most of the foreshore. The intermittent wetlands making up the Blond Bay system are not common or sufficiently protected in the region. ***Social and Cultural values*** Research: The lakes are scientifically valuable for the study of haloclines and geologically, as part of the Gippsland Lakes system. Recreation: Lake Victoria abuts The Lakes National Park which has a visitor centre and bird hides.

Wetland	Key Features
	Aboriginal culture: Numerous archaeological sites, including a burial site, scarred tree, shell middens, surface scatters and isolated artefacts, occur around Lake Victoria and Blond Bay. Reference *Department of the Environment and Energy. 2017. Lake Victoria Wetlands - VIC072, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC072**.*
Lower Aire River Wetlands	***Site description*** These wetlands consist of three shallow freshwater lakes, brackish to saline marshes and an estuary on the Aire River floodplain. This floodplain occurs at the confluence of the Ford and Calder Rivers with the Aire River. It is surrounded by the Otway Ranges and dune-capped barrier along the ocean shoreline. ***Physical features*** Geological setting: Quaternary alluvium on Quaternary colluvium and alluvium and sediments of the Tertiary Dilwyn Formation and Cretaceous Otway Group. ***Ecological features*** The Lower Aire River Wetlands have extensive beds of Common Reed and groves of Woolly Tea-tree which can support large numbers of waterbirds. These wetlands act as a drought refuge for wildlife. ***Significance*** Lake Hordern is considered to be of State significance for its geomorphology. ***Social and Cultural values*** (No data) Reference *Department of the Environment and Energy. 2017. Lower Aire River Wetlands - VIC091, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC091**.*
Lower Merri River Wetlands	***Site description*** The Lower Merri River Wetlands consist of two connected wetlands developed in a swale between calcareous dune ridges and fed by the Merri River. ***Physical features*** Geological setting: The geology consists of Quaternary lacustrine and paludal sediments overlying colluvium and alluvium, and tuff of the Newer Volcanics. ***Ecological features*** These wetlands are of high value for their avifauna. There are large areas of Common Reed with Spiky Club-sedge, saltmarsh and mudflats. ***Significance*** The Lower Merri River Wetlands are of high value for their geomorphology and are a well-preserved example of interdunal wetlands fed by a small drainage system. ***Social and Cultural values*** Recreation: The wetlands are used for hunting, walking and bird watching. The Mahogany Trail follows the edge of these wetlands. History: The Mahogany Ship is reputed to be buried under sand dunes adjacent to Saltwater Swamp. Aboriginal culture: Surface scatters exist at Kelly Swamp indicating a history of Aboriginal occupation. Reference Department of the Environment and Energy. 2017. Lower Merri River Wetlands - VIC075, in Australian Wetlands Database. Department of the Environment and

Wetland	Key Features
	Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC075**.
Lower Snowy River Wetlands System	***Site description*** The Lower Snowy River Wetlands consist of Lake Corringle, Lake Wat Wat, Lake Curlip, Cabbage Tree Lagoon and numerous other small wetlands on the floodplain of the Snowy and Brodribb Rivers. The area consists of extensive saltmarsh flats and reed beds, paperbark thicket, mud flats and seagrass beds and thus supports a diverse faunal assemblage. ***Physical features*** Geological setting: Quaternary colluvial, alluvial, lacustrine, paludal and marine sediments on Tertiary sediments. ***Ecological features*** These wetlands are of high value for their avifauna and fish. ***Significance*** The Lower Snowy River Wetlands are high value for their ecological, recreational, scientific, educational and scenic values. The wetlands are an excellent example of a floodplain system consisting of a diverse range of habitats and contain extensive areas of Swamp Paperbark, reed beds, salt marsh and mudflats which have been cleared or badly degraded elsewhere throughout the Snowy River floodplain. Similar areas in East Gippsland (i.e. remainder of Snowy River floodplain, Cann River floodplain and Genoa River floodplain) have all been severely degraded through clearing, drainage channels and grazing. Lakes Corringle, Wat Wat and Curlip are of significant conservation value since they support an array of wildlife that may only exist where these remnant pockets of vegetation remain undisturbed. ***Social and Cultural values*** Recreation: The area is a very popular destination for recreation fishermen and boating enthusiasts, particularly during summer months and school holidays. Tourism: Recreation is very important to the economy of Marlo and Orbost. Research: The Lower Snowy River Wetlands continue to be subject to numerous scientific research projects and investigations. The gradual infilling of a large coastal embayment to produce the extensive floodplain of the Snowy and Brodribb rivers has allowed for detailed studies in coastal and estuarine morphologies, evolution of wetland vegetation, and wetland/estuary hydrology. Other studies related to the area include wetland classification, habitat type and water bird distribution and the effect of altering hydrologic regimes. Reference *Department of the Environment and Energy. 2017. Lower Snowy River Wetlands System - VIC087, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC087**.*
Mallacoota Inlet Wetlands	Site description Wetland Atlas numbers: 8822 436430 (Mallacoota Inlet), 8822 526420 (Lake Barracouta), 8822 468412, 8822 472415, 8822 494416. ***Physical features*** Mallacoota Inlet was formed by the submergence of the Genoa and Wallagaraugh River valleys and partial closure of the resulting marine embayment by a sandy barrier and accumulation of dunes. Geological setting: Tertiary sediments and some areas of Ordovician sediments (Mallacoota Beds) and the Kuark Metamorphics underlie most of the Inlet. Islands within the Inlet and the barrier system along the coast (forming Howe Flat and Lake Barracoota) consist of Quaternary coastal and aeolian deposits. The Inlet shoreline consists of low cliffs of sedimentary rock and small sandy beaches. Quaternary swamp and lagoonal deposits occur on Howe Flat and at Lake Barracoota.

Wetland	Key Features
	Ecological features The diversity of flora and fauna in the East Gippsland and adjacent Eden region is high as this area is on the convergence of the cool and warm temperate zones of eastern Australia. The Mallacoota Inlet Wetlands also provide a variety of wetland habitats ranging from estuarine to freshwater, deep inlet waters to sedgelands, and open and closed hydrological s. ***Significance*** Mallacoota Inlet and surrounds are listed on the Register of the National Estate. The Inlet and Howe Flat-Lake Barracoota are listed as of State significance, and Tidal Delta, Goodwin Sands and Allan Head within the Inlet are listed as of Regional significance for geology and geomorphology. North and south Mallacoota Inlet are listed as of State zoological significance. Parts of the Inlet are within the Croajingolong National Park Biosphere Reserve. Lake Barracoota supports important lowland wetland ecosystems and contains a relict marine fauna. ***Social and Cultural values*** Mallacoota and the surrounding district are very popular holiday destination. Recreation: Boating, fishing, bird-watching. Reference *Department of the Environment and Energy. 2017. Mallacoota Inlet Wetlands - VIC133, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC133****.*
Mud Islands	***Site description*** Mud Islands are a group of low, sandy islands located in the southern part of Port Phillip Bay. The islands are narrow and arranged in a roughly circular configuration around a central tidal lagoon. On the southern, western and northern shores, extensive intertidal mudflats and sea-grass meadows are present. ***Physical features*** Geological setting: Quaternary coastal and aeolian sediments. ***Ecological features*** The islands have very high value for fauna since they support large numbers of migratory wading birds and breeding seabirds. ***Significance*** Mud Islands has a high value for its ecological, recreational, scientific, educational and aesthetic features. It has a very high diversity of birds, 114 species, and is an important feeding and roosting site for many migratory birds. The wetland is an unusual offshore saltmarsh island complex providing breeding habitat for many birds. Mud Islands provides a wilderness experience for visitors. ***Social and Cultural values*** Recreation: Mud Islands receives many visitors although it is only accessible by boat. However, visiting the island is not encouraged by the Department of Natural Resources and Environment. Research: The avifauna of Mud Islands has been well documented historically, and the vegetation has been surveyed in detail. Bird banding has been carried out on Mud Islands since 1914. Between 1979 and 1987, 11,300 Silver Gull chicks were banded of which 2% have been recovered. A dense population of the introduced *Carcinus maenas* occurs in the lagoon. The rapidly changing geomorphology makes Mud Islands an ideal place to study plant succession. Education/tourism: Mud Islands is used for excursions by Frankston TAFE and the Victorian Institute of Marine Sciences, which also run summer holiday activities for the general public. Reference *Department of the Environment and Energy. 2017. Mud Islands - VIC077, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC077****.*

Wetland	Key Features
Point Cook & Laverton Saltworks	***Site description*** The coastline of this area comprises rocky shoreline, sandy beaches and spits and large areas of intertidal mudflats and seagrass. Laverton Saltworks consists of shallow evaporation basins and saltmarsh. The Point Cook Coastal Park contains saltmarsh, dune vegetation, grassland, freshwater meadows, fresh to brackish marshes and a saline lake. ***Physical features*** Geological setting: Quaternary coastal, lacustrine, paludal and aeolian sediments overlying basalt flows of the Newer Volcanics. Ecological features The saltworks ponds and Point Cook Lake provide an important habitat for waders, particularly sandpipers, avocets and stilts, and other waterbirds. ***Significance*** The coastline from Point Cook to Skeleton Creek includes wetlands which are high value for their ecological, recreational, scientific, educational and cultural features. The Laverton Saltworks are a very valuable artificial wetland with a range of salinities providing habitat diversity. This salinity range is vital in maintaining the value of the habitat. The active recurving sand spits between the Skeleton Creek mouth and the Laverton Creek mouth are geomorphologically significant. Point Cook Coastal Park has been rated as a site of state botanical significance. ***Social and Cultural values*** Recreation: The Point Cook Coastal Park receives large numbers of visitors and provides recreational facilities. Research: The area has been the study site in a number of research projects such as the banding of Double-banded Plovers by the Australasian Wader Studies Group. It also has detailed historical bird survey data. History: The Point Cook Estate, Point Cook Homestead and the Stables are all listed on the Register of the National Estate, classified by the National Trust and are listed on the Register of the Historic Building Council. Reference *Department of the Environment and Energy. 2017. Point Cook & Laverton Saltworks - VIC116, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC116.*
Powlett River Mouth	***Site description*** (No data) ***Physical features*** Geological setting: Quaternary alluvium on Cretaceous sediment of the Strzelecki Group. ***Ecological features*** The Powlett River Mouth provides valuable habitat for the endangered Orange-bellied Parrot. ***Significance*** (No data) ***Social and Cultural values*** Research: The Powlett River mouth is covered in McMahon et al. (1994) which covers saltmarsh habitats on the Victorian coast. Reference *Department of the Environment and Energy. 2017. Powlett River Mouth - VIC078, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC078**.*
Princetown Wetlands	***Site description*** These wetlands consist of swamps of varying salinity on the floodplains of the Gellibrand River and its tributary, the Serpentine (Latrobe) Creek. Wetlands types present are a deep freshwater marsh, semi- permanent saline marshes and a shallow freshwater marsh.

Wetland	Key Features
	Physical features The Princetown Wetlands occur in the contact area between the Port Campbell Plains, the folded Otway geology and Recent dune deposits. Geological setting: Quaternary alluvium on Tertiary Gellibrand Marl and Dilwyn Formation and Quaternary Bridgewater Formation. ***Ecological features*** The Princetown Wetlands have extensive beds of Common Reed Phragmites australis, and meadows dominated by Beaded Glasswort which can support large numbers of waterbirds. ***Significance*** A series of relict spits adjacent to the Gellibrand Estuary and a number of levee banks at various sites have State significance for their geomorphology. ***Social and Cultural values*** (No data) Reference *Department of the Environment and Energy. 2017. Princetown Wetlands - VIC093, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC093**.*
Shallow Inlet Marine & Coastal Park	***Site description*** Shallow Inlet is a large tidal embayment with a single channel to the sea. The seaward side is enclosed by a sandy barrier complex of spits, bars and mobile dunes. ***Physical features*** Geological setting: Shallow Inlet consists of Quaternary coastal and aeolian sediments deposited in a basin eroded into lower Palaeozoic and Pliocene sediments and enclosed by Pleistocene and Holocene coastal barrier and dune deposits. Large areas of mudflats are exposed at low tide. ***Ecological features*** Shallow Inlet is of high value for its avifauna and flora. ***Significance*** 13 sites of State, regional and local geological and geomorphological significance has been documented for the Shallow Inlet Marine and Coastal Park. ***Social and Cultural values*** Education: Shallow Inlet is used occasionally by local schools for environmental education. Tertiary institutions have used the area as a field study site for post-graduate research, mainly in geology and geomorphology. Research: The formation of the entrance barrier of Shallow Inlet has been studied in Cummins (1989). Tourism: Shallow Inlet is a popular tourist destination offering attractive surroundings and a variety of recreational activities including fishing, sailboarding, swimming, camping and picnicking. It also provides a base for visits to other holiday locations such as Wilsons Promontory and Corner Inlet. Aboriginal culture: Detailed archaeological surveys have discovered rich sites between Shallow Inlet and Darby River. Aboriginal middens are found along the coast west of Shallow Inlet. History: Shallow Inlet and the surrounding area also have a well-documented European history, including maritime history and associated shipwrecks. Reference *Department of the Environment and Energy. 2017. Shallow Inlet Marine & Coastal Park - VIC080, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC080** .*
Swan Bay & Swan Island	***Site description*** Swan Bay is a shallow marine embayment partly enclosed by spits and barrier islands such as Swan Island. It is generally less than two metres in depth, with 700–1,000 ha of mudflats exposed at low tide and has extensive seagrass beds. The bay is fringed with saltmarsh including some extensive flats and there are some

Wetland	Key Features
	stands of remnant woodland, particularly on Edwards Point at the northern end and on the islands on the eastern boundary of the bay. ***Physical features*** Geological setting: Quaternary coastal and aeolian sediments overlying Quaternary alluvial and coastal sediments. ***Ecological features*** The bay is of high value for its avifauna and flora. It is very productive for birds, molluscs and fish. The saltmarsh and intertidal seagrass meadows are regionally significant. The avifauna is particularly diverse, with 190 bird species recorded. ***Significance*** Swan Bay is a high value wetland for its ecological, recreational and educational features. Swan Bay is an unusual shallow embayment with a mixture of seagrass species which is relatively undisturbed and in good ecological condition. ***Social and Cultural values*** Research: Swan Bay has been well researched scientifically and is the subject of many reports. The type specimens of two isopods Haliophasma cycneum and Paranthura boronia held at the Museum of Victoria were collected in Swan Bay. The Marine Science Laboratory of the Department of Natural Resources and Environment at Queenscliff is in close proximity. History: Swan Island has value for historical military relics. Reference *Department of the Environment and Energy. 2017. Swan Bay & Swan Island - VIC081, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC081**.*
Sydenham Inlet Wetlands	Site description Wetland Atlas numbers: 8622 756184 (Sydenham Inlet), 8622 744203, 8622 764199, 8622 765191, 8622 769185, 8622 784209. ***Physical features*** Sydenham Inlet, together with Tamboon Inlet, developed in an embayment between the headlands at Pearl Point and Tamboon South. Bemm River formed a shallow tidal lagoon between two late Pleistocene-Holocene barriers behind a dune and barrier system on Ninety Mile Beach. An exposure of Noorinbee Granodiorite, which forms a small waterfall and rapids, defines the tidal extent of the Inlet. The accumulation of swamp deposits and river sediments has reduced the area and depth of the Inlet and has isolated Mud Lake and Swan Lake from the main wetland. The active cuspate delta of the Bemm River and several abandoned deltas occur on the north side of the Inlet. Geological setting: Sydenham Inlet and Mud Lake occur in a basin of Quaternary alluvium on Tertiary sand and Quaternary beach and dune deposits. Swan Lake was formed on Tertiary sand and Quaternary beach and dune deposits. ***Ecological features*** The Sydenham Inlet Wetlands include a variety of wetland types affected by fresh to saline water, provide a large area of estuarine habitat and support a high diversity of flora and fauna. ***Significance*** Sydenham Inlet is of State significance for its geology and geomorphology. The Inlet, Mud Lake, Swan Lake and the lower Bemm River are of high value for their flora and fauna. Riparian communities such as along the Bemm River near Sydenham Inlet are of high botanical significance. The diversity of fish species and the importance of the Inlet entrance barrier for roosting or nesting terns and shorebirds are particularly notable. ***Social and Cultural values*** Recreation: Fishing, boating, walking, birdwatching.

Wetland	Key Features
	Reference *Department of the Environment and Energy. 2017. Sydenham Inlet Wetlands - VIC134, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC134****.*
Tamboon Inlet Wetlands	***Site description*** Wetland Atlas numbers: 8722 863231 (Lake Furnell), 8722 872188 (Tamboon Inlet). ***Physical features*** Tamboon Inlet, together with Sydenham Inlet, developed in an embayment between the headlands at Pearl Point and Tamboon South. Cann River formed a shallow tidal lagoon between two late Pleistocene-Holocene barriers behind a dune and barrier system on Ninety Mile Beach and bordered by a band of plutonic rock to the east. The Inlet consists of the river channel within a delta, the north and south basins separated by a sand bar and spit, the eastern channel and the entrance barrier complex. Geological setting: Quaternary beach and dune deposits underlie most of Tamboon Inlet and Devonian Noorinbee Granodiorite occurs along the east side of the Inlet. Lake Furnell was formed on Quaternary beach and dune deposits and Tertiary sediments. ***Ecological features*** The Tamboon Inlet Wetlands have a variety of wetland types affected by fresh to saline water which support a diversity of flora and fauna. The Inlet provides a large area of estuarine habitat. ***Significance*** Tamboon Inlet, Lake Furnell and the lower Cann River are of high value for their flora and fauna, particularly the diversity of fish species. Tamboon Inlet is of State significance for its geology and geomorphology. ***Social and Cultural values*** Recreation: Fishing, boating, walking, birdwatching. Reference *Department of the Environment and Energy. 2017. Tamboon Inlet Wetlands - VIC135, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC135****.*
Werribee-Avalon Area	***Site description*** This wetland system contains a variety of habitats, including large areas of intertidal mudflat and seagrass beds, extensive areas of saltmarsh, small stands of White Mangrove Avicennia marina, reed beds, salt evaporation lagoons of the Avalon saltworks and the grass filtration paddocks and sewage treatment lagoons of the Werribee Treatment Complex. ***Physical features*** Natural wetlands include two inter-tidal lagoons (Limeburners Bay and The Spit), two estuaries (Little River and Werribee River), saltmarsh flats and several shallow freshwater marshes. Artificial wetlands comprise salt evaporation ponds (built from saltmarsh and embayments), sewage filtration paddocks and sewage treatment lagoons. Geological setting: Quaternary coastal, lacustrine and paludal sediments and basalt flows of the Newer Volcanics. ***Ecological features (***No data) ***Significance*** The Port Phillip Bay Coastal Study identified Limeburners Bay as a site of geomorphological, floral and faunal interest, and The Spit and the Western Treatment Complex as sites of faunal interest. Limeburners Bay is listed as a site of special scientific interest for its vegetation and its geology and geomorphology. The Spit is also a site of geological and geomorphological scientific interest. These wetlands are

Wetland	Key Features
	of high value for ecological, recreational, tourism, scientific and educational features. They are highly productive and include diverse habitats supporting a wide range and large numbers of waders, ducks, passerines and raptors. ***Social and Cultural values*** Recreation: This wetland system has very high values for birdwatching. Although access is restricted it is within easy reach of Melbourne. The Werribee Treatment Complex is regarded as the best place in Victoria for waterbirds and is internationally renowned. The coastline is heavily used for recreational fishing. Research: Waterbird counts at Werribee are used to monitor the populations of species listed on JAMBA and CAMBA. It is also a study site for many research projects. Orange-bellied Parrots have been extensively studied in the area. Education: The area is close to Melbourne and is used for teaching by universities. Reference *Department of the Environment and Energy. 2017. Werribee-Avalon Area - VIC121, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC121**.*
Western Port	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Yambuk Wetlands	***Site description*** The Yambuk Wetlands are a network of the estuary of the Eumeralla River and Shaw River (Lake Yambuk), associated freshwater meadows and semi-permanent saline wetlands. ***Physical features*** The wetlands adjacent to Lake Yambuk and the lower Eumeralla River are floodplain depressions separated from the river by low natural levee banks. All these wetlands have formed in the swale between successive barrier complexes. Geological setting: Quaternary lacustrine, paludal, coastal and alluvial sediments on Quaternary colluvium and alluvium and Tertiary sediments. ***Ecological features*** The Yambuk Wetlands are high value for their flora and fauna, and they act as drought refuges. The vegetation consists of extensive reed beds and narrow bands of saltmarsh. ***Significance*** Lake Yambuk is an excellent example of an estuary with extensive overbank swamps. ***Social and Cultural values*** Recreation: Fishing, duck hunting, boating and walking at the river mouth are the main activities. Aboriginal culture: Shell middens, surface scatters and isolated hearths exist in and around Lake Yambuk. Reference *Department of the Environment and Energy. 2017. Yambuk Wetlands - VIC084, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=VIC084**.*
Tasmania	
Boullanger Bay - Robbins Passage	**Site description** Boullanger Bay - Robbins Passage is an extensive area of tidal channels and intertidal mud and sand flats lying between the northwest coastline of Tasmania, and three off-shore islands (Perkins, Robbins and Penguin islands). **Physical features** The site is composed of both estuarine and marine areas, including tidal mud and sand flats, intertidal channels and tidal channels.

Wetland	Key Features
	Ecological features The large area of exposed mud and sand flats at this site provides a feeding ground for resident and migratory waders. Other seabirds are also abundant in the area, using headlands, sandy beaches, dunes and saltmarshes surrounding the area for roosting and nesting. The saltmarsh areas are important for invertebrates, mainly small crustaceans, crabs and snails. **Significance** Boullanger Bay - Robbins Passage attracts the largest numbers of migratory waders in Tasmania and is also a very significant habitat for non-migratory species. It supports a number of bird species which are regarded as significant both nationally and internationally. Among the many birds using the area, there are 13 species which are listed on the following international treaties, the JAMBA and the CAMBA. The area provides the most extensive feeding grounds on an important route for birds migrating across Bass Strait. It is likely that the Orange-bellied Parrot uses this area as a stop-over in its migration across Bass Strait. **Social and Cultural values** There is extensive anecdotal evidence of the long-term use of the area by Tasmanian Aboriginals for various purposes, including hunting and food-gathering. Although it is likely that Aboriginal values of National Estate significance exist at this site, these have not yet been identified or documented. *Reference* *Department of the Environment and Energy. 2017. Boullanger Bay - Robbins Passage - TAS089, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS089*** **Earlham Lagoon** **Site description** An estuarine coastal lagoon/marsh on the south-east coast of Tasmania. Access is possible by 2-wheel drive. **Physical features** The lagoon lies within a coastal swale, overlying Quaternary deposits. The soil is predominantly silt, which is yellow brown in colour with reducing, organic mud. **Ecological features** The site is surrounded by grazing land and therefore the marsh flora has become mixed with exotic grasses. **Significance** The lagoon supports species which are poorly reserved in Tasmania. It is also used by Red-necked Stints which are listed as important species both under the JAMBA and the CAMBA. **Social and Cultural values** The lagoon is valued locally as a recreational area. *Reference* *Department of the Environment and Energy. 2017. Earlham Lagoon - TAS033, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS033**.* **Flyover Lagoon 1** **Site description** Flyover Lagoon is one of a number of shallow, saline coastal lagoons and marshes, which occur on the east coast of Cape Barren Island in the Furneaux group, Bass Strait. Collectively these lagoons are Ramsar listed as the "East-Coast Cape Barren Island Lagoons". This entry pertains to the northern section of Flyover Lagoon. Access to this area is by walking or off-road vehicles. **Physical features** Flyover Lagoon is a dune barred (dammed by Recent calcareous sand dunes) lagoon, which forms part of the Cape Barren dune system. The topsoil is grey sand, with some reducing organic mud. **Ecological features** The wetland is surrounded by heath and coastal scrub and is largely free from invasion by exotic species. Both a Lepilaena cylindrocarpa and

Wetland	Key Features
	Selliera radicans community are present at the site. Many species of waterbirds use the area. **Significance** Flyover Lagoon supports a suite of species and communities which are rare, vulnerable and poorly reserved in Tasmania. The lagoon is part of the Cape Barren dune system, which is considered geologically significant, and is listed in the Tasmanian Geoconservation Database. It is also of cultural significance to the Tasmanian Aboriginal community. **Social and Cultural values** The area is valued as a site for various recreational activities. It is also of significance to the Aboriginal community. *Reference* *Department of the Environment and Energy. 2017. Flyover Lagoon 1 - TAS040, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS040**.*
Flyover Lagoon 2	**Site description** Flyover Lagoon is one of a number of shallow, saline coastal lagoons and marshes, which occur on the east coast of Cape Barren Island in the Furneaux group, Bass Strait. Collectively these lagoons are Ramsar listed as the "East-Coast Cape Barren Island Lagoons". This entry pertains to the southern section of Flyover Lagoon. Access to this area is by walking or off-road vehicles. **Physical features** Flyover Lagoon is a dune barred (dammed by Recent calcareous sand dunes) lagoon, which forms part of the Cape Barren dune system. There are deep sandy soils throughout and some areas of plain formed on Quaternary siliceous marine sands and clays. **Ecological features** The wetland is surrounded by heath and coastal scrub and is free from invasion by exotic species. This basin is important for its Eleocharis pusilla sedgeland community. Many species of waterbirds use the area. **Significance** Flyover Lagoon supports a suite of species and communities which are rare, vulnerable and poorly reserved in Tasmania. The lagoon is part of the Cape Barren dune system, which is considered geologically significant, and is listed in the Tasmanian Geoconservation Database. It is also of cultural significance to the Tasmanian Aboriginal community. This site is visited by White-bellied Sea Eagles which are listed as an important species under the CAMBA. **Social and Cultural values** The area is valued as an area for recreational activity and also holds cultural significance for the Tasmanian Aboriginal community. *Reference* *Department of the Environment and Energy. 2017. Flyover Lagoon 2 - TAS041, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS041**.*
Lavinia Nature Reserve (Lake Martha Lavinia, Sea Elephant Wildlife Sanctuary, Nook)	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1.
Little Thirsty Lagoon	**Site description** Little Thirsty Lagoon is one of a number of shallow, saline coastal lagoons and marshes, which occur on the east coast of Cape Barren Island, in the

Wetland	Key Features
	Furneaux group, Bass Strait. Collectively these lagoons are listed on the Convention on Wetlands as the "East-Coast Cape Barren Island Lagoons". Access to this area is by walking or trail bikes. **Physical features** The topsoil is inorganic, aerated red-brown sand. Ecological features The lagoon supports a diverse aquatic flora community and is also utilised by many migratory birds. **Significance** Little Thirsty Lagoon supports a suite of species and communities which are rare and poorly reserved in Tasmania and also a species which is vulnerable at a national level. The lagoon is also an important site for a number of migratory birds listed under the CAMBA and/or the JAMBA. **Social and Cultural values** The lagoon is of cultural significance to the Tasmanian Aboriginal community. *Reference* *Department of the Environment and Energy. 2017. Little Thirsty Lagoon - TAS043, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS043**.*
Logan Lagoon	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Maria Island Marine Reserve	**Site description** The Maria Island Marine Reserve is the seaward extension of the Maria Island National Park, off the east coast of Tasmania. The reserve runs from around the shoreline out to the 20 m depth contour, about one kilometre offshore. **Physical features** Fossil Bay, on the island's west coast, is characteristically limestone, containing numerous large caverns, whereas rounded granite blocks with moderate cave development occur along most of the eastern coast of the island. Dolerite and folded, argillite reefs are found between these two areas. The east coast reefs drop quickly to considerable depths (40+ m) and experience maximal wave exposure. The sheltered reefs of Shoal Bay are very shallow and have a broken topography of small dolerite boulders. The sandstone reefs near Howells Point are usually submerged under sand in shallow water, but where they extend to greater depths, long gutters and ledges are found. **Ecological features** There are extensive seagrass beds and fish nurseries in Mercury Passage (between Maria Island and mainland Tasmania) and sandstone reefs at Howells Point. Forests of giant kelp (15-20 m), rocky reefs and large underwater caverns are found in Fossil Bay. The marine communities around Maria Island occur on a variety of substrates and have a rich diversity of flora and fauna. **Significance** Maria Island Marine Reserve protects a representative range of the marine communities found along Tasmania's east coast. It is one of only a few formal marine reserves in Tasmania. The marine area is the most significant representation of the Maugean biogeographic province reserved in Tasmania. It provides an important breeding refuge for species which are commercially fished. The Fossil Cliffs, part of the Marine Reserve, is a site of international geoconservation significance for its well-preserved marine fossils. The site is also used by a number of bird species which are listed under the JAMBA and the CAMBA.

Wetland	Key Features
	Social and Cultural values The Marine Reserve has significant aesthetic and recreational values, including large underwater caverns, sandstone reefs and seagrass beds of interest to the snorkeler or diver. *Reference* *Department of the Environment and Energy. 2017. Maria Island Marine Reserve - TAS036, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS036*** **Social and Cultural values** The Marine Reserve has significant aesthetic and recreational values, including large underwater caverns, sandstone reefs and seagrass beds of interest to the snorkeler or diver. *Reference* *Department of the Environment and Energy. 2017. Maria Island Marine Reserve - TAS036, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS036***
Moulting Lagoon	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Pearshape Lagoon 1 **Pearshape Lagoon 2** **Pearshape Lagoon 3** **Pearshape Lagoon 4**	**Site description** A group of coastal lagoons on the southwest coast of King Island (Bass Strait). Access is possible by 2-wheel drive. **Physical features** The lagoons have an inflowing channel. Pearshape lagoons occur within coastal swales overlaying Quaternary calcareous sands. The soil is predominantly sand, which is white in colour with medium organic content. **Ecological features** The wetlands support communities of mixed sedges and grasses, with flooded tea tree scrub in some areas. **Significance** The wetlands are good representative wetlands for the region and are visited by a diverse range of waterbirds. **Social and Cultural values** This area is valued by locals as it is a suitable area for recreational shooting. *Reference* *Department of the Environment and Energy. 2017. Pearshape Lagoon 1 - TAS076, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS076**. Accessed 25 Jul 2017.* *Department of the Environment and Energy. 2017. Pearshape Lagoon 2 - TAS077, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS077**.* *Department of the Environment and Energy. 2017. Pearshape Lagoon 3 - TAS078, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS078** .* *Department of the Environment and Energy. 2017. Pearshape Lagoon 4 - TAS079, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS079**.*
Pitt Water and Orielton Lagoon	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Rocky Cape Marine Area	**Site description** A marine area off the coast of Rocky Cape National Park, on the northwest coast of Tasmania. **Physical features** The rugged coastline at Rocky Cape National Park maintains its jagged nature underwater. Offshore from the headlands are rocky reefs that extend

Wetland	Key Features
	to depths greater than 20 m. The folded quartzite extends as a series of parallel ridges containing long, overhanging caves which follow the strike of the rock. The boulder beaches give way to sea grass beds in very shallow water. Wave exposure around the coast is moderate, although water clarity during calm weather can reach up to 20 m. **Ecological features** The extensive caves and high structural relief, together with the range of wave exposures found in the area, result in particularly high biotic diversity. The lower eulittoral zone contains bands of the seaweeds, Hormosira banksii and Cystophora torulosa. Below these species occurs a zone of Cystophora moniliformis which merges with Caulerpa brownii and a suite of other seaweeds. Numerous other species are found in the area. As a result of the relatively low wave energy and considerable cave development at Rocky Cape, a large number of fragile, erect animals grow on rock faces, even in shallow water. The Rocky Cape fish fauna contains many warm temperate species as well as numerous cool temperate species including cave dwelling species. The abundance of the slow-moving, edible Boarfish, Pentaceropsis recurvirostris, indicates that the area has not been spearfished extensively. **Significance** The Rocky Cape Marine Area is a representative wetland type. It is an important site due to its species-diverse marine communities and pollution-free waters. It also supports a species which is thought to be rare in Tasmanian waters. **Social and Cultural values** The area is used by the community for recreational activities such as scuba diving, snorkelling, fishing and boating. Reference *Department of the Environment and Energy. 2017. Rocky Cape Marine Area - TAS080, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS080**.*
Syndicate Lagoon	**Site description** Syndicate Lagoon is part of a chain of lagoons and marshes occurring down the eastern coast of Flinders Island (Bass Strait). Access is possible by 4-wheel drive. **Physical features** The lagoon occurs on Quaternary calcareous sands with some reducing organic muds. **Ecological features** The area is relatively undisturbed and there are representative examples of coastal vegetation around the lagoon. Swans (Cygnus atratus) and other waterfowl breed in winter in the fringe of Juncus tussocks around Syndicate Lagoon. As the water recedes in summer, wading birds feed on the exposed sand and mudflats. The lagoon is rich in nutrients and provides abundant food for waterbirds. The wetland complex is a refuge for waterfowl during the shooting season, and a resting and feeding area for migratory birds. **Significance** Syndicate Lagoon supports communities which are poorly reserved in Tasmania and provides an important habitat for a range of migratory waterbirds. The lagoon is visited by a number of migratory bird species listed under the CAMBA and/or the JAMBA. **Social and Cultural values** (No data) Reference *Department of the Environment and Energy. 2017. Syndicate Lagoon - TAS047, in Australian Wetlands Database. Department of the Environment and Energy,*

Wetland	Key Features
	Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS047***
The Chimneys (Lower Ringarooma River floodplain)	**Site description** The wetland area is situated on the sandy flood plain of the Lower Ringarooma River (northern Tasmania) and is surrounded by woodland used for rough grazing. Access to the site is by 4-wheel drive. **Physical features** The Chimneys may represent the remnants of a once more extensive lake system. The area consists of flat plains of Quaternary clays, sands and gravels. Silty clay soil overlays a deep grey sand, with silt content decreasing with depth. The silt is derived from tin mining activity in the river catchment. **Ecological features** The area is dominated by scrub and tussock grassland vegetation and includes substantial areas of freshwater marsh habitat in the floodplain. There are also lagoons and dunes which support a rich variety of invertebrate fauna. **Significance** This site has been listed under the Convention on Wetlands of International Importance. The area supports a number of species which are rare or vulnerable and are poorly reserved in Tasmania. The area has a rich diversity of invertebrate fauna. The Chimneys are also an important feeding and nesting place for many species of waterbird. Its geoscientific significance relates to its age, as it could be older than other lakes in the area (having a possible Pleistocene age being situated well within known Pleistocene dunefields). If so, it is of considerable interest from a palynological and palaeobotanical perspective. The Chimneys may have important subfossil potential such as megafaunal remains. **Social and Cultural values** The area was used by Aboriginal people and has a long history of European occupation and mining exploitation. Limited use is made of the area for duck shooting and cattle grazing. Reference *Department of the Environment and Energy. 2017. The Chimneys (Lower Ringarooma River floodplain) - TAS005, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS005****.*
Tregaron Lagoons 1	**Site description** A coastal lagoon, partly in the private Cape Portland Wildlife Sanctuary (north-east Tasmania). Access is possible by 2-wheel drive. **Physical features** Holocene dune barred lagoon situated in a restricted transgressive dunefield in relation to other parts of the region. The soil is predominantly sand (overlaying Jurassic dolerite and Quaternary deposits), which is grey in colour with medium peat content. **Ecological features** Crassula helmsii herbfield is found in this wetland, where the dominant species forms a low, closed sward with the co-dominants Myriophyllum propinquum and Mimulus repens. **Significance** The lagoon supports species and communities which are rare and poorly reserved in Tasmania and a species which is listed as nationally vulnerable. It is important for comparative geomorphological studies for its value in the understanding of Holocene coastline development. This site supports a group of species which are listed as important under both the CAMBA and/or the JAMBA. **Social and Cultural values** (No data)

Wetland	Key Features
	Reference *Department of the Environment and Energy. 2017. Tregaron Lagoons 1 - TAS006, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS006***
Tregaron Lagoons 2	**Site description** A coastal lagoon, part of which is reserved in the private Cape Portland Wildlife Sanctuary (north-east Tasmania). Access is possible by 2-wheel drive. **Physical features** Holocene dune barred lagoons situated in a restricted transgressive dunefield in relation to other parts of the region. The soil is predominantly sand (overlaying Jurassic dolerite and Quaternary deposits), which is grey in colour with medium peat content. **Ecological features** The lagoon is visited by a high diversity of waterbirds. The wetland contains a Mimulus repens herbfield, whilst the dominant emergent species include Juncus sp., Triglochin spp. and Phragmites sp. **Significance** The lagoon supports species and communities which are rare and poorly reserved in Tasmania and a species which is listed as nationally vulnerable. It is important for comparative geomorphological studies for its value in the understanding of Holocene coastline development. The site is visited by a number of important migratory species which are listed under the CAMBA and/or the JAMBA. **Social and Cultural values** (No data) Reference *Department of the Environment and Energy. 2017. Tregaron Lagoons 2 - TAS007, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS007****.*
Unnamed Wetland TAS010	**Site description** A coastal lagoon, part of which lies within the private Cape Portland Wildlife Sanctuary (north-east Tasmania). Access is possible by 2-wheel drive. **Physical features** The wetland occurs within a coastal swale overlaying Jurassic dolerite and Quaternary deposits. The soil is predominantly sand, which is grey in colour with medium organic content. **Ecological features** This wetland supports a Wilsonia rotundifolia herbfield. **Significance** The wetland supports species and communities which are rare and poorly reserved in Tasmania. It forms part of a band of wetlands in the area. **Social and Cultural values** (No data) Reference *Department of the Environment and Energy. 2017. Unnamed Wetland - TAS010, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS010****.*
Unnamed Wetland TAS012	**Site description** A coastal lagoon, part of which is in the Musselroe Bay Conservation Area (north-east Tasmania). Access is possible by 2-wheel drive. **Physical features** The wetland occurs within a coastal swale overlaying Quaternary deposits. The soil is predominantly sand, with high organic content.

Wetland	Key Features
	Ecological features The site supports a saltmarsh community. **Significance** The wetland supports species which are rare and poorly reserved in Tasmania. It has evolved as part of a bay mouth spit complex which is significant as it is both undisturbed and poorly reserved in the State. **Social and Cultural values** Valued as an area for recreational activities such as boating and fishing. Reference *Department of the Environment and Energy. 2017. Unnamed Wetland - TAS012, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS012.*
Unnamed Wetland TAS051	**Site description** This lagoon is one of a number of shallow, saline coastal lagoons and marshes, which occur on the east coast of Cape Barren Island, in the Furneaux group, Bass Strait. Collectively these lagoons are listed on the Convention on Wetlands as the "East-Coast Cape Barren Island Lagoons". Access to this area is by walking or off-road vehicle. **Physical features** There are deep sandy soils throughout and some areas of plain formed on granite and Quaternary siliceous marine sands and clays. This particular small, brackish wetland is perched in the coastal sand dune system. The topsoil is inorganic, aerated dark grey-brown sand. **Ecological features** This site is sparsely vegetated, but free from invasion of exotic species. **Significance** The lagoon supports species which are considered rare and poorly reserved in Tasmania and nationally and provides an important habitat for a range of migratory waterbirds, some of which are listed under the CAMBA and/or the JAMBA. **Social and Cultural values** The area surrounding the wetland is valued as a site for recreational activities. Reference *Department of the Environment and Energy. 2017. Unnamed Wetland - TAS051, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS051**.*
Unnamed Wetland TAS052	**Site description** This lagoon is one of a number of shallow, saline coastal lagoons and marshes, which occur on the east coast of Cape Barren Island, which is in the Furneaux group in Bass Strait. Collectively these lagoons are listed on the Convention on Wetlands as the "East-Coast Cape Barren Island Lagoons". Access is possible by walking or off-road vehicles. **Physical features** The wetland is barred by a foredune overlaying granite and sands. The soil is predominantly sand, which is grey in colour with low organic content. **Ecological features** This site is important for large numbers of migratory waterbirds. The vegetation community surrounding the margins of the lagoon is an open herbfield. **Significance** The lagoon supports species and communities which are considered rare and poorly reserved in Tasmania, and a species which is vulnerable on a national level. It is also used by species which are listed under the CAMBA and/or the JAMBA.

Wetland	Key Features
	Social and Cultural values The area including and surrounding this wetland has important recreational values. Reference *Department of the Environment and Energy. 2017. Unnamed Wetland - TAS052, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS052**.*
Unnamed Wetland TAS081	**Site description** A coastal wetland in the far northwest of Tasmania. Access is possible by 2- wheel drive. **Physical features** The wetland occurs within a coastal swale overlaying metamorphosed fine-grained rocks. The soil is predominantly sand, which is grey in colour with medium organic content. **Ecological features** A Hydrocotyle muscosa herbfield occurs within this wetland, where the dominant species form low, mostly closed swards and is commonly associated with Crassula helmsii, Eleocharis acuta, Lilaeopsis brownii and Selliera radicans. Villarsia reniformis aquatic community, also found in this wetland, forms a dense cover, with the co- dominant species Myriophyllum propinquum, Isolepis fluitans and Triglochin procera. **Significance** This site is an important representative wetland for the region. It is of further importance as it supports communities which are poorly reserved in Tasmania. **Social and Cultural values** The area is valued as an important site for recreational activities such as fishing. Reference *Department of the Environment and Energy. 2017. Unnamed Wetland - TAS081, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=TAS081**.*
New South Wales	
Avoca Lagoon	***Site description*** A shallow, brackish lagoon with extensive *Phragmites australis* rushlands. Large *Juncus kraussii* reedlands occur in the northern arm. Swamp forests of *Melaleuca quinquenervia* and *Casuarina glauca* surround most of the northern and western arms and are also found on the island. There are dense growths of aquatic grasses and algae, especially in the northern arm. The bottom is mainly silt but is sandier near the entrance. ***Physical features*** (No data) ***Ecological features*** (No data) ***Significance*** In Fair Condition. There is a high nutrient input from septic tanks, urban runoff and fertilisers used in the rural part of the catchment. The narrow opening of the southern arm of the lake restricts water movement. This section of the lake is showing increased rates of eutrophication. The lagoon is being dredged for sand, thus increasing turbidity and disturbance of aquatic habitats. Frequent artificial opening has unknown effects. ***Social and Cultural values*** The lake is an important tourist attraction and recreation area. It is a good nesting and feeding area for ducks, moorhens and other waterbirds. Reference

Wetland	Key Features
	*Department of the Environment and Energy. 2017. Avoca Lagoon - NSW181, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW181**.*
Beecroft Peninsula	**Site description** The Commonwealth component of the Beecroft Peninsula consists of the area known as the Beecroft Weapons Range and covers almost all of the Peninsula except a strip of land in the northern end that contains the township of Currarong and Abrahams Bosom Reserve, and an area to the west of the Beecroft Weapons Range that is NSW NPWS land. The vegetation is diverse (573 species) and of high conservation value (8 ROTAP species recorded). Physical features The Beecroft Peninsula forms the northern headland of Jervis Bay and is a remnant of a Permian coastal plateau that slopes north and east from high ocean cliffs to the gentler shore of the Bay. The area supports a high diversity of vegetation types within a small area including mangroves, saltmarsh and freshwater swamps, heathland, eucalypt forest and sub-tropical and littoral rainforest. On the northern boundary of the range (outside of the Commonwealth area) is Lake Wollumboola, which is the largest shallow saline lagoon on the south coast of NSW. The Lake is seldom open to the sea. Wowly Gully, in the north-west corner of the Peninsula, consists of a series of interconnected pools and is fringed by sandflats and swamps. The gully is frequently open to Jervis Bay at which time it becomes a tidal channel. **Ecological features** The peninsula supports a variety of wetland units with varying vegetation types, including: Casuarina glauca swamps with a shrub and sedge understorey; Low lying swamps supporting Phragmites australis, Melaleuca ericifolia, Baumea teretifolia, Baumea articulata and Leptospermum juniperinum; stream swamps occur in the catchment of Duck creek with dominant species including Gahnia clarkei and Gleichenia microphylla; swampy thicket occurs on low lying land between heathland and low lying swamp with common species being; Allocasuarina littoralis, Epacris microphylla, and Melaleuca thymifolia; and mangroves Avicennia marina found on tidal mudflats. Other habitat types include coastal scrub, wet and dry heath, small and large crowned eucalypt forests, Terpentine and rainforest. The lower saltmarsh of Lake Wollumboola is a mosaic of two communities, one dominated by the uncommon Wilsonia backhousei and the other is dominated by Sarcocornia quinqueflora. Grey mangrove Avicennia marina occurs in patches at Chinamans Beach, but fringes Cararma inlet behind which are areas of saltmarsh. The most striking feature is the presence of the Chenopod Sclerostegia arbuscula which is only known from a few sites in NSW. Significance The area supports a high diversity of vegetation types within a small area and a variety of wetland types. A number of threatened flora and fauna species are present. **Social and Cultural values** The Point Perpendicular lighthouse includes residences and ancillary structures representing early construction methods using pre-cast concrete block masonry employing sandstone aggregate from the site. There are a large number of aboriginal sites recorded on the peninsula including art sites, middens, scarred trees and campsites. <u>Reference</u> *Department of the Environment and Energy. 2017. Beecroft Peninsula - NSW176, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW176**.*

Wetland	Key Features
Bondi Lake	***Site description*** (No data) ***Physical features*** Bondi Lake is an example of a Simple Embayment Lake. Embayment lakes are formed in the same formative process as in drowned valley lakes, except that in this case a bay is cut off. Such lakes were formed in the Holocene marine transgression. The lake lies in a broad depression behind the frontal dune. ***Ecological features*** Bondi Lake is a freshwater lake located in an area whereby the surrounding waterbodies exhibit varying degrees of salinity. The lake supports a range of freshwater flora and fauna species, little documentation exists. ***Significance*** (No data) ***Social and Cultural values*** Former school house located at the northern end of Bondi Lake Reference *Department of the Environment and Energy. 2017. Bondi Lake - NSW116, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW116****.*
Brisbane Water Estuary	**Site description** (No data) **Physical features** The estuary of Brisbane Water is a relatively small (27 km2) broad, shallow estuary connected to Broken Bay through a narrow channel. The estuary is entirely within the City of Gosford. Ecological features Two species of mangroves occur, Grey Mangrove (Avicennia marina) and River Mangrove (*Aegiceras corniculatum*) and cover an area of 163 ha; Saltmarsh covers an area of 95 ha, mostly in the Cockle Bay Nature Reserve and Rileys Island Nature Reserve. Intertidal seagrass beds are extensive and are shown on the attached map. Brisbane Water is important feeding area for migratory waders and for waterbirds generally. Swans arrive in spring and summer in the estuary to feed on the extensive seagrass beds. The area is also important as a nursery and spawning ground for fish and crustaceans. **Significance** (No data) **Social and Cultural values** Around 100,000 people live around Brisbane Water, there is an important commercial fishery and oyster farming industry based in the estuary and the area is well known as an amateur fishing area. Marinas operate around the estuary and there are many sailing and motorboat clubs operating on the lakes and in the estuary. Reference *Department of the Environment and Energy. 2017. Brisbane Water Estuary - NSW132, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW132***
Bundjalung National Park	***Site description*** (No data) ***Physical features*** The geology of Bundjalung National Park consists primarily of areas of Quaternary sediments including alluvium, gravel, sand, silt, clay and areas of beach and dune sand. The geology of the remaining area consists of Triassic - Jurassic sediments of the Bendamba Group including sandstone, shale, and conglomerate). Soils of Bundjalung National Park include siliceous sands, sand podzols, humus podzols, acid peats, and Quaternary estuarine deposits. These soils are sandy, poorly structured and infertile. Examples of the dune and swale complex which was formed during the Pleistocene are contained in Bundjalung National Park. ***Ecological features*** Bundjalung National Park consists of a dunal wetland system, consisting of a mosaic of wet heath, sedgeland, dry heath, forested swamp and

Wetland	Key Features
	sclerophyll forest south of Evans Head. In the southern area of the National Park swamp sclerophyll forests grade to saltmarsh and mangroves in intertidal areas. The central area comprises predominantly of wet heathland and sedgeland communities. ***Significance*** This large complex of dunal wetlands is in a relatively natural condition and is considered to be a representative example of coastal dunal wetlands. ***Social and Cultural values*** Evidence of Aboriginal occupation of the area covered by Bundjalung National Park includes middens, campsites, mythological sites, a fish trap made of rock at Woody Head, stone tool workshops and bora ceremonial grounds. Goanna Headland which lies adjacent to Bundjalung National Park has particular mythological significance to the local Aboriginal community. There is a Native Title claim over the park, and it is likely that some form of joint management will occur in the future. Bundjalung has been used for military purposes since World War II. Disused bunkers associated with target practice ranges are located in the central area of Bundjalung National Park. In the past the coastal areas of the National Park have been used for fishing, recreation, bee keeping and limited cattle grazing. A miners cottage, erected in 1923 still stands near Woody Head. Possible opportunities for scientific studies and educational purposes. Reference *Department of the Environment and Energy. 2017. Bundjalung National Park - NSW026, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW026****.*
Clarence River Estuary	**Site description** (No data) **Physical features** The geology of the area consists of Quaternary sediments including alluvium, gravel, sand silt, clay overlying the Cretaceous-Jurassic Kangaroo Creek Sandstone. **Ecological features** Estuary of largest coastal river in NSW (based on discharge and catchment area, and associated mangrove, seagrass and saltmarsh areas. Four species of mangrove occur within the Clarence Estuary including the River Mangrove (Aegiceras corniculatum), Grey Mangrove (Avicennia marina var. australasica), Black Mangrove (Bruguiera gymnorrhiza) and the Milky Mangrove (Excoecaria agallocha). Dominant species in saltmarsh include Samphire (Sarcocornia quinqueflora) and Salt Couch (Sporobolus virginicus). Rainforest trees, shrubs and vines are also a prominent feature of the estuary. **Significance** A number of wetlands within the Clarence Estuary are SEPP 14 wetlands; these include Freeburn, Thorny, Micalo, Dart, Hickey and Rabbit Islands. Social and Cultural values The Clarence Estuary was utilised by Aborigines for fishing and evidence of this includes oyster shell middens that have been recorded on Micalo Island. In the early 1800's Richard Craig pioneered the harvesting of extensive Red Cedar stands of the Clarence. Cropping began with sugar cane farms in 1864 on the Clarence River floodplain. Reference *Department of the Environment and Energy. 2017. Clarence River Estuary - NSW027, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW027****.*
Clybucca Creek Estuary	***Site description*** (No data) ***Physical features*** The geology of the Clybucca Creek Estuary comprises of Quaternary sediments including alluvial, paludal and estuarine deposits, mainly sands silts and gravel.

Wetland	Key Features
	Ecological features Wetlands consisting of 520 ha of mangroves, 191 ha of seagrasses, and 365 ha of saltmarsh. Mangrove species within the estuary include Grey Mangrove (*Avicennia marina*), River Mangrove (*Aegiceras corniculatum*), Milky Mangrove (*Excoecaria agallocha*). The saltmarsh community include species such as Couch (*Sporobolus virginicus*), Sedge (*Cyperus polystachyos*), Sea Rush (*Juncus kraussii*), the Sedge *Fimbristylis ferruginea*, Seaberry Saltbush (*Rhagodia candolleana* ssp. *candolleana*) and, Ruby Saltbush (*Enchylaena tomentosa*). Freshwater swamp forest also occurs along the estuary and includes species such as Paperbark (*Melaleuca quinquenervia*), Willow Bottlebrush (*Callistemon salignus*) and Swamp Oak (*Casuarina glauca*). Fauna species recorded within the estuary include the Australian White Ibis (*Threskiornis molucca*), Straw-necked Ibis (*Threskiornis spinicollis*), Pied Oystercatcher (*Haematopus longirostris*), Pelican (*Pelecanus conspicillatus*), Whimbrel (*Numenius phaeopus*), White-bellied Sea-eagle (*Haliaeetus leucogaster*), Pied Cormorant (*Phalacrocorax varius*), Little Pied Cormorant (*Phalacrocorax melanoleucos*), Welcome Swallow (*Hirundo neoxena*), Azure Kingfisher (*Alcedo azurea*), Willie Wagtail (*Rhipidura leucophrys*), Jacky winter (*Microeca fascinans*), Red-bellied Black Snake (*Pseudechis porphyriacus*), and the Echidna (*Tachyglossus aculeatus*). ***Significance*** (No data) ***Social and Cultural values*** Evidence of Aboriginal occupation of the wetland includes midden sites at Stuarts Point and Shark Island. The Macleay middens are unique as a surviving complex and are probably the largest deposits of their sort still intact. Other Aboriginal sites which occur within the estuary include burial sites, ceremonial grounds and carved trees. *Reference* *Department of the Environment and Energy. 2017. Clybucca Creek Estuary - NSW028, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW028**.*
Clyde River Estuary	**Site description** (No data) **Physical features** The geology of the Clyde River estuary consists primarily of Ordovician sediments including siltstone, claystone, sandstone, quartzite and chert. with some areas around the mouth of the estuary consisting of Quaternary sediments including alluvium gravel, swamp deposits and sand dunes. **Ecological features** A relatively south coast estuary, which supports areas of mangrove including River Mangrove (Aegiceras corniculatum) and Grey Mangrove (Avicennia marina) (3200 ha), seagrass (70 ha) and saltmarsh (100 ha). Other common flora species include Common Reed (Phragmites australis), Sea Rush (Juncus krausii), Sheoaks (Casuarina spp.), Eucalyptus spp., Long-leaved Wallaby Grass (Danthonia longifolia). Relatively rich zooplankton fauna is found in the estuary. Many native fish are found in the estuary including Australian Smelt (Retropinna semoni), Australian Bass (Macquaria novemaculeata), and the Australian Grayling (Prototroctes maraena). Fauna species which occur in the area include the Common Eastern Froglet (Crinia signifera), Brown Striped Frog (Limnodynastes peronii), Brown Tree Frog (Litoria ewingii), Lace Monitor (Varanus varius), Grass Skink (Lampropholis delicata), Red-bellied Black-snake (Pseudechis porphyriacus), Striated Heron (Butorides striatus), Buff-banded Rail (Gallirallus philippensis), Purple Swamphen (Porphyrio porphyrio), Masked Lapwing (Vanellus miles), Brown Cuckoo-Dove (Macrophygia amboinensis), Gang-gang Cockatoo (Callocephalon fimbriatum), Musk Lorikeet (Glossopsitta concinna), Little Lorrikeet (Glossopsitta pusilla), Crimson Rosella (Platycercus elegans), Australian Owlet-nightjar (Aegotheles cristatus), Laughing

Wetland	Key Features
	Kookaburra (Dacelo novaeguineae), Sacred Kingfisher (Todiramphus sanctus), Striated Thornbill (Acanthiza lineata), Brown Thornbill (Acanthiza pusilla), White-throated Gerygone (Gerygone olivacea), Spotted Pardalote (Pardalotus punctatus), White-browed Scrubwren (Sericornis frontalis), Eastern Spinebill (Acanthorhynchus tenuirostris), Yellow-faced Honeyeater (Lichenostomus chrysops), Lewin's Honeyeater (Meliphaga lewinii), White-naped Honeyeater (Melithreptus lunatus), Scarlet Honeyeater (Myzomela sanguinolenta), Eastern Yellow Robin (Eopsaltria australis), Eastern Whipbird (Psophodes olivaceus), Grey Shrike-thrush (Colluricincla harmonica), Crested Shrike-tit (Falcunculus frontatus), Rufous Whistler (Pachycephala rufiventris), Spangled Drongo (Dicrurus bracteatus), Leaden Flycatcher (Myiagra rubecula), Grey Fantail (Rhipidura fuliginosa), Rufous Fantail (Rhipidura rufifrons), Double-barred Finch (Taeniophygia bichenovii), Brown Antechinus (Antechinus stuartii), Feathertail Glider (Acrobates pygmaeus), Greater Glider (Petauroides volans), Sugar Glider (Petaurus breviceps), Swamp Wallaby (Wallabia bicolor), Gould's Long-eared Bat (Nyctophilus goudli), Little Forest Eptesicus (Vespadelus vulturnus), Bush Rat (Rattus fuscipes), and Leopard Seal (Hydrurga leptonyx). **Significance** (No data) Social and Cultural values The area was populated by the Yuin group of Aboriginal tribes who probably set up permanent camps near the river. Several middens have been recorded near the mouth of the estuary. The coastal areas provided plentiful food and were favoured by the Aboriginal people. Europeans have utilised the area for forestry purposes since around the 1820s. Reference *Department of the Environment and Energy. 2017. Clyde River Estuary - NSW059, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW059**.*
Cockrone Lagoon	***Site description*** A shallow brackish lagoon with extensive *Phragmites australis* reedlands near the head waters. The Lake is fringed by *Baumea juncea*, *Juncus krausii* and *Melaleuca ericifolia* scrub. *Melaleuca quinquenervia*, *M. styphelioides* and *Casuarina glauca* occur around most of the lagoon, and thickets of *Melaleuca biconvera* extend up Cockrone Creek. The water is usually clear with *Ruppia* sp. and several species of green algae. ***Physical features*** (No data) ***Ecological features*** (No data) ***Significance*** The condition is very good. This is the best preserved of the coastal lagoons but there are some nutrient runoff and septic pollution. The foredune was affected by developments and was blowing into the mouth of the lagoon. Dune restoration is now beginning to take effect. ***Social and Cultural values*** The lake is an important tourist attraction and recreation area. It is also a feeding and nesting area for many species of water birds. Reference *Department of the Environment and Energy. 2017. Cockrone Lagoon - NSW182, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW182***
Coila Creek Delta	**Site description** (No data) **Physical features** The delta has formed at the mouth of Coila Creek that drains to Coila Lake, a large south coast ICOLL of about 700 ha. A variety of sediments form the delta including shell-filled sands on the points of the delta, soft sandy clays on the

Wetland	Key Features
	saltmarsh, black cracking clays in pans, and black fine soft muds in the lake adjoining the delta. **Ecological features** Mico-relief of a few decimetres gives rise to various habitats. Low areas are dominated by a Samphire (Sarcocornia quinqueflora), Wilsonia rotundifolia saltmarsh in good condition, higher areas by rushland of Sea Rush (Juncus krausii) and various saltmarsh forbs including Selliera radicans and Creeping Monkey-flower (Mimulus repens), and the longest accumulated sediments flanking Coila Creek dominated by a Swamp Oak (Casuarina glauca) forest. The dried black cracking claypans support no visible plant life. The strandline on the northern shore comprises various sedge species and a mix of unusual forbs. The aquatic habitats are rich in aquatic plants. Algae, Sea Grass (Zostera sp.), Sea Tassel (Ruppia sp.) and Sea Wrack (Halophila sp.) all occur with healthy populations of Halophila adjoining the saltmarsh. **Significance** (No data) **Social and Cultural values** Bait search area for fishers. Aboriginal significance is unknown but likely. Reference *Department of the Environment and Energy. 2017. Coila Creek Delta - NSW117, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW117*** .
Coomonderry Swamp	**Site description** (No data) **Physical features** Coomonderry Swamp was formed by natural infilling behind the sand barrier north of Mount Coolangatta. The wetland has soils composed of friable organic peat overlying acid peats of depths greater than one metre. Below the peat, various sandy subsoils overlie Quaternary marine sands. **Ecological features** The swamp is dominated by sedges and aquatic herbs. In particular the eastern margin of the swamp supports a most outstanding example of freshwater wetland - woodland - sand dune transition. At the swamp edge extensive reed beds and sedgelands merge into thickets of Swamp Oak (Casuarina glauca), Prickly Tea Tree (Leptospermum juniperinum), Swamp Paperbark (Melaleuca ericifolia) and Snow in summer (Melaleuca linariifolia). Adjacent to these shrub and small tree species there are extensive stands of Swamp Mahogany (Eucalyptus robusta) with an understorey of native grasses and sedges. Wet meadow communities on the western and southern margins are highly dynamic and support a diversity of short-lived wetlands species. Adjacent areas of Southern Mahogany (Eucalyptus botryoides), and Blackbutt (Eucalyptus pilularis) open forest as well as littoral rainforest also occur. Sedge and reed beds cover most of the swamp and are dominated by Jointed Twig-rush (Baumea articulata), Baumea arthrophylla, Tall Spike-rush (Eleocharis sphacelata), Common Reed (Phragmites australis) and Broad-leaf Cumbungi (Typha orientalis). Open water areas are dominated by submerged plant communities of Water Millfoil (Myriophyllum sp.), Nardoo (Marsilea sp.), and Blunt Pondweed (Potamogeton ochreatus. Significance Good example of coastal wetland on south coast, in relatively undisturbed condition. Coomonderry Swamp is the largest freshwater coastal wetland in the southern region of NSW. It is an outstanding example of a large freshwater swamp developed inland of a parallel Quaternary dune system. **Social and Cultural values** (No data) Reference *Department of the Environment and Energy. 2017. Coomonderry Swamp - NSW076, in Australian Wetlands Database. Department of the Environment and Energy,*

Wetland	Key Features
	*Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW076**.*
Cormorant Beach	***Site description*** Almost completely surrounded by houses with inadequate buffer. Subject to urban runoff. Degraded margin. ***Physical features*** (No data) ***Ecological features*** (No data) ***Significance*** A rare wetland type heavily impacted on the margins but retaining some very important unspoilt components. It contains rare freshwater communities, some uncommon species and important faunal habitat. All four plant communities that occur in the wetland are considered to be significant, with the dunal freshwater wetland providing frog and bird habitat within the urban area. While Paperbark Shrubland and Swamp Oak forest are structurally similar to estuarine counterparts, at this site they occur in deeper standing water and herbaceous understorey plants are different. ***Social and Cultural values*** Surrounded by urban development. Reference *Department of the Environment and Energy. 2017. Cormorant Beach - NSW172, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW172**.*
Crowdy Bay National Park	**Site description** (No data) **Physical features** The geology of Crowdy Bay National Park consists primarily of Quaternary sediments including sand, silt, mud, gravel, quartose sand and silt. An area of Tertiary rhyolite also occurs at Diamond Head which was formed as the result of an intrusion caused by volcanic activity along the east coast of Australia. Bedrock outcrops occur throughout the park and consist of Triassic shales, tuff, tuffaceous sandstone, sandstone and conglomerate. The soils of Crowdy Bay National Park consist predominantly of unconsolidated and podsolised poor nutrient sandy soils of Holocene and Pleistocene origin including siliceous sands, sand podzols and humus podzols, acid peats, solonchaks and brown podzolics. Bedrock soils include lithosols, red and yellow earths, gleyed podzolics, soloths and dark grey-brown clay loams. **Ecological features** Dunal wetland system, consisting of a mosaic of wet heath, sedgeland, dry heath, forested swamp and sclerophyll forest north of Harrington. Vegetation communities within the park include Tuckeroo (Cupaniopsis anacardioides) and Brush Box (Lophostemon confertus) littoral rainforests, Grey Mangrove (Avicennia marina) mangrove forests and woodlands, Flooded Gum (Eucalyptus grandis) and Blackbutt (Eucalyptus pilularis) wet sclerophyll forests, Tallowwood (Eucalyptus microcorys), Black Sheoak (Allocasuarina littoralis), and Banksia (Banksia aemula) dry sclerophyll forests and woodlands, graminoid clay heathland, wet heathland, Samphire (Sarcocornia quinqueflora), Sand Couch (Sporobolus virginicus) chenopod shrubland, Hairy Spinifex (Spinifex sericeus) tussock grassland, Kangaroo Grass (Themeda triandra) sod grassland, various sedgelands, Sea Rush (Juncus kraussii) rushland, Swamp Water Fern (Blechnum indicum) fernland, and saltmarsh communities. **Significance** Crowdy Bay National Park is a large complex of dunal wetlands which remain in a relatively natural condition and are thus considered to be a good example of this wetland type. **Social and Cultural values** Until the late nineteenth century the Ngamba and Birripai tribes of Aborigines occupied the area. In the summer the Birripai people lived in the

Wetland	Key Features
	lowlands of their territory near the river and the sea so that they could utilise the seasonally abundant fish and shellfish and native fruits. Aboriginal sites within the park include shell middens (approximately 6,000 years old), axe heads, stone tools and hooks. On the homeward leg of his 1818 expedition over the New England Tablelands into the Hastings Valley, John Oxley traversed the park area. Mineral sand mining occurred in various areas within the park between 1959 and 1982. Several residences within the park are the result of early European occupation of the area. Reference *Department of the Environment and Energy. 2017. Crowdy Bay National Park - NSW029, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW029**.*
Cudgen Nature Reserve	Site description (No data) Physical features Three major landforms dominate the Cudgen catchment including: Coastal sands located east of Cudgen Lake; Cudgen lagoonal lands (surrounding Cudgen Lake and including the south east of Round Mountain; and sediments of the Neranleigh-Fernvale Group which dominate the Round Mountain hills and upper catchment. Cudgen Lake is a barrier dune lake system. Sandy yellow podsols occur between the outer barrier dunes and Cudgen Lake. The Clothiers Creek and Reserve Creek floodplain soils are dark loams overlying clays. Ecological features Cudgen Nature Reserve supports 15 distinct vegetation associations, viz. littoral rainforest, lowland subtropical rainforest on Round Mountain, lowland subtropical rainforest on swamp forest margins, Swamp Paperbark (Melaleuca quinquenervia) swamp forest, Swamp Mahogany (Eucalyptus robusta) forest, Blackbutt (Eucalyptus pilularis) forest, Grey Gum (Eucalyptus propinqua) - Blackbutt (Eucalyptus pilularis) tall open forest, Red Gum (Eucalyptus tereticornis) - Pink Bloodwood (Corymbia intermedia) - Swamp Turpentine (Lophostemon suaveolens) forest, Scribbly Gum (Eucalyptus signata) - Wallum Banksia (Banksia aemula) forest, Wallum Banksia (Banksia aemula) heath, Wet heath, Baumea rubiginosa Closed Sedgeland, Water Ribbons (Triglochin procera) Sedgeland, Schoenoplectus litoralis Sedgeland, Grey Mangrove (Avicennia marina) Mangrove Wetland. Other vegetation communities of special significance include Swamp Banksia (Banksia robur) wet heathlands, Riberry (Syzygium luehmanni) - Broad-leaved Lilly Pilly (Acmena hemilampra) littoral rainforests and Swamp Banksia (Banksia robur) - Leptospermum liversidgei - Xanthorrhoea fulva wet heathland community. The perimeter of Cudgen Lake contains dense stands of Common Reed (Phragmites australis) and Lepironia articulata scattered with Cladium procerum. The shallow lake waters support a dense emergent growth of reeds Schoenoplectus litoralis and Cumbungi (Typha sp.) on the northern side of the lake. Other aquatic species include Baumea rubiginosa sedgeland and Triglochin procera, while intertidal and subtidal species are dominated by mangroves e.g. Grey Mangrove (Avicennia marina), Bruguiera gymnorrhiza and seagrasses e.g. Eel Grass (Zostera capricorni). Significance (No data) Social and Cultural values The Aboriginal people of the Cudgen area were known as the Coodjingburra. A number of Aboriginal sites have been identified in the local area including a stone quarry on the banks of Cudgen Lake. Reference Department of the Environment and Energy. 2017. Cudgen Nature Reserve - NSW108, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW108***

Wetland	Key Features
Cullendulla Creek and Embayment	**Site description** (No data) **Physical features** Most of the area is composed of widely spaced beach ridges overlying a shallow sheet of nearshore or low tidal shelly sands. The areas between the ridges have been infilled with mud and organic debris. **Ecological features** A mangrove forest comprising River Mangrove (Aegiceras corniculatum), and Grey Mangrove (Avicennia marina) covers most of the tidally influenced portion of the basin and the creek margins. Mudflats are bare apart from scattered depressions in which patches of seagrasses occur. A bare zone also separates the mangrove swamp from upland Eucalypt forest. This zone consists of a hard mud pavement with intermittent coverings of blue-green algae and occasional individuals of Beaded Glasswort (Sarcocornia quinqueflora). Swamp She Oak (Casuarina glauca) grows on the beach ridges. Fauna species include Black Swan (Cygnus atratus), Little Pied Cormorant (Phalacrocorax melanoleucos), Pygmy Right Whale (Caperea marginata) nearby. **Significance** The beach chenier system (a chenier is a long, low narrow beach ridge roughly parallel to a retreating shoreline seaward of marsh and mud-flat deposits) is uncommon in NSW. These well-developed cheniers provide a record of shoreline trends over the Holocene (10,000 BP to present). The embayment provides a good example of low energy deposition of beach ridge and mud flat deposits within an enclosed bay. **Social and Cultural values** The site is also an important sedimentological research site. The area was populated by the Yuin group of Aboriginal tribes who probably set up permanent camps near the river. Several middens have been recorded near the mouth of the estuary. The coastal areas provided plentiful food and were favoured by the Aboriginal people. Cullendulla Creek was particularly a source of fin fish and shellfish such as the Sydney Rock Oyster (Sccostrea commercialis) and Bimbilla (Anadara trapezia). The beach ridges in the chenier system contain extensive middens of Bimbilla. Present use of the area as a source of seafood by the Aboriginal community indicates a long tradition of use and economy of the Cullendulla area. Evidence of the early logging trade is apparent in an old loading wharf in the upper reaches of the Creek. Logs from Benandarah State Forest were off-loaded in upper reaches of creek to barge or creek waters. Reference *Department of the Environment and Energy. 2017. Cullendulla Creek and Embayment - NSW060, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW060*** .
Durras Lake - NSW118	**Site description** (No data) **Physical features** 80% lake foreshore densely forested, 20% low lying areas covered in sedge/ saltmarsh which is periodically inundated. Lake separated from ocean by sand barrier dunes. Freshwater inflow from forested catchment. Lake shallow with depth between 1-2 m. Broadwater slightly deeper. **Ecological features** Excellent habitat for prawns, crustaceans and fish. Extensive seagrass beds, (Zostera capricorni), Swamp Oak (Casuarina glauca) forest adjoining sedge areas including Sea Rush (Juncus krausii) and Bare Twig-rush (Baumea juncea) with Spotted Gum (Eucalyptus maculata) forest surrounding most of the lake. Wetland 215b is and extensive sedgeland of Bare Twig-rush (Baumea juncea). **Significance** Main significance is the intact catchment and natural state of the lake. **Social and Cultural values** Area has Aboriginal significance, was one of the first sightings of Aboriginal people by Captain Cook. Numerous Aboriginal sites surround

Wetland	Key Features
	the lake. Close to south Durras lake was used in early timber industry. The area is within the Benandarah National Estate Area, recognised for its multiple-use forests. Reference Department of the Environment and Energy. 2017. Durras Lake - NSW118, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW118***.
Eve St. Marsh, Arncliffe	**Site description** (No data) **Physical features** Eve Street Marsh is situated on a low-lying coastal floodplain, within a broad and shallow valley floor, between gently slopes and low ridges. Soils of the area consists of Quaternary alluvium, and unconsolidated sediments. **Ecological features This** wetland is a remnant of a once extensive brackish marsh extending eastwards from Arncliffe. The site has been rehabilitated from its previously degraded state. Changes include major earthworks to establish appropriate gradients for tidal inundation, a mangrove lined channel connecting the wetland with the Cooks River and an enlarged tidal pond area in which water level is controlled by a weir. The main area of wetland consists of islands covered with saltmarsh in an area of tidal mudflats fringed by Common Reed (Phragmites australis), Club Rush (Bolboschoenus caudwellii) and Marsh Club-rush (Bolboschoenus fluviatilis). The saltmarsh is relatively diverse ranging from Sea Rush (Juncus kraussii) and Seablite (Suaeda australis) at the higher elevations through Samphire (Sarcocornia quinqueflora) to Creeping Monkey-flower (Mimulus repens) at the lower level. **Significance** The wetland has significance as one of the first Australian examples of a rehabilitated tidal marsh that provides habitat for uncommon saltmarsh communities and for migratory wading birds and resident birds. Social and Cultural values Eve Street Marsh is an important resource area for education and study of natural sciences. Reference *Department of the Environment and Energy. 2017. Eve St. Marsh, Arncliffe - NSW077, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW077*** .
Five Islands Nature Reserve	**Site description** (No data) **Physical features** The Five Islands are rocky offshore islands consisting of Big Island, Rocky Islet and Martin Islet. The climate of the area surrounding Five Islands Nature Reserve is described as temperate marine. The geology of the area is predominantly dolerite of the upper Permian age. **Ecological features** The Five Islands are a significant area for seabird breeding, also offering shelter to many migratory birds. The islands support many shrub and grass communities. However, the dominant species presently found on the islands includes the exotic Kikuyu Grass (Pennisetum clandestinum). **Significance** (No data) **Social and Cultural values** The Five Islands Nature Reserve is a site of significance to the local Aboriginal people. The Five Islands were regularly visited by local people as a place for fishing, evidence of this being the many shell middens found around the edges of Big Island. Reference Department of the Environment and Energy. 2017. Five Islands Nature Reserve - NSW137, in Australian Wetlands Database. Department of the Environment and

Wetland	Key Features
	Energy, Canberra. Available from: http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW137.
Jervis Bay	**Site description** The Jervis Bay Territory and surrounding Jervis Bay Area contain diverse wetland areas including tidal, intertidal and estuarine wetlands, freshwater lagoons, swamp, saltmarsh, sedgeland, rocky marine shores and non-tidal freshwater forested wetlands. The area represents a site in the transition zone between warm temperate and the cool temperate biogeographic provinces and supports rich faunal and floral units. The estuarine inlet supports large areas of seagrass (900 ha) and smaller areas of mangrove (125 ha) and saltmarsh (230 ha). Important wetland sites in the Jervis Bay Territory include Lake Windermere, Lake McKenzie, Flat Rock Creek, Captains Lagoon, Bowen Island, Murrays Beach and Ryans Swamp. Wetland sites in the Jervis Bay Area are associated with six major creeks entering Jervis Bay but primarily include Currambene Creek, Moona Moona Creek, Wowly Gully and Carama Inlet. The wetland sites provide valuable habitat for waterfowl, indigenous fresh water fauna, and threatened and biogeographically important species. **Physical features** The geology of Jervis Bay includes three broad units; the two Snapper Point sandstone headlands which enclose the Bay, and the softer, generally low-lying Wandrawandrian siltstone comprising the catchment area to the west of the Bay. **Ecological features** The vegetation type is characterised by swamp communities (2.2%), wet heath (1.5%), mangroves (0.6%) and salt marsh (0.5%). The dominant mangrove species is River Mangrove (Avicennia marina) occurring with much smaller stands of Grey Mangrove (Aegiceras corniculatum). Saltmarsh found on cliff tops on Bowen Island is unusual. The marsh is dominated by the saltmarsh grass (Sporobolus virginicus) and soil moisture is maintained by sea spray. Estuarine areas are characterised by salt marsh and to a lesser extent, mangroves. **Significance** The site has highly diverse communities, with 723 species identified. Due to relatively large areas of seagrasses, mangrove, and saltmarsh, it is considered to be a good example of estuarine wetland on the south coast. The bay provides potential habitat for migratory waders. As with all estuarine wetlands, the bay provides important nursery habitats for commercial fish species. **Social and Cultural values** The uniqueness of the area and its waters provide a popular destination for tourists and recreationalists. The natural qualities of the area and relatively pristine condition give the area a high conservation value. The site contains evidence of Aboriginal history in the form of middens and camps, and shipwrecks located in the waters of the bay contribute to maritime history. Reference *Department of the Environment and Energy. 2017. Jervis Bay - NSW078, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW078**.*
Jervis Bay Sea Cliffs	**Site description** (No data) **Physical features** Among the tallest sea cliffs on the NSW coastline. Extend for about 14 km on the Beecroft Peninsula and 11 km on the Bherwerre Peninsula. Incised inlets such as Eves Ravine and Devils Inlet. Rocky offshore islets Drum and Drum Sticks. High sandstone cliffs, marine caves, overhangs, tunnels and crevices. **Ecological features** Significant plant and animal communities are expected. These include fernlands and herbfields on seepages, soaks and behind waterfalls. Interstitial invertebrate communities expected on geological formations and unusual animal communities adapted to high salt and humidity environments. Significant marine habitats at the base of the cliffs.

Wetland	Key Features
	Significance (No data) **Social and Cultural** values Of interest for heritage value; recreation; defence. Reference Department of the Environment and Energy. 2017. Jervis Bay Sea Cliffs - NSW139, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW139***.
Killalea Lagoon	**Site description** (No data) **Physical features** The geology of the Lagoon is comprised mainly of Quaternary sediments. **Ecological features** Plant species present include Austral Stonecrop (Crassula sieberiana), Blown Grass (Agrostis avenacea), Branching Rush (Juncus prismatocarpus), Caldwell's Club-rush (Bolboschoenus caldwellii), Coast Couch (Zoysia macrantha), Coastal Wattle (Acacia sophorae), Common Reed (Phragmites australis), Common Spike-rush (Eleocharis acuta), Couch Grass (Cynodon dactylon), Crassula (Crassula peduncularis), Creeping Monkey-flower (Mimulus repens), Duck Weed (Spirodela punctata), False Quilwort (Lilaeopsis polyantha), Flat Spurge (Chamaesyce psammogeton), Floating Club-rush (Isolepis fluitans), Goosefoot (Chenopodium glaucum), Guinea-flower (Hibbertia scandens), Inverted Sedge (Carex inversa), Jersy Cudweed (Pseudognaphalium luteoalbum), Kangaroo Grass (Themeda triandra), Knobby Club-rush (Isolepis nodosa), Lesser Joyweed (Alternanthera denticulata), Many-spiked Sedge (Cyperus polystachyos), Monier's Bacopa (Bacopa monniera), Nodding Club-rush (Isolepis cernuus), Ribbonweed (Vallisneria gigantea), River Buttercup (Ranunculus inundatus), River Club-rush (Schoenoplectus validus), Saltwater Couch (Paspalum distichum), Slender Knotweed (Persicaria decipiens), Spinifex (Spinifex sericeus), Streaked Arrowgrass (Triglochin striatum), Swamp Oak (Casuarina glauca), Tall Spike-rush (Eleocharis sphacelata), Velata Sedge (Fimbristylus velata), Water Primrose (Ludwigia peploides), and Water Ribbons (Triglochin procerum). Isolated clumps of Jointed Twig-rush (Baumea articulata) and Cumbungi (Typha orientalis) occur within the lagoon. Records exist of up to 300 Black Swans on the lagoon including many young cygnets. Other waterbird species present included Pied Cormorant (Phalacrocorax varius), Little Black Cormorant (Phalacrocorax sulcirostris), Pelicans and Black Duck (Anas superciliosa). **Significance** Considered to be a good example of a freshwater coastal lagoon. **Social and Cultural values** (No data) Reference *Department of the Environment and Energy. 2017. Killalea Lagoon - NSW079, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW079***
Kooragang Nature Reserve	**Site description** (No data) **Physical features** Kooragang Nature Reserve comprises two areas: Kooragang Island and Fullerton Cove. Kooragang Island originally consisted of several smaller islands or bars. Several attempts to control deposition and siltation of the Newcastle port area resulted in the agglomeration of these islands into a smaller number of larger units by the artificial filling of channels and the construction of training walls. Fullerton Cove is a large shallow embayment north of Kooragang Island. It has a maximum depth of two to three metres at its centre and at low tide large areas of mudflats are exposed. The lower Hunter River is a barrier estuary formed by the deposition of sediments in swamps and flats lying between the inner and outer coastal barrier sands. The sediments on Kooragang Island and adjacent estuarine areas comprise black silty and

Wetland	Key Features
	highly saturated soft clays to a depth of about 2 metres which are underlain by a light grey and silty sand. Depending on their elevation above sea level, drainage pattern and susceptibility to freshwater flooding, these sediments may be more or less saline. Salinities may vary from as high as 70% in evaporative salt marsh areas to as low as 8% behind levees where the soil is generally more fertile and regularly flooded by fresh water. Most soils of Kooragang Island are only slightly acidic, although small areas of sandy clays supporting brackish swamps can reach significantly low pH and create the potential for acid sulphates to occur, should they be permanently dried out or drained. **Ecological features** Extensive areas of mangrove (approximately 15 km^2), saltmarsh (approximately 5 km^2) and mudflats, occurring within the Hunter River estuary. Past filling has destroyed up to 10 km^2 of estuarine wetlands, but remaining wetlands remain in a healthy condition. Kooragang Nature Reserve contains numerous wetland types. The area is ecologically diverse and represents a significant genetic pool for wetland species in the region. Habitat types contained within Kooragang Nature Reserve include Mangrove forests dominated by Grey Mangrove with some River Mangrove; Saltmarsh dominated by Samphire Sarcocornia sp. and Saltwater Couch (the community of saltmarsh in the area to the west of Fullerton Cove was once the largest in the region). Saline and freshwater pastures are dominated by couch and other agricultural grasses, sedges and introduced weeds; Swamp forests consisting of Swamp Oak and Paperbarks. that are now limited (these forests once formed an intermediate stage in the succession of habitats from mangroves to forests in brackish water above the saline regime). Rainforest communities exist in remnants on Kooragang Island (isolated individual trees, for example figs Ficus spp. and Cabbage Tree Palms, still occur). A small area of seagrass Ruppia spiralis is located in a large tide pool adjacent to the railway line south of the Reserve; and Brackish swamps and standing open water containing sedges Scirpus spp. and other aquatic species. Other important habitats that exist include standing open water, mudflats, sandy beaches and rock training walls. The Nature Reserve is listed as a wetland of international importance under the Ramsar Convention because of its value as migratory wader habitat. **Significance** Considered to be a representative example of its type. **Social and Cultural values** Kooragang Nature Reserve and the surrounding areas have become known as one of the most important bird study areas in NSW. The Reserve is used for both research and recreational birdwatching. Limited recreational fishing is also undertaken within the Reserve. The Worimi and Awabakal Aboriginal tribes were the earliest inhabitants of the lower Hunter estuary. There are numerous middens and campsites scattered throughout the lower Hunter, but they occur particularly along the river banks and within the dunes along Stockton Bight. The nearest Aboriginal sites outside the reserve come from the dunes and coastal forests between Fullerton Cove and Stockton Bight where many and varied sites are known to occur. There are a few European historic sites within Kooragang Nature Reserve. These include concrete footings of an old dairy on Sandy Island, a timber bridge, a mature Moreton Bay Fig associated with early farming and a half-submerged timber drogher. The most significant structure on the island is the school teachers residence; however this lies outside the reserve. <u>Reference</u> Department of the Environment and Energy. 2017. Kooragang Nature Reserve - NSW080, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW080.

Wetland	Key Features
Lagoon Head	**Site description** A small undisturbed hind-dunal wetland and draining creek on crown land, SEPP No. 14 168. **Physical features** (No data) **Ecological features** (No data) **Significance** A rare wetland type with a diversity of communities and plants, some significant. This small wetland contains a high diversity of plant communities of which Freshwater Herbland, Spike-rush Sedgeland, Freshwater Baumea Sedgeland and Melaleuca-Baumea Shrubland are poorly represented along the NSW south coast. **Social and Cultural values** (No data) Reference *Department of the Environment and Energy. 2017. Lagoon Head - NSW173, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW173**.*
Lake Hiawatha and Minnie Water	**Site description** (No data) **Physical features** The geology of Lake Hiawatha and Minnie Water is primarily undifferentiated Palaeozoic greywacke, slate, sandstone, quartzite and chert with minor areas to the north and south of the lake consisting of Quaternary alluvium including alluvium, gravel, sand, silt and clay with dunes to the east of the lakes. The Palaeozoic geology supports soils such as red and yellow podzolics, and yellow and grey earths. **Ecological features** The sedge Lepironia articulata is the major emergent shoreline plant of both lakes. The bed of Minnie Water is covered by a dense mat of aquatic plants such as Musk Grass (Chara fibrosa) and Golden Bladderwort (Utricularia aurea). The Great Crested Grebe (Podiceps cristatus) and the Hoary-headed Grebe (Poliocephalus poliocephalus) occur on Lake Hiawatha and the Little Grassbird (Megalurus gramineus) if found in the reed beds at the water's edge. A variety of water beetles are common in both lakes. They are notable for their characteristic fauna such as the zooplankton including Calamoecia tasmanica, Mesocyclops leuckarti and Bosmina meridionalis. Twelve species of fish have been recorded within the lakes, the dominant ones being the Fire-tail Gudgeon (Hypseleutris galii) and the introduced Mosquito Fish (Gambusia holbrooki). **Significance** These wetlands are the largest dune contact lakes in this biogeographic region. Extensive research in the area suggested these sites were of regional significance with respect to freshwater invertebrates. **Social and Cultural values** Aboriginal sites within the park include pippie shell middens along the dune systems (possibly those near the lakes), mythological sites, campsites and stone tool workshops and quarries. The pippie shell middens are evidence of transitory day camps and together with campsites these demonstrate the marine-centred activity of the local Aborigines over the past 1,000 years. The lakes have significant value for scientific research for studying biological and physiochemical interactions. Reference Department of the Environment and Energy. 2017. Lake Hiawatha and Minnie Water - NSW031, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW031***.
Lake Illawarra	**Site description** (No data) **Physical features** Lake Illawarra is an early-intermediate barrier estuary with its entrance to the ocean being a weakly active fluvial delta system. The entrance

Wetland	Key Features
	channel is constantly changing by shifting aeolian sands and a high energy beachfront. **Ecological features** The shallow waters and saline conditions allow seagrasses such as Zostera sp. and Ruppia sp. to thrive. These seagrasses provide food for waterfowl. A total of 24 species of waterbirds was recorded on Lake Illawarra, including 97 Grey Teal (Anas gibberifrons), 74 Chestnut Teal (Anas castanea), 42 Black Swan (Cygnus atratus), and 40 Australasian Little Grebe (Podiceps novaehollandiae). Estuarine vegetation of Lake Illawarra was mapped and included saltmarsh communities and extensive seagrass beds. Four major structural units or complexes and 15 communities for the foreshore vegetation of Lake Illawarra, with a total of 126 species recorded. The peripheral and foreshore vegetation includes the saltmarsh of Samphire (Sarcocornia quinqueflora), Shore Rush (Juncus kraussii), Common Reed (Phragmites australis), Swamp Oak (Casuarina glauca), and Creeping Saltbush (Atriplex australasica). **Significance** (No data) Social and Cultural values Aboriginal sites of archaeological significance occur near the lake including a burial ground, quarry and open midden. Reference *Department of the Environment and Energy. 2017. Lake Illawarra - NSW081, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW081***
Lake Termeil Wetland Complex	***Site description*** Termeil Lake is a large relatively undisturbed coastal lagoon with a catchment area of about 1400 ha. ***Physical features*** (No data) ***Ecological features*** (No data) ***Significance*** The complex of wetlands at Lake Termeil makes this area significant and has been described as near pristine. The wetland supports a number of regionally rare plant species and uncommon wetland vegetation communities. The wetland is a rare example of freshwater vegetation communities. In addition the wetland supports a range of water birds and two threatened bat species and has been protected from anthropogenic disturbance. ***Social and Cultural values*** Does not appear to have a high level of recreational use. A number of aboriginal sites have been recorded around the lake. Reference *Department of the Environment and Energy. 2017. Lake Termeil Wetland Complex - NSW174, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW174***
Limeburners Creek Nature Reserve	**Site description (**No data) **Physical features** The geology of Limeburners Creek Nature Reserve is varied i.e. the headlands consist of Carboniferous sediments including sandstone, siltstone, tuff, shale and limestone and the western areas of the reserve consist of Quaternary sand dunes. Soils are sandy and are derived from clays, sands, silt mud and gravel. Ecological features Dunal wetland system, consisting of a mosaic of wet heath, sedgeland, dry heath, forested swamp and sclerophyll forest. The majority of the reserve contains Broad-leaved Tea Tree (Melaleuca quinquenervia) and Swamp Oak (Casuarina glauca) swamp sclerophyll forest and woodland, Heath Banksia (Banksia ericifolia) swamp shrubland, Grass Tree (Xanthorrhoea fulva), Tea Tree (Leptospermum sp.) and Banksia (Banksia oblongifolia) wet heath and sedgelands.

Wetland	Key Features
	Small pockets of littoral rainforest, mangroves, dune heathlands, and saltmarsh communities are also represented within the nature reserve. **Significance** Limeburners Creek Nature Reserve is a large complex of dunal wetlands remaining in a relatively natural condition and is therefore considered to be a good example of coastal dunal wetlands. **Social and Cultural values** Aboriginal occupation of the area dates back to 5-6,000 years. A particularly high concentration of Aboriginal sites have been recorded within the Nature Reserve including burial sites, shell middens, campsites, axe-grinding grooves, and stone quarries. One of the three Aboriginal fish traps recorded along the north coast of NSW is located within the Nature Reserve. There is also evidence of European settlement in the area, for example, there is evidence of the gathering of shells which were burnt to produce lime for the penal colony at Port Macquarie. The Nature Reserve provides opportunities for scientific research of coastal processes, wetland systems and vegetation succession. Reference *Department of the Environment and Energy. 2017. Limeburners Creek Nature Reserve - NSW032, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW032*** .
Merimbula Lake	**Site description** (No data) **Physical features** The geology of Merrimbula Lake consists of Tertiary sediments including gravel, sand, sandstone, clay and lignite on the southern shores and Upper Devonian sediments of the Merrimbula Formation including conglomerate, red and brown shale, sandstone, quartzite, and arkose. **Ecological features** Supports relatively large area of seagrasses (2300 ha) and smaller areas of mangrove (40 ha) and saltmarsh (60 ha. Flora species which occur in the area include Dune Thistle (Actites megalocarpa), Knobby Club-rush (Isolepis nodosa), Rush Lepidosperma gladiatum, Coastal Bearded Heath (Leucopogon parviflorus), Coastal Wattle (Acacia sophorae), Spiny-headed Mat-rush (Lomandra longifolia), Wood Sorrel (Oxalis chnoodes), Beach Fescue (Austrofestuca littoralis), Hairy Spinifex (Spinifex sericeus), Prickly Couch (Zoysia macrantha), and the herb Acaena novae-zelandiae. Fauna species include the Hawksbill Turtle (Eretmochelys imbricata), Leopard Seal (Hydrurga leptonyx), Dugong (Dugong dugon), Little Penguin (Eudyptula minor), Little Pied Cormorant (Phalacrocorax melanoleucos), Little Black Cormorant (Phalacrocorax sulcirostris), Australian Pelican (Pelecanus conspicillatus), and Australian White Ibis (Threskiornis molucca). **Significance** (No data) **Social and Cultural values** Two large Aboriginal shell middens have been located at the site. Reference Department of the Environment and Energy. 2017. Merimbula Lake - NSW061, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW061***.
Meroo Lake Wetland Complex	**Site description** Meroo Lake is an extensive coastal lagoon with a catchment area of approximately 1950 ha. It comprises one large and one small estuarine wetland that are linked to the lake. **Physical features** (No data) **Ecological features** (No data) **Significance** Saltwater sedgeland is probably the largest stand of the river clubrush near its southern limit. This very large wetland contains some mosaic communities

Wetland	Key Features
	with mixes of dominant species not often seen elsewhere. In a study of the fauna of the wetlands of the lower Shoalhaven City, Lake Meroo stood out in terms of the diversity and abundance of mammals and frogs. The Lake supports the only population of Nationally Endangered Green and Golden Bell Frog found in the coastal lakes, and it is considered to be the third largest population in the Shoalhaven Region. The lake also provides habitat for three other threatened animal species. Social and Cultural values Does not appear to have a high level of recreational use. A number of aboriginal sites have been recorded around the lake. **Reference** *Department of the Environment and Energy. 2017. Meroo Lake Wetland Complex - NSW175, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW175***
Minnamurra River Estuary - NSW084	**Site description** (No data) **Physical features** (No data) **Ecological features** The riverine vegetation is dominated by thick stands of Grey Mangrove (Avicennia marina) and River Mangrove (Aegiceras corniculatum) with areas of saltmarsh, Casuarina forest and rushes in brackish areas subject to flooding or tidal movements. Rocklow Creek (SEPP 14 wetland 374) supports mangrove forest along the immediate banks of the creek. Adjacent to the creek is a brackish wetland dominated by Salt Rush (Juncus kraussii) and Samphire (Sarcocornia quinqueflora). Swamp She-oak (Casuarina glauca) and Common Reed (Phragmites australis) are found around the margins of the wetland. SEPP 14 wetland 373 consists of a crown reserve on the southern side of the river downstream of the road bridge. The reserve consists of mangrove and saltmarsh communities with considerable amounts of regenerating mangroves present. Saltmarsh species present include Samphire (Sarcocornia quinqueflora), Salt Couch (Sporobolus virginicus) and pigface. The mangroves appear to be regenerating after disturbance. SEPP 14 wetland 372 is at the upper reaches of the estuary and consists of a mixture of Swamp She-oak forest and saltmarsh which occurs on the floodplain of the river. This floodplain area is crossed by a number of saline-brackish creeks which support thin fringes of mangroves along their banks. Species present in the Swamp She-oak forest community include Swamp She-oak (Casuarina glauca), Northern Boobialla (Myoporum acuminatum), Salt Rush (Juncus kraussii), Club Rush (Isolepis nodosa), Seablite (Suaeda australis), Salt Couch (Sporobolus virginicus), and Samphire (Sarcocornia quinqueflora). In the saltmarsh areas records exist of Salt Rush (Juncus kraussii), Streaked Arrowgrass (Triglochin striata), Creeping Brookweed (Samolus repens), Salt Couch (Sporobolus virginicus), Samphire (Sarcocornia quinqueflora), and Seablite (Suaeda australis). SEPP 14 coastal wetland 372 is located on private property which is subject to grazing. A new residential development has been constructed around the south-eastern side of the wetland. **Significance** (No data) **Social and Cultural values** The Minnamurra Estuary is also an important area for commercial oyster farming. Reference Department of the Environment and Energy. 2017. Minnamurra River Estuary - NSW084, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW084***.
Moruya River Estuary Saltmarshes	**Site description** (No data)

Wetland	Key Features
	Physical features The saltmarsh is part of a mature estuarine system with a relatively extensive floodplain. The marsh is geographically defined by SEPP 14 coastal wetlands No. 177 and 178 and possibly SEPP 14 coastal wetlands in Malabar Lagoon. Ecological features A large Samphire (Sarcocornia quinqueflora) dominated herbfield, sparse Mangrove shrubland lining the channel banks, Juncus rushlands and Swamp Oak (Casuarina glauca) forest on the landward side of the marsh occurs at SEPP 14 coastal wetland No. 177. **Significance** Moruya River estuary contains a number of extensive, modified salt and brackish marshes. All are of conservation significance and due to their variability, of considerable floristic interest. **Social and Cultural values** Grazing area. Reference *Department of the Environment and Energy. 2017. Moruya River Estuary Saltmarshes - NSW119, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW119**.*
Myall Lakes	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Nadgee Lake and tributary wetlands	**Site description** (No data) **Physical features** Nadgee Lake is an intermittently open/closed coastal lake. It has never been mechanically opened. It has a relatively large catchment of 15.5 km^2 and a surface water area of about 1 km^2. It has a broad unvegetated sand berm at the normal breakout entrance. The depth of the lake is unknown but likely to be less than 5 m. **Ecological features** The area is habitat for a range of wildlife including threatened species. The lake supports interesting waterbird assemblages including Musk Duck and Black Swan and may be an important drought refuge for waterbirds. Emergent rushes protect the western foreshore and merge into the adjoining swamp communities. Estuarine aquatic vegetation includes sea grass beds of Ruppia sp. Up to 1,000 Black Swans gather at Nadgee Lake between September and January to moult. During this time the birds are flightless and dependent on the lake to supply all their needs including food and shelter until the moult is finished. During winter as few as two swans have been recorded. **Significance** (No data) **Social and Cultural values** It is the only coastal lagoon of its type within a wilderness area in NSW and is the most undisturbed coastal lake in NSW. There is evidence of Aboriginal occupation of the area. Due to its pristine nature, the lake is an excellent reference site for scientific research regarding coastal lagoon ecology. Reference *Department of the Environment and Energy. 2017. Nadgee Lake and tributary wetlands - NSW187, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW187** .*
Nargal Lake	**Site description** (No data) **Physical features** Nargal Lake is one of few dune-swale freshwater lakes in the bioregion the other main one being Bondi Lake. The total catchment is about 60 ha. A relatively narrow frontal dune about 50 m basal width and about 10 m total height separates the lake from the ocean. This is much narrower and lower than the Bondi Lake foredune.

Wetland	Key Features
	Ecological features The eastern shoreline and fringe contain small areas of Swamp Oak (Casuarina glauca) forest. Sedgelands of Spike-rush (Eleocharis sp.) occur in the south-western and northern sectors of the lake providing shelter for waterbirds and waterfowl, e.g. Musk Duck (Biziura lobata), and breeding grounds for Black Swan (Cygnus atratus). Possible drought refuge for waterfowl. A strandline herbfield of Selliera radicans and other species occurs on the eastern shoreline. **Significance** (No data) **Social and Cultural values** Of significance to Aboriginal people Reference Department of the Environment and Energy. 2017. Nargal Lake - NSW120, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW120***
Nelson Lagoon	**Site description** (No data) Physical features Intermittently closed and open barrier lagoon with several small, indented bays and with 20 km^2 catchment. Aerial photo interpretation suggest that this lagoon has undergone a high degree of in-filling. A delta has formed at mouth of Nelson Creek. **Ecological features** Areas of saltmarsh of conservation significance. **Significance (**No data) **Social and Cultural values** Natural recreation, swimming and fishing Reference *Department of the Environment and Energy. 2017. Nelson Lagoon - NSW121, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW121****.*
Pambula Estuarine Wetlands	**Site description** (No data) **Physical features** Estuarine system with a backwater extending as a closed tributary to the Yowaka River. They are located upstream of Pambula Lake at the fluvo-estuarine interface on the southern edge of the Pambula River floodplain. The wetlands are located across a number of different land tenures including freehold, reserved and unreserved crown lands, and a small flora and fauna reserve. **Ecological features** The area is habitat for a number of fauna including threatened species. Areas of exposed sandflats and Mangroves (Avicennia marina), saltmarsh and brackish/freshwater assemblages. **Significance** (No data) **Social and Cultural values** The area is a landmark to the local community. It is a developing icon for the community with strong recognition developing for its environmental and historical values. The community and Bega Valley shire council are working together to define a balance for the area between protection and potential recreational use. The area has significant historical values linked to use of part of the area as a race course. Reference Department of the Environment and Energy. 2017. Pambula Estuarine Wetlands - NSW122, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW122***
Port Stephens Estuary	**Site description** (No data) **Physical features** The geology of the Port Stephens estuary comprises primarily of Quaternary alluvium (gravel, sand, silt, clay, 'Waterloo Rock', marine and freshwater

Wetland	Key Features
	deposits) and Carboniferous Nerong Volcanics (Toscanite, dacite, andesite, ignimbrite, agglomerate, conglomerate, sandstone and siltstone). Smaller areas on the west of the estuary are comprised of Carboniferous undifferentiated volcanics and Permian sediments of the Dalwood Group (sandstone, siltstone, mudstone, shale, conglomerate, tuff, and basalt). The soils of the area are generally acidic. The soils of the beach fore dune are leached, well drained and sandy whereas the soils of the hind dunes are grey, well drained with a humic zone. Poorly drained peat and silty soils over sand occur in the swamp heaths and forests. The soils of the tidal zone comprise of silts and muds compacted with shell fragments. **Ecological features** Extensive estuarine system consisting of an area of 2,776 ha of mangroves, 1000 ha of seagrass, and 1433 ha of saltmarshes. This comprises approximately 21% of mangrove forests, 13% of saltmarsh, and 5% of seagrasses in NSW. Other aquatic plant communities present within the estuary include Seawracks Halophila spp. The flora of the beach fore dunes consists of species such as Many-flowered Mat-rush Lomandra multiflora, Prickly Couch Zoysia macrantha, Bearded Heath Leucopogon lanceolatus, Guinea Flower Hibbertia scandens, Coast Tea Tree Leptospermum laevigatum, Paperbark Melaleuca armillaris, Coast Banksia Banksia integrifolia, Old Man Banksia Banksia serrata, and Black Sheoak Allocasuarina littoralis. In the hind dunes dense vegetation includes Smooth-barked Apple Angophora costata, Old Man Banksia Banksia serrata, Monotoca elliptica and Blackbutt Eucalyptus pilularis with an understorey of Blady Grass Imperata cylindrica, Bracken Fern Pteridium esculentum and Wattle Acacia sp. The vegetation of the inner barrier dunes support scrubland vegetation including Old Man Banksia Banksia serrata, Tea Trees Leptospermum trinervium, L. polygalifolium, Rice Flower Pimelia linifolia, Grass Tree Xanthorrhoea australis, Prickly Moses Acacia ulicifolia, Sydney Golden Wattle Acacia longifolia, Broad-leaved Scribbly Gum Eucalyptus haemastoma, and Parramatta Red Gum Eucalyptus parramattensis. Swamp heath and swamp forest occurs near Salamander Bay and includes dominant species such as Banksias Banksia robur, B. oblongifolia, Hakea Hakea teretifolia, Paperbarks Melaleuca nodosa, M. quinquenervia, Swamp Mahogany Eucalyptus robusta, Broad-leaved Scribbly Gum Eucalyptus haemastoma, Native Broom Viminaria juncea, Prickly-leaved Tea Tree Melaleuca styphelioides, and Christmas Bells Blandfordia grandiflora. Mangrove species growing in the tidal zone are the River Mangrove Aegiceras corniculatum, Grey Mangrove Avicennia marina. Other species growing in this zone include Swamp Oak Casuarina glauca, Sea Rush Juncus krausii, Tuckeroo Cupaniopsis anacardioides, Brush Muttonwood Rapanea howittiana, Creeping Brookwood Samolus repens, Samphire Sarcocornia quinqueflora, the herb Sueada australis, Ruby Saltbush Enchylaena tomentosa, Isolepis nodosa, and Prickly Couch Zoysia macrantha. Freshwater swamps occur between the outer barrier dunes and terrestrial dunes and includes species such as Water Ribbons Triglochin procerum, Tall Spike-rush Eleocharis sphacelata, Tea Tree Leptospermum liversidgei, Christmas Bells Blandfordia grandiflora, Vanilla Plant Sowerbaea juncea, Milkmaids Burchardia umbellata, and Selaginella uliginosa. Mammal species which have been recorded within the area include the Yellow-footed Antechinus (*Antechinus flavipes*), Brown Antechinus (*Antechinus stuartii*), New Holland Mouse Pseudomys novaehollandiae, Common Brushtail Possum Trichosurus vulpecula, Lesser Long-eared Bat Nyctophilus geoffroyi, Gould's Long-eared Bat Nyctophilus gouldi, and the Northern Brown Bandicoot Isoodon macrourus. Other species recorded within the area include the Eastern Banjo Frog Limnodynastes dumerilii. **Significance** The Port Stephens Estuary is considered to be a good example of estuarine wetland due to large areas of mangroves and saltmarsh in a healthy condition.

Wetland	Key Features
	Social and Cultural values The Port Stephens area was traditionally occupied by the Worimi people. Evidence of Aboriginal occupation of the area is not well documented; however, some middens and stone artefacts have been recorded within Tomaree National Park. James Cook named Port Stephens after he sailed past in 1770. In 1791, the Salamander was the first ship to enter the harbour while carrying out an informal investigation. Governor Macquarie arrived in Port Stephens in the Lady Nelson in 1811. John Oxley arrived in 1818 on returning from his trek seeking the source of the Macquarie River. Prior to permanent European settlement of the area, groups of Chinese fishermen were reputed to have lived along the shores of Port Macquarie. Reference *Department of the Environment and Energy. 2017. Port Stephens Estuary - NSW034, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW034**.*
Shoalhaven / Crookhaven Estuary	**Site description** (No data) **Physical features** Geographical area of listing includes Comerong Island, an extensive sand island in the Shoalhaven River estuary. The eastern side of Comerong Island consists of a marine sand barrier on which parallel dunes have formed. The northern part of this sand barrier is a sandspit across the Shoalhaven River entrance and is subject to flooding. The remainder of Comerong Island and the other islands within the estuary have built up on river silt behind the sand barrier. The islands are joined by mudflats at low tide. Additional habitats of sandspits (at Shoalhaven Heads) and sediments of various assortments occur as a result of riverine and marine deposition. **Ecological features** Supports relatively large area of mangrove (350 ha) and saltmarsh (150 ha), with smaller area of seagrasses (100 ha) and small patches of swamp oak forest. Common species include River Mangrove (Avicennia marina), Sea Rush (Juncus kraussii), Bracken Fern (Pteridium esculentum), Juncus polyanthemus, Common Reed (Phragmites australis), Swamp Oak (Casuarina glauca), Samphire (Sarcocornia quinqueflora), Sporobolus virginicus, Seablite (Suaeda australis), Goosefoot (Chenopodium glaucum), and New Zealand Spinach (Tetragonia tetragonioides). An area of littoral rainforest occurs on the south western side of the dunes on Comerong Island. Common species include Corkwood (Guioa semiglauca), Red Olive Plum (Cassine australis), Brown Beech (Cryptocarya glaucescens), Cabbage Tree Palm (Livistona australis), and Turnip Wood (Rapanea howittiana). **Significance** Due to relatively large areas of mangrove, saltmarsh and seagrasses, considered to be representative example of estuarine wetland on the south coast. **Social and Cultural values** One Aboriginal midden of significance has been recorded within the estuary and several other sites within the area are of significance to the Aboriginal community such as other open middens and axe grinding grooves. Also of scientific importance in the areas of wader conservation and research. Reference Department of the Environment and Energy. 2017. Shoalhaven / Crookhaven Estuary - NSW088, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW088.
Solitary Islands Marine Park	**Site description** (No data) **Physical features** The Marine Park lies in the region where the warm tropical waters of the East Australian Current meet cool coastal waters of temperate origin creating a biogeographic overlap zone of unusually high diversity. The Solitary Islands are

Wetland	Key Features
	remnants of a north-south outcrop of marine rocks of Carboniferous age. The inner shelf, beaches and dunes consist of silica sands. Ecological features Habitats include open waters, continental shelf floor, coral reefs, rocky reefs and headlands, sandy beaches, estuaries, tidal mud flats, seagrass, mangroves, saltmarsh, low scrub lands, grass leans, shallow soils and bare rock. **Significance** (No data) **Social and Cultural values** The marine park is a focus for tourism activities, particularly whale watching, boating, snorkelling, scuba diving and recreational fishing. It is also of key importance to education and scientific research in a variety of universities and museums and The University Of Armidale operates a research station at Arrawarra Headland. Reference *Department of the Environment and Energy. 2017. Solitary Islands Marine Park - NSW109, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW109**.*
St. Georges Basin	**Site description (**No data) **Physical features** The geology of the northern shores of the St Georges Basin consists primarily of Permian sediments of the Wandrawandian Siltstone which includes siltstone, and silty sandstone. The eastern and western shores consist of Permian sediments of the Conjola formation including conglomerate, sandstone and silty sandstone, while the southern shore consists primarily of Quaternary sediments including alluvium gravel, swamp deposits and sand dunes. **Ecological features** Supports relatively large area of seagrasses (850 ha) and smaller areas of mangrove (25 ha) and saltmarsh (4 ha). Swamp Oak (Casuarina glauca) woodland fringes much of the basin with smaller areas of Swamp Paperbark (Melaleuca ericifolia) shrubland and Common Reed (Phragmites australis) reedland. The catchments on the southern and western sides of the basin are covered largely in native vegetation. **Significance** (No data) **Social and Cultural values** (No data) Reference Department of the Environment and Energy. 2017. St. Georges Basin - NSW090, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW090***.
Swan Lagoon	**Site description** (No data) **Physical features** The lagoon is characteristic of many south coastal lagoons separated from the sea by beach dunes. Ecological features A small lagoon with reed swamp catchment. The lagoon itself is surrounded by Grey Swamp She-oak (Casuarina glauca) which is considered to be 20 plus year old regeneration. Early reports from the area indicate a more open woodland probably of forest red gum (Eucalyptus tereticornis). Juncus sp. and Common Reed (Phragmites australis) fringe the water edge. **Significance** (No data) **Social and Cultural values** The significance is cultural both traditional and contemporary. The lagoon (in part) lies within the Murramarang Aboriginal Area and forms part of a complex of sites within a culturally significant landscape. The area is one of only three archaeological sites of Pleistocene age on the south coast. The area has high Aboriginal significance. Part of significance relates to the lagoon being home to the mythological serpent, a creature common in Aboriginal culture. The mythology

Wetland	Key Features
	of the lagoon makes connections as far as the far south coast and the Snowy mountains. The lagoon and swamp provide a range from freshwater to brackish conditions, with associated vegetation. This wetland complex would have provided several alternative sources of animal and plant food for Aboriginal people who were also exploiting marine resources around Murramarang Point. The area including the lagoon continues to be of significance for contemporary Aboriginal people of the south coast who regard the area as being indicative of their culture, signifying intertribal relationships through its use as a meeting place. Reference *Department of the Environment and Energy. 2017. Swan Lagoon - NSW140, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW140**.*
Swan Pool / Belmore Swamp	**Site description** (No data) **Physical features** The geology of the area consists of Quaternary sediments including sand, silt, mud and gravel. **Ecological features** Very extensive fresh meadows, seasonal fresh swamps, and reed swamps, characterised by a zonation from fresh meadow to seasonal fresh swamp and reed swamp with increasing depth and permanence of inundation. Common species include Marsh Clubrush (Bolboschoenus fluviatilis), Common Reed (Phragmites australis), Spike-rushes (Eleocharis equisetina and Eleocharis dietrichiana), Water Couch (Paspalum distichum), and Water Pepper (Persicaria hydropiper). Swamp forests of Broad-leaved Paperbark (Melaleuca quinquenervia), Snow-in-summer (Melaleuca linariifolia) and Swamp Oak (Casuarina glauca) fringe the wetlands. **Significance** A good example of a large area of coastal floodplain swamp. **Social and Cultural values** The Macleay coastal area is part of the area of the Thunghutti (Dhunghutti) group of Aboriginal people. Aboriginal sites recorded within the local area include bora rings, shell middens, campsites, and burial sites. Sites specifically recorded within Belmore Swamp include shell middens and burial grounds. Cedar cutters were the first Europeans to explore the rainforests of the north coast rivers during the 1820s. Farmers cleared the rainforests of the alluvial plains for agriculture and Kempsy was then established in 1836. Reference Department of the Environment and Energy. 2017. Swan Pool / Belmore Swamp - NSW035, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW035***.
Tabourie Lake	***Site description*** Extensive estuarine lake comprising 5 SEPP 14 wetlands. ***Physical features*** (No data) ***Ecological features*** (No data) ***Significance*** Saltmarsh is a community type declining in area in NSW, which may provide important nursery habitat for fish. Nearly all of the region's saltmarsh occurs in two small bays at Lake Tabourie, and in Tabourie Creek. It supports a number of rare plant species and two threatened animal species. ***Social and Cultural values*** A number of aboriginal sites have been recorded around the lake; recreational use. Reference *Department of the Environment and Energy. 2017. Tabourie Lake - NSW171, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-***

Wetland	Key Features
	bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW171 *. Accessed 25 Jul 2017.*
Terrigal Lagoon	***Site description*** A shallow, brackish lagoon with *Phragmites australis* reedlands at the extremities of the western arm. A wide border of *Juncus kraussii* is found there on the landward edge and *Casuarina glauca* is spreading into the reedlands. Spoonbills and Black ducks were observed on this arm of the lagoon. The northern arm has been significantly altered by development on the shores and filling of the wetlands. The bottom is very silty, and the water becomes very turbid when mixed by wind waves. There are no obvious algal areas or seagrasses. ***Physical features*** (No data) ***Ecological features*** (No data) ***Significance*** Condition is poor. Septic pollution is being reduced as the sewer is connected but urban run-off, fertilisers and the like, continue to add nutrients. Landfill, erosion in the catchment and frequent opening, all result in accelerated sedimentation. Some of the wetlands are recommended for conservation in SEPP No. 14 numbers 908 and 910. ***Social and Cultural values*** The lagoon is an important tourist attraction and recreation area. Water birds and animals still use the western arm of the lagoon where the shore vegetation is less disturbed. Reference *Department of the Environment and Energy. 2017. Terrigal Lagoon - NSW180, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW180****.*
Towra Point Estuarine Wetlands	**Site description** (No data) **Physical features** Towra Point is located on the northern side of Kurnell Peninsula which forms the southern shore of Botany Bay. It is an estuarine complex bounded by Woolooware, Quibray and Weeney Bays. Towra Point and Taren Point are low lying promontorys of Holocene sandy sediments. The muddy sand flats at the eastern end of Towra Point and at the western end of Towra Spit are being damaged by coastal erosion. Towra Spit is actively extending in a southwesterly direction and the beaches on the eastern and western faces of Towra Point are eroding and contributing sand to the growth of the spit. Recent erosion has been partly attributed to dredging and port works within Botany Bay. In 1991, erosion caused the western portion of Towra Spit to separate from the mainland and to form a highly mobile island west of the spit. However, during 1997 the island rejoined the mainland at the eastern end after a large local storm. **Ecological features** The terrestrial parts of the land are fringed by extensive tidal wetlands, including approximately 600 ha of seagrasses including Strapweed (Posidonia australis), Eelgrass (Zostera capricorni), and the Paddleweeds Halophila ovalis and Halophila decipiens; 400 ha of mangroves including the Grey Mangrove (Avicennia marina) and River Mangrove (Aegiceras corniculatum); and 161 ha of saltmarshes, representing one of the few large remnant systems near Sydney. Towra Point is an important bird feeding, roosting and nesting site for migratory waders and waterfowl. Towra Point Nature Reserve is listed under the Ramsar Convention because of its value as migratory wader habitat. The terrestrial plant communities comprise a number of recognised associations such as Swamp She-oak (Casuarina glauca) forest, littoral rainforest, littoral strandline and a complex mosaic of dune sclerophyll scrub/forest. **Significance** Large areas of mangroves and saltmarsh in a healthy condition provide a representative example of estuarine wetlands. The site contains 50% of mangrove

Wetland	Key Features
	communities remaining in the Sydney region. It is an important habitat for many species of migratory waders and is considered an important area for wading birds in NSW and is especially significant for wading and wetland birds in the Sydney region. As with other areas of estuarine wetlands, also an important habitat for many commercial fish species. Because of the presence of migratory waders, the area is often used for wader research, including banding. Located close to Kurnell Field Studies Centre and is used for environmental education. **Social and Cultural values** Because of the presence of migratory waders, the area is often used for wader research, including banding. Located close to Kurnell Field Studies Centre and is used for environmental education. The Towra Point area offers a readily accessible variety of wetland plants and animals in close proximity to Sydney for research and teaching. The Reserve has some historic structures and three known Aboriginal sites. The shorebird community occurring on the relict tidal delta sands at Taren Point has been listed as an endangered ecological community under the NSW Threatened Species Conservation Act, 1996. Reference Department of the Environment and Energy. 2017. Towra Point Estuarine Wetlands - NSW092, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW092**.
Tuggerah Lake	**Site description** (No data) **Physical features** (No data) **Ecological features** Three main features of the wetlands are Teatree Swamps dominated by Broad-leafed Paperbarks Melaleuca quinquenervia; Casuarina swamps containing major forests of Swamp Oak Casuarina glauca; and Shallow Estuarine Waters, the main aquatic vegetation being the seagrasses Zostera capricorni, Halophila ovalis and Sea Wrack Ruppia megacarpa. The areas of saltmarsh surround the lake. Saltmarsh of Rushes Juncus sp., Samphire Sarcocornia quinqueflora and Saltwater Couch Paspalum vaginatum occur around the lakes in addition to the fringing paperbarks and swamp oaks. Seagrass beds are very extensive and drop their leaves twice a year so that large areas of wrack occur around the lake. At times extensive beds of algaes occur which die and mix with the wrack of the seaweed. **Significance** (No data) **Social and Cultural values** About 50,000 people live around Tuggerah Lakes in the suburbs of The Entrance, Long Jetty, Killarney Vale, Berkeley Vale, Chittaway, North and South Tacoma, Wyongah, Gorokan, Toukley and Norahville. Fourteen professional fishermen operate all year round; the area is important for recreational fishing, sailing and water skiing and The Entrance is a major holiday resort, c.25 caravan parks front onto the lake. Coal mining will shortly take place under the lake. Reference Department of the Environment and Energy. 2017. Tuggerah Lake - NSW141, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW141*** .
Tuross River Estuary	**Site description** (No data) **Physical features** A complex delta estuary at intermediate stage of infilling with many low islands and islets (>20), draining a major SEC bioregion river system and enters the sea adjoining a relatively long beach barrier. **Ecological features** A diverse area of land and waters with high shoreline length due to the delta system. Islands contain a variety of plant and animal communities

Wetland	Key Features
	including mangroves, saltmarsh, Casuarina swamp forest, mapped littoral rainforest (SEPP 26), sand and mud flats. **Significance** (No data) **Social and Cultural values** Oyster farming, recreational boating and fishing, productive (cattle, dairy) grazing land on & adjoining delta. Aboriginal middens and sites of Aboriginal sacred significance are known in the area. Reference Department of the Environment and Energy. 2017. Tuross River Estuary - NSW123, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW123**.
Twofold Bay	**Site description** (No data) **Physical features** The area of the Bay shoreline and seabed up to 6 m depth. Includes the rocky and sandy shorelines of Twofold Bay, the Towamba River and Nullica River estuaries, Curalo Lagoon and the seabed of four separate embayments including Calle Calle Bay in the north, Quarantine Bay and Nullica Bay in the west and East Boyd Bay in the south. Excludes wharf area and harbour facilities at Snug Cove; and breakwall and boat ramp near Quarantine Bay. **Ecological features** The area is habitat for a number of marine mammals and birds including threatened species. Areas of exposed sandflats in the Towamba River estuary are potential habitat for waders. Flora species present within the bay include Pigface (Carpobrotus glaucescens), New Zealand Spinach (Tetragonia tetragonioides), Fireweed Groundsel (Senecio linearifolius), Coastal Saltbush (Rhagodia candoleana ssp. candolleana), Calystegia soldanella, Sedge (Carex pumila), Knobby Club-rush (Isolepis nodosa), Bracken Fern (Pteridium esculentum), Coast Beard-heath (Leucopogon parviflorus), Coastal Wattle (Acacia sophorae), Geranium (Geranium homeanum), Native Storksbill (Pelargonium australe), Spiny-headed Mat-rush (Lomandra longifolia), Paperbark (Melaleuca armillaris), Wood Sorrel (Oxalis chnoodes), Coast Blowngrass (Agrostis billardieri), Long-hair Plume Grass (Dichelachne crinita), Blady Grass (Imperata cylindrica), Hairy Spinifex (Spinifex sericeus), Speargrass (Stipa flavescens), Prickly Couch (Zoysia macrantha), Climbing Lignum (Muehlenbeckia adpressa), Coast Banksia (Banksia integrifolia), Small-leaved Clematis (Clematis microphylla var. leptophylla), and Bidgee Widgee (Acaena novae-zelandiae). **Significance** (No data) **Social and Cultural values** Twofold Bay has a legendary maritime history of whaling and fishing. It is a safe harbour for shipping. The Bay is a focus for marine ecotourism such as whale watching and produces oysters, mussels, abalone and other fin-fish. It is the largest and deepest embayment in the South-East Corner bioregion. Reference Department of the Environment and Energy. 2017. Twofold Bay - NSW124, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW124***.
Ukerebagh Nature Reserve	**Site description** (No data) **Physical features** Ukerebagh Nature Reserve consists of Ukerebagh Island and a mainland portion within and adjacent to the Tweed River estuary. It occurs on the Tweed floodplain which is formed from Quaternary alluvial and ocean beach deposits of gravel, sand, silt, clay and peat. Ecological features Vegetation communities found within Ukerebagh Nature Reserve include littoral rainforest, swamp forest, mangrove forest, open forest and saltmarsh

Wetland	Key Features
	associations. Seagrass is common in Ukerebagh Passage and together with Ukerebagh Nature Reserve forms one of the larger saline wetland systems in the Tweed estuary. **Significance** (No data) **Social and Cultural values** Association from pre-European times to the present day is evident in identified values of both traditional and contemporary historical significance. Several Aboriginal sites and 28 species of bush foods and medicinal plants traditionally utilised by local Aboriginal people have been recorded within Ukerebagh Nature Reserve. Many Aboriginal families lived on Ukerebagh Island during the 1920s and 1930s. Ukerebagh Nature Reserve is instrumental in the maintenance of the cultural identity of local Aboriginal people. Reference Department of the Environment and Energy. 2017. Ukerebagh Nature Reserve - NSW111, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW111**.
Waldrons Swamp	**Site description** (No data) **Physical features** Draining forested creeks from Pollwombra Mountain, Waldrons Swamp superimposes amorphously upon the northern part of the Broulee (Bengello) relict dunefield that extends to the Moruya River. The dunal features are very significant geomorphologically and of great scientific interest. The main body of the swamp is 2 km inland (at the ancient beachline) with a narrow outflow channel of some 1.5 km length meandering and cutting through the dunefield to connect very intermittently to the ocean at Bengello Beach between Broulee and Moruya Heads. **Ecological features** A variable mosaic of closed Swamp Paperbark (Melaleuca ericifolia) shrublands, Gahnia, Carex and Cladium sedgelands, rushlands and periodically open water providing breeding, refuge, roost and forage habitat for protected and threatened terrestrial species. **Significance** (No data) **Social and Cultural values** Locally important for grazing , eel fishing, water conservation and environmental protection. The relict dunal system adjacent to and south of the swamp is a great scientific interest. Reference Department of the Environment and Energy. 2017. Waldrons Swamp - NSW125, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW125***
Wallaga Lake	**Site description** (No data) **Physical features** A permanently open estuary with considerable area (100 ha.) of sandflat exposed at low tide near the entrance. The lake backs up into convoluted shallow reaches of inflowing tributaries flanked by Eucalyptus open forest including Red Gum (Eucalyptus tereticornis), Southern Mahogany (Eucalyptus botryoides), Black Apple (Planchonella australis), Water Gum (Tristania laurina), Lilly Pilly (Acmena smithii), Grey Myrtle (Backhousia myrtifolia), Sweet Pittosporum (Pittosporum undulatum), Rough Tree Fern (Cyathea australis), and Late Black Wattle (Acacia mearnsii). Swamp Paperbark (Melaleuca ericifolia) occurs along much of the shoreline of the lake. Forested islands occur within the lake. The lake is drained by a relatively large catchment of mostly forested and some rural lands. **Ecological features** Upper reaches of tributaries contain saltmarsh habitats. The lake is mostly fringed by a Swamp Oak (Casuarina glauca) stand. Extensive eelgrasses indicate potential fish nursery habitat. Occasional mangrove specimens only. Waterbird and seabird habitat for resting and forage provided by sandflats.

Wetland	Key Features
	Significance (No data) **Social and Cultural values** Islands within the lake and the lake itself are of strong spiritual significance to local Aboriginal people. Dreamtime songlines link tribal kings such as King Merriman to the Lake. Approximately 60 middens have been recorded on the shore of Wallaga Lake. Spectacular scenic vistas from coastal vantage points near lake entrance; the presence of Gulaga (Mt. Dromedary) to the north-west and the seascape to the east and north-east (including Montague Island) combine to evoke a classic south coast scenescape of 'estuary-mountain-ocean'. Reference *Department of the Environment and Energy. 2017. Wallaga Lake - NSW126, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW126**.*
Wallagoot Lagoon (Wallagoot Lake)	**Site description** (No data) **Physical features** Wallagoot Lagoon is an example of a Simple Embayment Lake. Embayment lakes are formed in the same formative process as in drowned valley lakes, except that in this case a bay is cut off. Such lakes were formed in the Holocene marine transgression. Extensive sand spits and sandy islets occur at the eastern end of the Lagoon, total area of these features dependent on water level. **Ecological features** The Lagoon has extensive areas of seagrass beds (area unknown), and a variety of rushes and sedges occur and include Saltmarsh (Sarcocornia quinqueflora), Streaked Arrow-grass (Triglochin striata), Saw-sedge (Gahnia sp.), Common Reed (Phragmites australis) and Sedges (Juncus spp.) A total of 480 faunal records have been recorded in the Wallagoot Lagoon area to date. **Significance** (No data) **Social and Cultural** values Tourism, recreation, education, commercial and recreational fishing. Extensive evidence of Aboriginal occupation (recorded sites) surrounding the lagoon. Reference Department of the Environment and Energy. 2017. Wallagoot Lagoon (Wallagoot Lake) - NSW127, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW127***.
Wallis Lake and adjacent estuarine islands	**Site description** (No data) **Physical features** The geology of Wallis Lake consists predominantly of Quaternary sediments of gravel, sand, silt, clay and marine and freshwater deposits. The geology of the western and southern area of the lake consists of Carboniferous sediments of the Wooton Beds and includes sandstone, siltstone, claystone, shale, and limestone. The lake is largely underlain by Pleistocene barrier, dune and back barrier deposits and underlying these estuarine sediments. **Ecological features** Coastal lagoon with extensive seagrass beds [including Eelgrasses (Zostera capricorni) and the Seagrass Posidonia australis] (3,079 ha), areas of saltmarsh (405 ha), mangroves (79 ha) [including Grey Mangrove (Avicennia marina), and River Mangrove (Aegiceras corniculatum)], Ruppia sp. and algal (Hormisira banksii) beds. The extensive seagrass beds in this estuary comprise approximately 20% of total seagrasses in NSW. Saltmarsh communities are dominated by Sarcocornia quinqueflora. The saltmarsh communities grade into swamp woodland with dominant species including Swamp Oak (Casuarina glauca) and Paperbark (Melaleuca quinquenervia. Sea Rushes (Juncus kraussii) dominate the area behind the saltmarsh with patches of sedge (Baumea juncea), rush (Schoenoplectus sp.) and Common Reed (Phragmites australis). Yahoo Island also supports a low closed forest

Wetland	Key Features
	(rainforest) community and an extensive tract of open Cabbage Palm (Livistona australis) community. Wallis Island includes communities of Paperbarks and Cabbage Palms and Swamp Mahogany (Eucalyptus robusta), Spotted Gum (Eucalyptus maculata), Grey Ironbark (Eucalyptus paniculata) and Forest Red Gum (Eucalyptus tereticornis) forests. **Significance** (No data) **Social and Cultural values** Aboriginal middens have been recorded within Yahoo Island Nature Reserve. Reference *Department of the Environment and Energy. 2017. Wallis Lake and adjacent estuarine islands - NSW038, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW038***
Wamberal Lagoon	***Site description*** A shallow, brackish lagoon that is normally closed by a sandbar. Extensive flooded Baumea juncea, Juncus kraussii and Phragmites australis reedlands at the northern end support large frog populations. Parts of the dense Melaleuca ericifolia and Melaleuca nodosa scrub near Forresters Ck are normally inundated. The foredune is relatively well preserved and shows a vegetation succession from Spinifex hirsutus near the ocean to Banksia integrifolia and Melaleuca quinquenervia forest. Eleocharis species and Phragmites sp. occur on the lagoon shore. ***Physical features*** (No data) ***Ecological features*** (No data) ***Significance*** It is in good condition. Some of the catchment is still protected by dense vegetation. The dense vegetation acts as a nutrient sink and sediment trap. Septic pollution, urban runoff, rubbish dumping, and sedimentation are major problems for the continued wellbeing on the lagoon. The effects of frequent artificial opening are unknown. Some of the wetlands are recommended for conservation in SEPP No. 14 site numbers 907 and 909. The lagoon and foredune are in the Wamberal Lagoon Nature Reserve, and parts of the catchment have conservation zonings. ***Social and Cultural values*** The area is an important wildlife habitat, especially as so few coastal lagoons remain in good condition. It has great educational value, and guided tours are given to schools and other groups. The area is also used for recreation and is a valuable tourist attraction. Reference *Department of the Environment and Energy. 2017. Wamberal Lagoon - NSW179, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW179**.*
Wollumboola Lake	**Site description** (No data) **Physical features** Soils consists primarily of grey sandy loam underlain by heavy red clay derived from the Permian Wandrawandian siltstone common to the area. **Ecological features** The lake supports surrounding wetland areas of Casuarina forest, teatree scrub, saltmarsh and sedgelands. The bed of the lake supports seagrasses. Reports that wetland 365 consists of a narrow herbfield on the shores of the lake dominated by coastal saline tolerant species. Behind this is an area of rushes and sedges consisting of a mix of Common Reed (Phragmites australis), Salt Rush (Juncus kraussii) and the Sedge, Baumea juncea. It is only one of three sites containing Wilsonia rotundifolia in coastal NSW. Wetland 364 consists of a small bay in the northwest corner of the lake which support extensive sandflats and saltmarsh communities. The dominant species in the saltmarsh is Samphire (Sarcocornia quinqueflora). Shoreward from the saltmarsh is an area of mixed sedgeland

Wetland	Key Features
	consisting of sedge species and salt rush (Juncus kraussii). The bay is surrounded by a dense closed forest of Paperbark (Melaleuca sp.) and Swamp She-oak (Casuarina glauca). **Significance** (No data) **Social and Cultural values** Around 200 Aboriginal sites have been recorded in the area including symbolic / sacred sites, art sites, habitation sites and axe grinding grooves. Reference *Department of the Environment and Energy. 2017. Wollumboola Lake - NSW094, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW094*** .
Wooloweyah Lagoon	**Site description (**No data) **Physical features** The geology of Wooloweyah Lagoon is comprised predominantly of Quaternary sediments including alluvium. gravel, sand, silt, clay, beach sand and dune sand overlying Triassic-Jurassic sandstone, shale, and conglomerate. **Ecological features** Estuarine lagoon, and associated seagrass, mangrove and saltmarsh areas. Dominant plant species include the aquatic herb Bacopa monniera, Swamp Oak (Casuarina glauca), Spike-rush (Eleocharis equisetina), Rushes (Juncus spp.), Paperbark (Melaleuca quinquenervia), Water Couch (Paspalum distichum), Common Reed (Phragmites australis). **Significance** (No data) **Social and Cultural values** The Clarence Estuary was utilised by Aborigines for fishing and evidence of this includes oyster shell middens that have been recorded on Micalo Island. In the early 1800s Richard Craig pioneered the harvesting of extensive Red Cedar stands of the Clarence (Clancy, 1992). Cropping began with sugar cane farms in 1864 on the Clarence River floodplain. Reference Department of the Environment and Energy. 2017. Wooloweyah Lagoon - NSW039, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=NSW039***.
Queensland	
Bribie Island	***Site description*** Bribie is a low sand island, with an elevation less than 10 m. The island has formed the narrow Pumicestone Passage to the west. The wetlands occur as creeks, lagoons, swamps and tidal flats. The majority of the island's interior is flat with closed depressions. Creeklines are short or interrupted. Large swamps (hundreds to thousands of hectares in size) occur in the sand plain and supra-tidal zone. The most extensive geology is a formation of Holocene tidal flats and meadows of sand and mud found in central and western parts of the island along with Pleistocene estuarine deposits. Pleistocene sand ridges, and Holocene beach ridges occur along southern and eastern beaches. Soils are podzols (bleached sands) on the eastern dunes and gleyed podzolic soils with a higher clay content in the west. This is broken by more than 200 ha of peat swamp. Groundwater podzols are found in some of the wet areas. Recent soil samples have found the presence of acid sulfate soil deposits in south-western parts of the island. ***Physical features*** (No data) ***Ecological features*** The freshwater wetlands are primarily composed from six community types. Swamp paperbark (*Melaleuca quinquenervia*), swamp box (Lophostemon suaveolens), *Eucalyptus tereticornis*, flooded gum (*Eucalyptus grandis*), scribbly gum (*E. racemosa*), swamp mahogany (*E. robusta*), pink bloodwood

Wetland	Key Features
	(*Corymbia intermedia*), cabbage tree palm (*Livistona australis*) open forest on beach ridges and old estuarine deposits, open forest or woodland dominated by *M. quinquenervia* with *E. robusta* and no understorey except swamp water fern (*Blechnum indicum*), *Baumea*, *Restio* and *Villarsia* spp. ground cover. Heathland or sedgeland with Hakea actites, broad-leaved banksia (Banksia robur), *Leptospermum* spp. and swamp grasstree (*Xanthorrhoea fulva*), *Ghania*, *Epacris* and *Restio* species, with emergents such as *E. robusta*, brush box (*Lophostemon confertus*), *L. suaveolens*. Wallum banksia (*Banksia aemula*) low open forest and woodland with black sheoak (*Allocasuarina littoralis*) and open heath. *M. quinquenervia*, and heathland or sedgeland on beach ridges. Open heath with *Caustis recurata*, *Xanthorrhoea fulva*, *Coleocarya gracilis*, *Sowerbea juncea* and *Leptospermum*, *Banksia* and *Bauera* species on beach ridge systems. Eight hundred and fifty hectares of intertidal and low coastal shrubland and forests occur in the south, west and north. These areas have communities with grey mangrove (*Avicennia marina*), river mangrove (*Aegiceras corniculatum*), yellow mangrove (*Ceriops tagal*), spotted mangrove (*Rhizophora stylosa*), large-fruited orange mangrove (*Bruguiera gymnorhiza*), milky mangrove (*Excoecaria agallocha*) and black mangrove (*Lumnitzera racemosa*), swamp she-oak (*Casuarina glauca*), Salicorna quinqueflora, Triglochin striata and sand couch (*Sporobolus virginicus*). ***Significance*** At least 850 ha of gazetted intertidal and estuarine shrubland and forests occur in the south, west and northern shorelines of the island. On the island, most wetland and vegetation mosaics are hundreds to thousands of hectares. These communities are considered highly significant representatives of their type in south-east Queensland because of their size and naturalness. A survey of intertidal vegetation by the Queensland Herbarium has delineated 26 communities that intersect the Bribie wetland. These include 21 communities of State significance, three communities with regional significance, and two communities with local or major significance. Significant areas of sub-tidal sea grass occur in Pumicestone Passage. These areas are protected by a wetland reserve and fish habitat area in an area of more than 7000ha on the western side of the island. The shorelines and tidal wetlands of the island are listed in the Moreton Bay Ramsar area. The area provides refuge for threatened wildlife and is species rich. ***Social and Cultural values*** Bribie Island has two listings in the Register of the National Estate: Pumicestone Passage and Bribie Island, and for the World War II fortifications in the northern ocean-side of the island. The area is recognised for its value to migratory waders, and local naturalist groups visit the island for annual bird surveys. The island has been used by Brisbane universities for research into oceanography, coastal geomorphology, and for coastal heath studies. QPWS provides educational facilities. The Department of Primary Industries Fisheries Branch has an aquaculture research facility on the south-eastern part of the island. The beaches attract tourists from the greater Brisbane area and picnic facilities and parks are provided for this purpose. The intersecting Pumicestone Passage is very high natural and scenic amenity, and the natural quality of its habitats attract naturalists and fishermen. The value to commercial fisheries is very high due to the spawning, recruitment, refugia and feeding values for aquatic fauna in the passage. No commercial fishing is allowed within the passage. More than 50 cultural heritage sites have been identified on the island. Numerous middens, artefact scatters, scarred and carved trees have been identified. Highly significant evidence from campsites and villages indicates that Indigenous peoples have lived on the island for more than 2,000 years. European settler heritage (additional to the war fortifications) includes historic wooden lighthouses (built in 1896) and a fish cannery site built in the early 1900s. Reference

Wetland	Key Features
	*Department of the Environment and Energy. 2017. Bribie Island. - QLD189, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD189**.*
Burrum Coast	***Site description*** The site comprises the coastline and estuaries between, and including, Beelbi and Theodolite creeks. It is made up of extensive intertidal flats associated with the mouth of the Burrum River and adjacent coastline; mangrove and saltflat systems along estuaries and coastline; freshwater wetlands dominated by wallum heaths, and lesser areas of sedgeland and swamp forests. ***Physical features*** Landforms: shallow, protected marine waters; broad intertidal sand flats and tidal deltas; fringing mangrove/saltflat; beaches backed by frontal dunes; and beach ridges with swampy swales. Geology: dominated by relatively recent (Holocene) deposits - sandy beach ridges, muddy estuarine sediments and sandy tidal deltas; much larger areas of Pleistocene sandy beach ridge deposits occur behind the more recent ones; undifferentiated Quaternary freshwater swamp deposits of mud and peat occur in the lower parts of the beach ridge systems. Soils: calcareous sands on the beaches, siliceous sands in the Holocene beach ridges, siliceous podosols in the Pleistocene beach ridges, sands/loams/muds in mangrove and saltmarsh, and acid peats and peaty sands in the low-lying swampy areas between the beach ridges. ***Ecological features*** Major habitat types include seagrass beds, mangrove low closed forest to open shrubland, saltmarsh, bare claypan, and extensive bare sandflats (exposed at low tide); sedgelands, open forest/woodland and closed heath occur in swampy areas of the beach ridge systems; fringing woodlands and open forests, dominated variously by *Casuarina*, *Melaleuca* and *Eucalyptus* spp., occur adjacent to the beaches and wetland communities. The mangrove communities vary in structure and composition - low closed forest of grey mangrove (Avicennia marina) and/or club mangrove (*Aegialitis annulata*) shrubs fringes the larger estuaries; large-fruited orange mangrove (*Bruguiera gymnorhiza*) and/or yellow mangrove (*Ceriops tagal*) and/or river mangrove (*Aegiceras corniculatum*) and/or spotted mangrove (*Rhizophora stylosa*) low forest to open shrubland fringes smaller estuaries; less frequently inundated areas support yellow mangrove and/or river mangrove open shrubland; while milky mangrove (*Excoecaria agallocha*), myrtle mangrove (*Osbornia octodonta*) and cotton tree (*Hibiscus tiliaceus*) are confined to the landward fringes of the mangrove forest and shrubland. Saltmarsh areas behind the mangroves are variously dominated by sand couch (*Sporobolus virginicus*) grassland and samphire herbland (e.g. samphire (*Halosarcia indica*), seablite (*Suaeda australis*) and *Tetragonia tetragonoides*). These areas may also be fringed by woodlands of *Melaleuca* spp. and swamp she-oak (*Casuarina glauca*). The swampy areas on peaty soils comprise three community types - open forest/woodland dominated by *Melaleuca* spp. but including cabbage tree palm (*Livistona australis*), *Tristania suaveolens* and *Eucalyptus tereticornis*; closed heath with species including *Boronia falcifolis*, wallum bottlebrush (*Callistemon pachyphyllus*), wallum tea-tree (*Leptospermum semibaccatum*), *Restio fastigiatus* and common heath (*Epacris obtusifolia*); and sedgeland, common species including *Schoenoplectus litoralis*, sea rush (*Juncus kraussii*) and sword grass (*Gahnia sieberiana*). ***Significance*** (No data) ***Social and Cultural values*** Several high value Aboriginal cultural sites occur, mainly along the Burrum and Gregory rivers and behind the beach at Woodgate. Important and increasingly popular for tourism and recreation, particularly for fishing and boating. Valuable area for research into both natural and cultural features of the Hervey Bay coastline. Reference

Wetland	Key Features
	Department of the Environment and Energy. 2017. Burrum Coast - QLD126, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD126****.*
Bustard Bay Wetlands	***Site description*** The site includes the embayment and estuaries between Rodds Peninsula and Round Hill. It is comprised of three interconnected, mangrove dominated, estuarine wetlands on and around Middle Island (Pancake, Middle and Jenny Lind creeks), plus two similar small estuaries at the southern end of Bustard Bay (Eurimbula and Round Hill creeks); an extensive non tidal, seasonal, freshwater wetland exists between the two southern estuaries, in Eurimbula National Park. ***Physical features*** The coastline of Bustard Bay consists largely of Holocene beach ridge deposits (including a large exposed sandmass on Middle Island); Holocene estuarine deposits dominate the western side of Middle Island and the major estuaries; on the north of Middle Island, Bustard Head and Clews Point are formed on unnamed granites of Triassic origin. A small area of the same granite occurs on the west side of Middle Island, near the centre of the Pancake Estuary; the estuarine deposits are bounded variously by Quaternary alluvium and Agnes Water volcanics (Triassic), an outcrop of which also forms Round Hill Head. There is considerable variation in the sediment of the estuaries - Round Hill Creek is predominantly sandy with a small fraction of fine mud, Eurimbula and Middle creeks are largely fine mud with small amount of sand at their mouths, Jenny Lind and Pancake creeks are sandy. ***Ecological features*** The dominant plant community in the site is mangrove forest and shrubland, with relatively small areas of saltflats behind; mangroves exhibit distinct banding from seaward to land : Avicennia and/or Aegialitis fringe on seaward margin; Rhizophora and/or Avicennia and/or Ceriops zone (main zone); Ceriops and/or Avicennia and/or Rhizophora zone; coastal saltflat (sand couch (*Sporobolus virginicus*) and/or chenopods); Ceriops fringe (between saltflat and terrestrial vegetation); several intertidal seagrass beds are situated in Pancake Inlet and in the small bay formed between Bustard Head and Clews Point. Of significance is the somewhat unusual occurrence of a fringing coral reef in an estuary (Pancake); the site supports a variety of marine fauna (e.g. 25 crab species and 29 mollusc species in Eurimbula and Round Hill creeks), as well as numerous shore, sea and land birds. ***Significance*** The Round Hill Head area is one of only three places where James Cook went ashore on his journey up the east coast of Australia in 1770. The site provides popular anchorages for recreational boats travelling up and down the coast, as well as unique natural features (landscape, flora and fauna, estuarine coral reef) in a relatively undisturbed condition. ***Social and Cultural values*** James Cook came ashore at Round Hill Head during his voyage up the east coast of Australia in 1770, and the Bustard Head Lighthouse was the second to be built in Queensland in 1868. Bustard Head also has a cemetery associated with early exploration of the area. Aboriginal shell middens occur throughout the area and there is considerable intrinsic value to fisheries as habitat and crab fishery. Bustard Bay supports a trawl fishery, while the estuaries support crab fisheries. Middle Island supports a small grazing enterprise, and several shipwrecks are located in Bustard Bay. Scientific interest and research values: Especially in the coral reef. The area is becoming increasingly popular as a tourist destination, especially as an access point to the Great Barrier Reef. Reference

Wetland	Key Features
	Department of the Environment and Energy. 2017. Bustard Bay Wetlands - QLD127, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD127****.*
Colosseum Inlet - Rodds Bay	***Site description*** The site is comprised of the area of the Curtis Coast between Wild Cattle Island and Rodds Peninsula. It contains three large estuaries/embayments with extensive mangroves and lesser areas of coastal saltflat and seagrass beds, supporting fauna of state and national significance. ***Physical features*** Geology/geomorphology: marine lowlands surrounded by flat to undulating terrain; geology is predominantly Quaternary estuarine (Holocene) and alluvial (Pleistocene) deposits fringed by Agnes Water granites (Triassic) and Miriam Vale granodiorites (Permian); Hummock Hill Island has an area of the latter granites surrounded by estuarine deposits and Quaternary beach ridge deposits on the north and south ends; a small area of Quaternary tidal delta sands occurs at the mouth of Colosseum Inlet. Soils: the lowlands are mainly saline clays (Olsen et al., 1980). ***Ecological features*** Extensive mangrove forests and shrublands; restricted seagrass beds; coastal saltflats (claypan and saltmarsh) and a small coral reef. Mangroves exhibit distinct banding from seaward to land : Avicennia fringe on seaward margin • Rhizophora zone (main zone) • Ceriops zone • Coastal saltflat • Ceriops fringe (between saltflat and terrestrial vegetation). Seagrasses are generally intertidal due to the natural turbidity of the waters - most abundant species are *Zostera capricornia*, *Halophila ovalis* and *Halodule uninervis*. Coastal saltflats range from bare claypan, through low/dwarf open halophytic shrubland (e.g. *Sarcocornia* spp. and *Suaeda* spp.), to open and closed grasslands dominated by sand couch (*Sporobolus virginicus*). ***Significance*** (No data) ***Social and Cultural values*** Several sites of archaeological importance occur in Colosseum Inlet and around Rodds Bay. These waterways are popular for boating, providing an extensive sheltered passage along the coast, as well as mooring sites inside Colosseum Inlet and Rodds Harbour. It is an important recreational fishing/crabbing area, and also an important source of commercial fisheries species. Hummock Hill Island supports a small grazing operation. Tourism is gaining momentum with several resort proposals in this area. There are also mineral reserves under exploration. Reference *Department of the Environment and Energy. 2017. Colosseum Inlet - Rodds Bay - QLD129, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD129****.*
Deepwater Creek	**Site description** (No data) **Physical features** The Deepwater landscape is characterised by a gently sloping alluvial plain that is closed by a coastal dunefield in the north and east. The catchment includes extensive Quaternary alluvium and Tertiary sandstone formations. The sandstones occur in elevated western areas and alluvium occurs in the north, east and south-eastern plains. Outcrops of the Triassic volcanics are found in the north and east. A small highland area in the south west of the catchment is Triassic granite. Minor formations of Jurassic and Triassic sandstone and mudstone occur in southern areas. Dune formations contain Holocene sands, and the estuary

Wetland	Key Features
	contains Holocene deposits. Gradational yellow massive earths (Gn2.3) predominate in elevated and western sections of the catchment. Soloths (Dy 3.41) have formed in the low eastern areas and deeply leached siliceous sands (Uc 1.21) have formed on the coastal dunes. Most discharge is produced from northern watersheds and shallow sandy aquifers. Other significant creeks include Reedy, Fullers, Bullock, Five mile, Pearson, Blackwater and Pig creeks. The drainage network is organised, convergent and unidirectional. Waterholes are found in the main channel and swamp formations occur near the coastal dunes. The climate is 'temperate humid' but a close proximity to the sub-tropics in the north is associated with thunderstorms and high rainfall intensity. **Ecological features** The inland alluvial and palustrine environments and ecosystems (together with the Eurimbula and Bustard Bay area) provide the largest and least disturbed northern representatives of their type. The estuary is flanked by more than 100 ha of littoral forest, grass meadow and reed beds. Closed Ceriops mangrove forests dominate with Avicennia forest and Sporobolous grassland. Aegiceras and Rhizophera forests occur in smaller communities. Sporobolous meadows are associated with Juncus, Casuarina and Melaleuca communities. Coastal rocky headlands support Themeda triandra and heath communities while adjacent foredunes support Themeda, Allocasuarina, Banksia and Accacia species. Further inland, the Quaternary sand plain and dune swales support microphyll and notophyll rainforest and open forest including Eucalyptus, Corymbia, Melaleuca, Callitris and Livistonia species. The swamps and ponded areas inland of the dunes support fringing sedge Leperonia articulata, meadows with Blechnum indicum and areas of Urtricularia, Lepidosperma, and Philydrum species. These areas merge with the prevalent alluvial ecosystems of wet heaths with Melaleuca, Banksia, Hakea, Leptospermum and Baekia species (typical wallum), open riparian forests of Melaleuca quinquenervia, Eucalyptus robusta, E. tereticornis, E. racemosa, Corymbia intermedia and Lophostemon suaveolons. On slopes of seasonally waterlogged Tertiary sediment or volcanic rock, open forests and grassy woodlands with Eucalyptus, Corymbia, Melaleuca and Banksia species are prevalent. **Significance** The Deepwater catchment and lowlands provide a large and relatively intact wetland system at the northern limit of the coastal lowland 'wallum' ecosystem of south-east Queensland. The area is one of the least disturbed mainland representatives for coastal acid freshwater wetlands in Queensland. The area is part of the Macpherson-Macleay zone of biogeographical transition, an area with enhanced species diversity. The sandy beaches support the second largest aggregation of mainland breeding sea turtles in Queensland and provide the only mainland nesting site used repeatedly by the nationally endangered leatherback turtle. **Social and Cultural values** This is an important area for nature-based recreation (camping, boating and fishing), and it provides a destination for regional communities. Shell middens are found on the foredunes. The Gooreng Gooreng Aboriginal people have a tradition with the land. Captain Cook visited the area in 1770, which may have been his first landing place in Queensland. Captain Cook's landing just to the north of the mapped area (Town of 1770) attracts tourists to the Deepwater beaches and headlands. The 1770 area has high social value in south-east Queensland. The mineral-rich Deepwater Beach ridge dunes are of high economic and natural value. The dune field is listed in the Register of the National Estate. <u>Reference</u> Department of the Environment and Energy. 2017. Deepwater Creek - QLD182, in Australian Wetlands Database. Department of the Environment and Energy,

Wetland	Key Features
	Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD182***.
Fraser Island	***Site description*** Fraser Island is the largest sand island in the world. It has huge reserves of fresh groundwater and characteristic window and barrage dune lakes. The topography of the island is characterised by rough dunes reaching an elevation of more than 220 m. Steep cliffs are common on the east coast and extensive flats are common on the west. The catchment is that of the permeable Fraser Island sandmass and there is relatively little direct runoff. ***Physical features*** Landform: intertidal flat, beach, floodout, supratidal flat, drainage depression, stream channel, stream bed, tidal creek, estuary, swamp, swale and lake; uplands are rough dunes with high relief. General geology: Fraser Island is dominated by a series of overlapping parabolic dunes which have been deposited as a result of inland migration of sands from coastal blowouts. These Quaternary and older siliceous sands overlie Cretaceous sediments of the Maryborough and Burrum sediments. Igneous intrusives at Indian Head and Waddy Point are the only true rocks on the island. The sand dunes were derived from the erosion of sandstones from coastal river valleys in northern NSW and southern Queensland. These late Pleistocene deposits were transported up the coast to their present position with successive rises and falls in sea level due to eustatic oscillations. The Pleistocene units are characterised by pure white sand while the Holocene dunes of pale yellow-brown sand overlap and, in some cases, form a veneer over the Pleistocene units. Soils: the soils are mostly quartzipsamments. They are deep sands with an A horizon of variable development and some deeper organic staining. Giant podosols occur with thick, richly coloured B horizons. There are also some groundwater podosols and peats. ***Ecological features*** The following wetland and related environments occur on the island: (i) permanent creeks fed by springs draining the major sand aquifers, on the east and west of the island. Rainforest communities are found along Eli and Wanggoolba creeks and comprise notophyll vine forests, notophyll palm forests and microphyll vine forests. Six species of rare or vulnerable plants have been recorded from the rainforests. Isolated dense palm forests of piccabeen palm (*Archontophoenix cunninghamiana*) are found in sheltered areas along the streams. Little information is available on aquatic macrophytes within the creeks. Some waterways support different morphs of the Fraser Island sunfish (*Rhadinocentrus ornatus*); (ii) dry sclerophyll forests or paperbark woodland (swamp paperbark (*Melaleuca quinquenervia*)) grading into paperbark swamp at the margins of the lakes. Forests are structurally variable and can include forest red gum (*Eucalyptus tereticornis*), red bloodwood (*Corymbia* spp.) and swamp box (*Lophostemon suaveolens*) as well as swamp mahogany (*Eucalyptus robusta*) and weeping cabbage palm (*Livistona decipiens*) in moister sites; (iii) open shrublands and low woodlands dominated by the wallum banksia (*Banksia aemula*). Other associated flora includes black sheoak (*Leptospermum trinervum*), monotoca white banksia and mallee forms of brush box. A notable species is Wide Bay boronia (*Boronia rivularis*) which occurs near lakes to the north end of the island, and which is recorded as a rare species with a restricted habitat. The acidic waters within this "wallum" environment are inhabited by a specialist frog fauna which has evolved in response to apparent constraints imposed on most other frogs by the acid waters. These "acid" frogs are represented by wallum rocketfrog (*Litoria freycineti*), Cooloola sedgefrog (*L. cooloolensis*), wallum sedgefrog (*L. olongburensis*) and wallum froglet (*Crinia tinnula*). The Fraser Island sunfish (*Rhadinocentrus ornatus*) is confined to wallum waters; (iv) freshwater perched water table window lakes and barrage dune lakes with marginal bands of sedges, dominated by *Lepironia articulata*. The sedge *Schoenus scabripes* is notable as a rare species restricted to highly specific habitats. Exposed areas of moist sand on lake

Wetland	Key Features
	margins area colonised by sundews (*Drosera spatulata*), dwarf yellow-eye (*Xyris juncea*) and fairy aprons (*Utricularia dichotoma*). A short-necked tortoise *Emydura* sp. is confined to island lakes and may be sub specifically different to current forms. The lakes are filled with either clear "white" or discoloured "black" water. Most lakes are oligotrophic and have depauperate fauna and flora. The lake catchments are closed and the organisms that inhabit them are isolated with the potential to diverge morphologically and genetically. Water birds occur in low numbers. Lake Wabby has a diverse fish fauna of 11 species, including the rare honey blue-eye (*Pseudomugil mellis*). The ancient chironomid midge *Anaphrotenia lacustris* is endemic to Lake Boernigin; (v) saline soil communities including mangroves, salt marshes and salt flats occur in the intertidal zones. The mangrove communities are dominant in terms of area and comprise 12 species. The dominant species of mangroves are grey mangrove (*Avicennia marina*), river mangrove (*Aegiceras corniculatum*), yellow mangrove (*Ceriops tagal*) and spotted mangrove (*Rhizophora stylosa*). Some of the mangrove species are at the southern limit of their distributions and some are of disjunct occurrence. Salt marshes and supratidal flats are dominated by samphires such as *Arthrocnemum* spp., *Suaeda* spp. and beadweed (*Salicornia quinqueflora*). sand couch (*Sporobolus virginicus*) is common; (vi) intertidal habitats including surf, sheltered beach and estuaries also occur. ***Significance*** The Fraser Island wetlands are significant because of their distinctness and because they are the best Australian example of a complex of wetlands characteristic of the South Eastern Queensland bioregion. Fraser Island possess the most numerous, most diverse, largest and highest perched lakes in the world. The lakes are notable for their palynology, climatology, ecology and, particularly, their hydrology. The hydrology and physicochemical properties of the groundwater are of notable scientific significance due to the relatively long residence time of water in the sandmass (70-100 years) and the characteristics of waters passing through the soil profiles. This island is also significant as a habitat for a diverse range of endemic, rare, and threatened fauna and flora. Fraser Island is also a World Heritage site. ***Social and Cultural values*** Fraser Island has a very long history of Aboriginal occupation. Only a small proportion of Aboriginal sites have been identified to non-Aboriginal people. Details of cultural landscapes with symbolic, ceremonial, and/or mythological significance to Aboriginal people are therefore not widely known. In addition to the above a large number of prehistoric sites have been identified. Fraser Island is also significant because of the number of sites relating to European occupation e.g. Bool Creek as the site of the first European landing, by Flinders from the Investigator. Currently Fraser Island is one of the most important tourism and recreational destinations in southeast Queensland. Reference *Department of the Environment and Energy. 2017. Fraser Island - QLD131, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD131****.*
Great Barrier Reef Marine Park	**Site description** (No data) **Physical features** The Great Barrier Reef is not a continuous barrier but a broken maze of coral reefs, some with coral islands (or cays). The reef comprises some 2,500 reefs which range in size from less than one hectare to more than 10,000 ha, and in shape from flat platform reefs to elongate ribbon reefs. There are 71 cays on the reef. The reefs are composed of the accumulated remains of animal calcium carbonate skeletal material and plant material, supporting a veneer of living plants and animals. The reef can be divided into three distinct sectors. The northern sector (north of latitude 16°S) contains many patch reefs with cays. Of particular interest are the low

Wetland	Key Features
	wooded islands which are coral cays carrying mangrove communities. The central sector (from 16°S to 21°S) is characterised by scattered platform reefs which are separated from fringing reefs of the mainland coast and coastal islands by a channel 15 km wide in the north and 50 km wide in the south. The southern sector (from 21°S to 24°S) is characterised in the north by a tightly packed maze of wall-like reefs separated by channels which carry strong tidal currents. To the south the reefs are tightly packed patch reefs with large patch reefs at the very southern end having well developed vegetated coral cays. **Ecological features** The Great Barrier Reef Marine Park contains a variety of habitats in a number of ecosystems. The area is recognised for its seagrass beds, estuarine wetlands, mangrove woodlands, island cays and coral atolls. The reef formations owe themselves to the ability of corals to produce substantial skeletons of calcium carbonate. Many of the corals have a variety of growth forms (branching corals, massive brain corals, plate-like corals, encrusting corals and mushroom corals) which relate not only to the genetic makeup of the corals but also, in part, to the hydrological regime and exposure of the location in which they develop. **Significance** (No data) **Social and Cultural values** The great diversity of life forms, especially in the endemic species, makes it an area of enormous scientific importance. It is an area that is recognised as being of great natural beauty and wonder and as such is one of Australia's most recognisable natural features. The area is extensively used for tourism and recreation. The area contains many archaeological sites of Aboriginal and Torres Strait Islander origin. There are over 30 historic shipwrecks in the area, and on the islands, there are ruins and operating lighthouses. Reference Department of the Environment and Energy. 2017. Great Barrier Reef Marine Park - QLD100, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD100***.
Great Sandy Strait	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Lake Coombabah	***Site description*** Lake Coombabah is a tidal lake at the mouth of Coombabah Creek. The lake and swamps have formed in the tidal delta and coastal plain of southern Moreton Bay. ***Physical features*** The majority of the wetland has formed on marine plain and alluvium. The upper alluvial and colluvial slopes occur on sub-coastal hills and rises. Tidal reaches and Melaleuca swamps in low lying and supra-tidal areas occur on Holocene muds and sands. Small beach ridge dunes to the east formed during the Holocene. The coastal flats are surrounded by Quaternary alluvial flats. The sub-coastal hills have developed from Devonian-Carboniferous geology of mudstone, shale and conglomerate. The beach ridge dunes have formed deep siliceous sands. Dune swales and swamps contain acid peat soils that are frequently waterlogged (e.g. humic podzols). Some supratidal freshwater swamp zones have developed peat profiles. Humic gley soils typically occur in old tidal channels and depressions, and they have permanently wet subsoils. More saline soils include solonchaks. Gleyed podzolics occur upslope of the tidal soils. Yellow podzolics are prevalent on alluvium and colluvium. Erodible sandy duplex soils with impermeable subsoil occur on elevated slopes, whilst seasonally waterlogged podzolics (some support perched water tables) occur on lower slopes. More than half of the lowland alluvial and coastal plain area is affected by acid sulfate soil deposits.

Wetland	Key Features
	Ecological features The upper watershed forms a mosaic of tall forests and woodlands with *Corymbia citriodora*, *Eucalyptus siderophloia*, *E. major*, *E. seeana* and *E. racemosa* with *Angophora*, and *Lophostemon* species. The lowland communities include Mangroves with Avicennia marina and Casuarina glauca, saltmarsh communities with *Sporobolus virginicus*, *Suaeda* and *Salicornia* species, *Casuarina glauca* forests with *Melaleuca quinquenervia*, forests with *M. quinquenervia*, *Eucalyptus robusta*, and *Blechnum indicum* with heath representatives such as *Restio* species, wet heath with *Restio pallens*, *R. tetraphyllus*, *Leptocarpus tenax*, *Epacris obtusifolia*, *Leptospermum juniperinum* and *Melaleuca nodosa*, tall heaths with *Banksia aemula*, *Leptospermum trinervium*, *Acrotriche aggregata* and *Leucopogon lanceolatus*, low heaths with *Bauera captitata*, *Hibbertia salicifolia*, *Epacris pulchella*, *Leucopogon species*, and Boronia species, lowland forests and woodlands with *Corymbia tessellaris*, *E. intermedia, Lophostemon confertus*, and *M. quinquenervia*, woodlands with *E. pilularis, E. crebra, E. tereticornis, E. intermedia, Lophostemon confertus*, *Acacia* species and *Callitris columellaris*, and open woodlands and grasslands with *E. pilularis, E. tereticornis, Xanthorrhoea* species, *Haemodorum tenuifolium, Tricoryne elatior, Xyris complanata*, and *Dianella caerulea*. ***Significance*** The Coombabah wetlands are significant because they are the most southerly lake and coastal swampland representatives in the bioregion, and because the area provides significant wildlife value and refuge habitat. Remnant vegetation mosaics are 10s to 100s of hectares in size. Remnant connectivity is poor and mosaics occur primarily as isolated fragments. Remnants have low to modest integrity, primarily due to numerous edge effects, illegal waste disposal and weed growth, clearing and fire. Weeds in the lowland areas include groundsel (*Baccharis halimifolia*), ragweed (*Ambrosia species*), introduced pine wildings and various pasture and annual species. Saline or brackish lowland wetlands are included in the Moreton Bay Ramsar area. Coombabah Lake and confluent tidal creeks intersect 41 mosaics of significant intertidal vegetation and tidal beds. The mosaics incorporate an area of about 500 ha. The Queensland Herbarium surveyed the tidal and near-tidal coastal vegetation and found 22 significant mosaics. Eleven mosaics have State significance and 11 have regional significance. Two Gazetted fish habitat areas extend through the tidal lake. The habitat areas include about 560 ha of the tidal wetland. The majority of the tidal lake and surrounding swamp area is used by waders for feeding and roosting. ***Social and Cultural values*** The Lake Coombabah area includes Ramsar and fish habitat areas because of its high value to bird and fish life. This wildlife activity attracts naturalist groups and bird watchers who survey the movement of migratory waders. The area is also popular with boat users. The Gold Coast City Council and QPWS supports the use of the area for natural history education, and local schools use the facilities for their studies. This is the last remaining representative of its type and size in the mainland area of the Gold Coast. The wetland area has high heritage value to the Kombumerri people. The area contains sites and relics such as shell middens and artifacts that indicate the use of natural resources by indigenous people for more than 5,000 years. These people harvested fish, crayfish, shellfish and dugong, as well as macropods, invertebrates and reptiles. The lowlands also provided vegetables and fruit, yams, nuts, berries, seeds etc. The area was used as a meeting and feasting place, and a place for ceremonies. The area also holds evidence of the development of the area by white settlers. The white settlers grazed cattle, cut and milled the timber, and fished the fisheries. From the 1950s to the present, the area has been marketed as a recreational, tourist and urban destination. Reference

Wetland	Key Features
	Department of the Environment and Energy. 2017. Lake Coombabah - QLD194, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD194*** .
Lake Weyba	***Site description*** The site comprises the area which covers that part of Noosa National Park south of the original headland park and the adjacent Lake Weyba. ***Physical features*** General geology: two geological units are represented. The majority of the area is of Pleistocene origins as old tidal delta sand deposits. The landform is level sand plain with humus podosols and peaty podosols on poorly drained plains and depressions. These low-lying areas are seasonally waterlogged, and the water table can be permanently close to the surface. Depression areas are permanently waterlogged. The western part of the block is on Myrtle Creek sandstones of Triassic/Jurassic origins. The landform here is gently undulating rises of coarse grained quartzose sandstones. Soils are yellow podosolics or yellow earths, low in nutrients and with little or no structure. ***Ecological features*** (No data) ***Significance*** (No data) ***Social and Cultural values*** Increasingly used for recreation. Reference *Department of the Environment and Energy. 2017. Lake Weyba - QLD133, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD133***.
Lower Mooloolah River	***Site description*** The Mooloolah River runs through a long reach of sandy coastal plain to become a delta with small islands, bars and meander channels. ***Physical features*** The Mooloolah River is pinned to the north by a beach ridge plain, alluvium, rocky headland, and urban infrastructure such as canals. The landscape is very gently to gently inclined with occasional very low rises. Most of the lower Mooloolah River is derived from Quaternary alluvium deposits. Some low rises and ridgelines are formed on sandstone, siltstone, shale, and ferruginous material formed during the Triassic-Jurassic period. The majority of coastal sands and silts in the lowest areas have formed from deposits of Holocene tidal sandy mud or peat-mud. Humic gley soils occur on Quaternary alluvium, while bleached sandy soils with pans (humic podzols, ground water podzols) are found in northern areas. The soils are generally nutrient poor and poorly drained. Hummock microrelief is found in areas of frequent waterlogging. Acid sulfate soil deposits with Jarosite occurs in the majority of low-lying areas. ***Ecological features*** Eight vegetation associations occur in the lower floodplain. These are *Eucalyptus tereticornis*, swamp paperbark (*Melaleuca quinquenervia*), scribbly gum (*E. racemosa*), and pink bloodwood (*Corymbia intermedia*) open forest on old estuarine deposits, *M. quinquenervia*, swamp box (*Lophostemon suaveolens*), *E. tereticornis*, flooded gum (*E. grandis*), *E. racemosa*, swamp mahogany (*E. robusta*), *C. intermedia*, cabbage tree palm (*Livistona australis*) and piccabeen palm (*Archontophoenix cunninghamiana*) open forest on old estuarine deposits, *E. robusta*, *L. suaveolens* with *M. quinquenervia* open forest on old estuarine deposits, E. *robusta, E. racemosa*, red bloodwood (*C. gummifera*), *M. quinquenervia* open woodland, *L. suaveolens* on old estuarine deposits, *E. racemosa*, red mahogany (*E. resinifera*), *C. gummifera* woodland on old estuarine deposits, swamp stringybark (*E. conglomerata*), Queensland white stringybark (*E. tindaliae*), *E. robusta*, *C. gummifera* and *Syncarpia glomulifera* in woodland or open forest on old estuarine deposits, closed heathland and sedgeland commonly with Hakea actites, broad-leaved banksia

Wetland	Key Features
	(*Banksia robur*), *Leptospermum* spp. and swamp grasstree (*Xanthorrhoea fulva*) on old estuarine deposits with emergents such as *E. robusta*, *E. racemosa*, *E.conglomerata*, *M. quinquenervia*, and black sheoak (*Allocasuarina littoralis*), and open to closed heathland/sedgeland with *M. quinquenervia* on old estuarine deposits. Aquatic emergents include *Phragmites*, *Lepironia*, *Ghania* and *Baumea* species. Estuarine species include river mangrove (*Aegiceras corniculatum*), grey mangrove (*Avicennia marina*), spotted mangrove (*Rhizophora stylosa*), large-fruited orange mangrove (*Bruguiera gymnorhiza*). ***Significance*** The Mooloolah River wetlands are significant because of they are a good representative of a number of wetland types and coastal environments, and because of the diversity of habitats, wildlife and provision of wildlife refuge. ***Social and Cultural values*** Two sites are listed in the Register of the National Estate; these are the Mooloolah River National Park and the Currimundi Lake Environmental Park. These areas are recognised and celebrated by local naturalist and conservation groups for their annual flower displays. The Mooloolah River and much of the mapped area is culturally significant to Indigenous peoples. Oyster middens have been found on the river banks and bora rings have been found in the area. Swards of Blechnum indicum within the Melaleuca forests provided a food source for Indigenous people. Evidence of Indigenous artefacts and tools is found in scatters in eastern coastal areas of the Mooloolah floodplain along with scarred trees. Reference *Department of the Environment and Energy. 2017. Lower Mooloolah River - QLD187, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD187**.*
Moreton Bay Aggregation	This site is listed as an Internationally Important Wetland. Key features are listed in Table 7-1**.**
Noosa River Wetlands	***Site description*** Spectacular and extensive system of freshwater, brackish and saline lakes, marshes, heathlands and estuarine wetlands associated with the Noosa River; it has unique landforms, vegetation and fauna. ***Physical features*** The Noosa River flows across a low lying, low gradient coastal plain, between the Cooloola sandmass on the coast and a series of sandstone hills (Benham Range) a short distance to the west; this plain extends to the coast, east of Lakes Cootharaba and Cooroibah. The entire plain is generally sandy (Quaternary beach, estuarine and lacustrine deposits). Lakes Cootharaba and Cooroibah are open ended; Como, Weyba and Doonella are cul-de-sacs; and Cooloola is isolated. Lakes Cooloola and Como are delta lakes, formed by deposition of sediment from the Noosa River where it enters Lake Cootharaba (which was formerly much more extensive). South of Lake Cooroibah, the river becomes more typically estuarine, with numerous low sand/mud islands, adjacent saline flats, and tidal delta and bars near the river mouth. Lake Weyba is located south of the Noosa estuary and, while not strictly a part of the Noosa River Lakes system, is tidally connected to the estuary. ***Ecological features*** Major habitat types include permanent open water bodies, estuarine waters, intertidal sand/mud flats, mangrove forest/shrubland, saltmarsh, open forest, woodland, sedgelands and heathland. Mangroves, intertidal flats and saltmarsh are the dominant communities in the Noosa River estuary, including islands and adjacent lakes. Fringing communities of mangrove forest/shrubland and/or swamp she-oak (*Casuarina glauca*) forest occur along the river and lake edges, to the limit of tidal influence. Mixed high to tall open forest/woodland communities occur along creek/river banks throughout the site (pink bloodwood (*Corymbia intermedia*), broad-leaved white mahogany (*Eucalyptus umbra*), *E. tereticornis*, black sheoak

Wetland	Key Features
	(*Allocasuarina littoralis*), coastal cypress (*Callitris columellaris*), swamp paperbark (*Melaleuca quinquenervia*) and swamp box (*Lophostemon suaveolens*). Seasonally and permanently waterlogged areas generally support tall woodlands dominated by swamp paperbark, with *Eucalyptus* spp., swamp box and swamp she-oak, and with or without shrub and ground layers of heath, grasses, sedges and restiads. Permanently saturated areas (e.g. freshwater lake margins) also support sedgelands. Common species including *Lepironia articulata*, soft twigrush (*Baumea rubiginosa*), *Baloskion pallens*, pithy swordsedge (*Lepidosperma longitudinale*) and sword grass (*Gahnia sieberiana*). Areas of low closed heathland occur on sand lenses within the drainage lines. ***Significance*** The Noosa River lakes and adjacent wetlands are one of few such wetland complexes on the Australian east coast. ***Social and Cultural values*** This site is a highly valued area for tourism and recreation; education is also a significant use (e.g. many school groups use facilities at Lake Cootharaba for geography and science field trips); rapidly increasing urban and tourism development due to the natural values of the area; invaluable area for research into unique flora, fauna and landscape processes; and highly significant to Aboriginal people with numerous archaeological sites. Reference *Department of the Environment and Energy. 2017. Noosa River Wetlands - QLD135, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD135**.*
North Stradbroke Island	***Site description*** North Stradbroke Island is a sand island anchored by sedimentary and volcanic rocky headlands developed in the Mesozoic and Palaeozoic period ***Physical features*** The island has been built by periodic ocean rise during the Quaternary. These transgressions move sand to the island and initiate dune formation. Most dune building occurred in the Pleistocene, with different periods of formation producing mosaics of dunes of different sizes and shapes. Dune patterns, elevation, and the distribution of peat and estuarine clay control wetland formation. The western marine flats form a tidal delta for southern Moreton Bay. In the Holocene, beach ridge formations have developed a large freshwater lagoon at the foothills of the eastern parabolic dunes. The lagoon (18 Mile Lagoon) includes approximately 3,000 ha of swamp and creekline. Acid peats and humic podzols (with organic pans) have developed in this type of environment. The wetlands are surrounded by fast draining siliceous sands. Marine flats have developed gleyed duplex soils. ***Ecological features*** Evapotranspiration accounts for 750–1,000 mm of water loss each year. Runoff quantities are less than 500 mm per annum, because soil-water and groundwater recharge captures most surface water. Recharge occurs through direct infiltration to an 'unconfined' aquifer. Surface water is retained in perched or groundwater swamps and lakes. Stream flow is mostly lateral discharge from the island's sand aquifers. The mapped area that is near-permanently waterlogged or inundated exceeds 5,300 ha including tidal flats and estuaries. During seasonally wet periods, the wetland area expands to at least 6,300 ha. Water depth in swamps is usually less than 1.5 m, but depths greater than 6 m occur in lakes (e.g. Blue and Brown Lake). Water quality is very good. Water is often tannin stained but turbidity is low, nitrogen levels are low, salinity is low and chlorophyll-a levels are low. Water pH is generally between 4 and 5. The primary function of the wetlands is for recharge, flood detention, discharge (lateral seepage holds saline water from groundwater), and supply of clean water to lagoons, swamps and lakes.

Wetland	Key Features
	Significance North Stradbroke Island wetlands are significant because they provide some of the best and largest representatives of southern sandy island wetlands, they include a diversity of wildlife in natural conditions and provide refuge habitat to wildlife including migratory species. The wetlands provide substantial cultural and historical value to indigenous people, for European settlers and because of the significant role they have provided for research and education. Remnant ecosystems are large and well connected. Mosaics of remnants vary from 10s to 1000s of hectares in extent and have a high level of integrity. The Queensland Herbarium has identified 23 low-lying coastal wetland habitats in the mapped area. All of the mosaics are considered to have State significance. Some of the southern and north western open tidal and estuarine areas are included in designated fish habitat area. These areas contain more than 200 ha of designated fish habitat area within the mapped wetland. Migratory waders use numerous small bays and flats for feeding and roosting (about 120 ha in the mapped wetland area), and these sites connect with extensive Moreton Bay general wader habitat. The majority of fresh and saline wetlands are included in the Moreton Bay Ramsar area. Contemporary disturbance to remnant patches includes fire and weeds (*Lantana camara* and *Baccharis halimifolia*), clearing and water use for sand mining. ***Social and Cultural values*** A number of historical and indigenous sites are listed by the Register of the National Estate. These include natural values of the central and southern sections of the island, Blue Lake National Park, the Dunwich Cemetery, Southern and Eastern Moreton Bay, and places of indigenous value at Point Lookout and Dunwich. The sea caves and cliffs of the island have regional geohistorical value. The area is visited by birdwatchers and naturalist groups, to survey birds, especially migratory waders, and to observe dugong and whales. Universities from Brisbane have an established history and tradition of zoological, ecological, coastal geomorphology and oceanographic research from the island. The island's estuaries and harbours provide frequently used recreational boating and fishing facilities and resources. The North Stradbroke Island wetlands were a critical part of the traditional indigenous hunter-gather economy. The significance of wetlands to the traditional Aboriginal lifestyle of the North Stradbroke Island people is substantial. The *Blechnum indicum* fern was the predominant vegetable staple food, while swamp yam species such as *Ipomea* and *Typha* species, and wild fruits and berries appear to have also played a food role. The swamps, swamp margins and their ecotones harboured the majority of plant species used in, and essential to, the traditional economy. These include blueberry ash (fish poison); foods such as midgim and pig face; paperbark for housing, shelter, packaging and fish storage; cottonbush and native hibiscus for cordage, twine and hunting and fishing nets; bark and trees for canoes and housing; timber and wood for spears, boomerangs and tools; and reeds and boronia for basketry. The Eighteen Mile Swamp provided no constraints to movement of resources, and the western margin was also used for traditional rites of passage initiation ceremony associated with a large bora ring associated located on the southern end of the island near Swan Bay. The west coast sites contain little evidence of the cross-island transport of food and other resources. Traditional occupation to the south of Dunwich appears to have been more low-key with family-sized occupation sites, often targeting premium local resources such as hairy mussel, oyster and quampie. European historic values include the use of Dunwich and Amity Point (areas with close access to Flinders and Myora swamps and springs) for early penal settlements until 1839. An initial survey of the island and contact with Aboriginals occurred in 1803 with an expedition led by Matthew Flinders. At that stage more than 300 indigenous people inhabited the island in permanent camps. Amity Point in the 1820s was used as a harbour and transfer point for goods dispatched to Brisbane.

Wetland	Key Features
	This activity was soon shifted to Dunwich. A Catholic mission for Aborigines was established at Dunwich in 1843. From 1850 to 1947 Dunwich played a Quarantine and 'Benevolent Asylum' role. Six large shipwrecks have occurred around the island. The historic cement and timber Point Lookout Light House was built in 1932 to reduce the number of shipping accidents. The island has an established history in the fishery industry, particularly from the 1940s. The most recent profitable and heavy industry to commence on the island is mineral sand mining (for ilmenite, rutile and zircon), which began in 1950. Much of the island's infrastructure was built with the initiation of mining activities. The area is now better known for its tourism and urban lifestyle. Reference *Department of the Environment and Energy. 2017. North Stradbroke Island - QLD191, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD191**.*
Northeast Curtis Island	***Site description*** The site is the northeastern side of Curtis Island, between Cape Keppel and Cape Capricorn, incorporating the extensive marine plain south of Yellow Patch inlet, and also Rundle Island. It is a shallow embayment some 20 km long, with small rocky headlands at each end; bay and estuary fringed largely by mangroves, behind which there is a 4,000-ha marine plain, which is tending to the southern limit of such habitat. ***Physical features*** Shallow embayment and small estuaries; offshore islands and sand bars; small rocky headlands; coastal lowlands; parabolic dune system and exposed sandmass. Geology dominated by estuarine deposits of the Holocene epoch; tidal delta sands of the same age at the mouth of Yellow Patch Inlet and in the sandbar offshore from it; Holocene high dune system occur along the southeastern boundary of the site (coastline running up to Cape Capricorn); Capes Capricorn and Keppel are formed on the Shoalwater and Wandilla formations respectively (Devonian); minor areas of Eocene colluvium occurs between the estuarine deposits and the Ramsay Range (Wandilla Formation). ***Ecological features*** Mangrove forest and shrubland forms an extensive fringing community along the estuaries and protected coastline of the bay; distinct banding occurs from seaward to land - Avicennia fringe on the seaward margin through a Rhizophora zone (main zone) a Ceriops zone on coastal saltflat to Ceriops fringe (between a saltflat and terrestrial vegetation). The most prominent feature of this wetland site is the vast (4,000 ha) marine plain, which represents the southern limit of this habitat type; the marine plain supports swampy or mixed grassland, dominated by green couch (*Cynodon dactylon*), *Paspalum* sp. and *Digitaria* sp., often in pure swards. The area supports a variety of flora and fauna, both terrestrial and marine, some of which are threatened species. ***Significance*** The extent of the marine plain, at the southern limit of the habitat type, the presence of threatened fauna, migratory waders, notable landscape features and the overall near natural condition of the area in general combine to make this site a highly significant wetland at the regional, state and national levels. ***Social and Cultural values*** A number of Aboriginal shell middens occur in the area. There is an historic lighthouse at Cape Capricorn which is listed on the Queensland Heritage Register. The site comprises an important grazing resource for leaseholders and has significant tourism/recreation values (e.g. estuarine boating and fishing, sightseeing). There is a popular and spectacular mooring site in Yellow Patch Inlet, and Yellow Patch sand blow is a significant landscape feature. Reference *Department of the Environment and Energy. 2017. Northeast Curtis Island - QLD017, in Australian Wetlands Database. Department of the Environment and Energy,*

Wetland	Key Features
	Canberra. Available from: ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD017***
Pine River and Hays Inlet	**Site description** (No data) **Physical features** The Lower Pine River and Hays Inlet area is an estuarine delta at the northern limit of Brisbane City. Pine River, Fresh Water and Hays creeks discharge into the delta. Hays Creek forms Hays Inlet, a shallow linear inlet with extensive tidal flats. The genesis of the inlet and lower Pine River has defined the delta. The inlet is bounded by Tertiary ferricrete with outcrops of Tertiary basalt on Redcliffe Peninsula in the east, and Triassic-Jurassic sandstones and shales in Mango Hill to the west. The majority of the delta and inlet is formed from Holocene and Pleistocene sand and mud. Northern and western areas on sandstone, colluvium and palaeosol have formed clayey humic gley soils with poor drainage and ironstone nodules. Eastern parts of the delta include krasnozem soils. The majority of supratidal flats and meadows have gleyed podzolic or soloth duplex soils with poor drainage and frequent waterlogging. Soils in southern and south-western reaches include humic gleys formed in depressions and old tidal channels with high water tables. Acid sulfate soil deposits are known or expected to occur in almost all wetland areas. **Ecological features** Vegetation in the wetland is dominated by mangrove shrublands and forests, saltmarshes and claypans, mixed Eucalyptus forest, Melaleuca forest, Casuarina open forest and sedge swamps on old pasture. Mangrove communities include grey mangrove (Avicennia marina) closed forests and shrublands, with river mangrove (Aegiceras corniculatum), large-fruited orange mangrove (Bruguiera gymnorhiza), yellow mangrove (Ceriops tagal), spotted mangrove (Rhizophora stylosa), milky mangrove (Exoecaria agallocha) and black mangrove (Lumnitzera racemosa). Low open Ceriops shrubland are a common feature in the high tidal zone. Intertidal saltmarshes include sand couch (Sporobolus virginicus) grassland, samphire communities, claypans and algal mats. Mixed Eucalyptus forests and woodland include E. tereticornis, Moreton Bay ash (E. tessellaris), grey ironbark (E. drepanophylla), swamp she-oak (Casuarina glauca), white bottlebrush (Callistemon salignus), swamp paperbark (M. quinquenervia), Cupaniopsis anarcardioides, Ficus platypoda, Brachychiton populneus, broad-leaved leopard tree (Flindersia collina) and cotton tree (Hibiscus tiliaceus). Forests of M. quinquenervia occur as small remnants in the south but more extensive forests occur around Hays Inlet. Casuarina glauca with S. virginicus occur on estuarine verges. Sedge swamps include broad-leaved cumbungi (Typha orientalis), common reed (Phragmites australis), Eleocharis species, Lepironia articulata, and frogsmouth (Philydrum lanuginosum). Minor scrub remnants occur with epiphytes (Asplenium australiasicum), glossy acronychia (Acronychia laevis), and crow's ash (Flindersia australis). **Significance** The Pine River and Hays Inlet wetland is significant because of its value to wildlife, especially migratory waders, and because of the facilities provided for wildlife education and research. The Queensland Herbarium has classified the extensive tidal wetlands and low-lying freshwater wetland vegetation into 46 vegetation mosaics of tens of hectares. Twenty-three mosaics have been identified with State significance, seven mosaics have regional significance, and 16 mosaics have local significance. A large area of the tidal zone, about 1,350 ha, is conserved for fish habitat, because of its value to fish and crustacean spawning and feeding. The area is critical to migratory waders. Seven areas of approximately 110 ha, as well as habitat mapped with the greater Moreton Bay area, provide essential wader roosting and feeding areas. The majority of the mapped wetland is included in the Moreton Bay Ramsar area because of its wader and fisheries significance. Significant weeds occur in the wetland, including Cyperus papyrus, Eichhornia crassipes, Protasparagus

Wetland	Key Features
	species, Chloris gayana, Baccharis halimifolia, and Lantana camara. These threats combined with pollution, littering and fire reduce the integrity and value of many habitats. **Social and Cultural values** The area is recognized regionally and nationally for its value to migratory waders. Thousands of visitors visit the wetland reserves (e.g. the Tinchi Tamba environmental park) to survey and observe the birds. Bird observer groups monitor the site annually and periodically to survey bird numbers. Bird hides and educational materials are provided in the Tinchi Tamba reserve. The area is recognized as a significant fishery, attracting tourists, boat and fishing enthusiasts from the Brisbane area. Indigenous values include middens, scarred trees and the use of the area for a burial area. Evidence of historic corduroy tracks and soldier settlements have been identified. One of these soldier settlement blocks was one of only two given to returned indigenous WW1soldiers. The formal use of the area for recreation dates back to 1929 when a caretaker's cottage and kiosk was built. Public parks and picnic areas are regularly used. Swimming, photography and nature appreciation are activities encouraged within the reserves and conservation areas. The Tinchi Tamba reserve is used by local school and TAFE colleges for educational purposes. Reference Department of the Environment and Energy. 2017. Pine River and Hays Inlet - QLD190, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: **http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD190** .
Port Curtis	***Site description*** The site includes all tidal areas in the vicinity of Gladstone, from a line between Laird Point and Friend Point (southern end of The Narrows), to a line between Gatcombe Head and Canoe Point, including the seaward side of Facing Island and Sable Chief Rocks, and southern Curtis Island west of a line between North Point and Connor Bluff. ***Physical features*** Partially enclosed embayment and shallow estuaries, including small, continental rocky islands, intertidal flats and estuarine islands. The geology consists of two main groups - Holocene estuarine deposits (lowlands), and Wandilla and Shoalwater Formations; both Devonian (islands and coastal hills), plus relatively smaller areas of Holocene tidal delta sands and beach ridges near the mouth of the Boyne River, and Pleistocene alluvium, associated with the Boyne and Calliope rivers. ***Ecological features*** There are extensive mangrove forests and shrublands (3,300 ha), seagrass beds (2,430 ha) and saltflats (2,800 ha). Mangroves exhibit distinct banding from seaward to land - Avicennia fringe on seaward margin through a Rhizophora zone (main zone) a Ceriops zone on coastal saltflat to a Ceriops fringe (between saltflat and terrestrial vegetation). Seagrasses are generally intertidal due to the natural turbidity of the waters - most abundant species is *Zostera capricornia*, with *Halophila ovalis* and *Halodule uninervis* also common. Coastal saltflats are mostly bare claypan, with lesser areas ranging from low/dwarf open halophytic shrubland (e.g. *Sarcocornia* sp. and *Suaeda* spp.), to open and closed grasslands dominated by sand couch (*Sporobolus virginicus*). ***Significance*** (No data) ***Social and Cultural values*** Several sites of high archaeological significance occur on Facing Island, and a number of shipwrecks are also found along the coast. Gladstone Harbour is the major port of central Queensland - 20% of Queensland's and 5% of Australia's export revenue is earned through this port. The area provides an important access to the Great Barrier Reef and has a developing tourism industry; the harbour facilities and other infrastructure in Gladstone continue to provide initiative for major ongoing industrial development.

Wetland	Key Features
	Reference *Department of the Environment and Energy. 2017. Port Curtis - QLD019, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD019***
Pumicestone Passage	***Site description*** Several creek systems drain into Pumicestone Passage at the northern extent of Moreton Bay. The direct access of these creeks to the sea is blocked by the barrier island, Bribie Island. This gives rise to a narrow, shallow passage which has limited water exchange with the ocean. The build-up of silt carried down by these creeks has formed vast tidal flats, providing feeding areas for waders. Seagrass meadows occur throughout the site. The adjacent national park on Bribie Island is fringed by mangroves backed by melaleuca swamps. ***Physical features*** General geology: the regional geology of the catchment area of Pumicestone Passage consists of a variety of volcanic and sedimentary rocks and associated unconsolidated sediments. The western boundary of the catchment is defined by the coastal ranges, consisting of sandstone, siltstone, shale, conglomerate, ironstone and coal of the Landsborough Sandstone. Along the coastal plain, the Landsborough Sandstone is the main sedimentary formation while Quaternary alluvium and coastal deposits are associated with streams issuing into Pumicestone Passage and along the western shores of that feature. Acid volcanic plugs, forming the Glasshouse Mountains, intrude into the sandstone unit. Bribie Island, which forms the eastern side of Pumicestone Passage, is built of Holocene dunes, tidal deltas, flats overlying Pleistocene sand ridges and estuarine deposits. It has no comparable major aeolian landforms such as those exhibited by the other barrier islands (Moreton, North Stradbroke and South Stradbroke) which form the eastern edge of Moreton Bay. ***Ecological features*** Four wetland habitats occur within the site, or adjacent to it: (i) shallow estuarine water systems including seagrass beds; (ii) lower intertidal mudflats; (iii) mangrove communities; and (iv) supratidal flats. ***Significance*** (No data): ***Social and Cultural values*** The site is important as a recreational area (e.g. swimming, fishing). Reference *Department of the Environment and Energy. 2017. Pumicestone Passage - QLD136, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD136*** .
The Narrows	***Site description*** The site is the passage between Curtis Island and the mainland, including the tidal wetlands on northwestern Curtis Island, and Graham Creek east of Deception Creek. ***Physical features*** Passage landform between mainland and continental island; supra and intertidal flats and estuary landforms; predominantly recent and Quaternary alluvial and marine deposits of silt, clay and sand. Significant oil shale deposits are found below the more recent sediments. ***Ecological features*** Habitat types include: (i) saline coastal flats; (ii) mangrove forests; (iii) intertidal sand and mud flats; (iv) seagrass beds and (v) open marine and estuarine waters. ***Significance*** The Narrows is a unusual landform feature, being one of only four tidal passages in Australia.

Wetland	Key Features
	Social and Cultural values Several registered sites of Aboriginal significance occur along The Narrows; a major commercial and recreational fishing and crabbing area; important waterway (at high tide) for boats moving up and down the coast. Reference *Department of the Environment and Energy. 2017. The Narrows - QLD021, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from:* ***http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD021***.
Upper Pumicestone Coastal Plain	***Site description*** The upper Pumicestone coastal and subcoastal plain includes the sub catchments of Bells, Lamerough, Halls, Bluegum, Mellum, Coochin, Coonorwin and Hussey creeks. ***Physical features*** The creeks are interrupted by depressions and swamps with hummock microrelief. Most water is shed from very low ridges of sandstone and lateritic residue. The creeks drain through tidal deltas to Pumicestone Passage. The creeks have low flow capacities and floodplain development is minimal. The geology is dominated by shale and sandstone from the Triassic-Jurassic period. The lowest plains are derived from tidal sands and muds. Soils include lateritic podzols, gleyed podzolics, humic gleys and groundwater podzols. The groundwater podzols are humus rich and have an organic pan. The podzolic gleyed soils are silt and clay rich and are found in depressions subject to frequent inundation and anoxia. The humic gleys also occur in frequently inundated areas but are sandier and include perched water tables. Large areas with peat and peaty sands occur. The wetlands include hundreds of hectares of acid sulfate deposits. ***Ecological features*** Feature wetland communities include Melaleuca forested wetlands with swamp water fern (*Blechnum indicum*) and broad-leaved banksia (*Banksia robur*), fringing riparian swamp paperbark (*M. quinquenervia*) and black sheoak (*Allocasuarina littoralis*) with *Hypolepis, Lepironia, Lygodium, Rhynchospora* and *Cyperus* species, *M. quinquenervia* wet heaths with *Banksia, Leptospermum, Callistemon* and *Ghania* species, sedgelands with *Lepironia articulata, Cyperus, Ghania, Baumea, Schoenus, Leersia* and *Philydrum* species, gallery myrtaceous forests in the supratidal zone (scribbly gum (*Eucalyptus racemosa*) and *M. quinquenervia*), notophyll vine forest, open and closed proteaceous wet heath with swamp stringybark (*E. conglomerata*), Bancroft's red gum (*Eucalyptus bancroftii*), swamp box (*Lophostemon suaveolens*), Syncarpia glomulifera, tinywattle (*Acacia attenuata*), broad-leaved tea-tree (*M. leucadendra*), *Epacris, Lomandra, Baeckia* and *Banksia* species, scribbly gum (*E. racemosa*) and blackbutt (*E. pilularis*) forest, intertidal meadows and pans with sand couch (*Sporobolus virginicus*) and swamp she-oak (*Casuarina glauca*), and mangrove shrublands and forests with *Avicennia, Aegiceris, Ceriops, Rhizophora*, and *Bruguiera* species. ***Significance*** The Upper Pumicestone Coastal Plain wetlands are significant because they contain some of the last remnants of wallum and intertidal wetland from the once extensive wetlands of the northern Caboolture plain. These remnants are good representatives because they have been conserved from development and for research. The area hosts a very large number of wildlife species, including migratory species, and provides refuge habitat for wildlife. The area has high cultural significance to Indigenous peoples and for research and education purposes. ***Social and Cultural values*** Several features in the area are listed in the Register of the National Estate. These include Pumicestone Passage and places of Indigenous value (e.g. bora and kippa rings, and fish traps occur in the area). The Pumicestone plain contains numerous sites of artefact scatters, scarred trees, middens and camps. The wetlands in this area provided an abundance of food (e.g. fish, crayfish, shellfish and vegetable matter) for Indigenous peoples. The area has an historic timber harvesting

Wetland	Key Features
	record, and a collection of Jinker logs and stumps cut using springboards are located in the area. The mapped area includes four scientific areas with a combined area of 800 ha. These areas were conserved from logging and wildfires to provide ecological reference sites to illustrate coastal wallum conditions prior to logging, and to enable the evaluation of soil types and the evolution of habitats. Habitat evolution research included analysis of fire frequency effects on wallum community diversity and viability. Local conservation and naturalist groups and QPWS survey these areas periodically and encourage community involvement. Universities also contribute to research. These areas are managed with risk management plans. The scientific areas have been established for 26 to 75 years, and their biological and ecological characteristics and dynamics have been extensively researched during that period of time. Large numbers of naturalists visit Pumicestone Passage for bird surveys because the area hosts large numbers of migratory waders. The passage is popular for boating activities, particularly recreational fishermen, and attracts tourists from across the region for this purpose. Reference *Department of the Environment and Energy. 2017. Upper Pumicestone Coastal Plain - QLD188, in Australian Wetlands Database. Department of the Environment and Energy, Canberra. Available from: http://www.environment.gov.au/cgi-bin/wetlands/report.pl?smode=DOIW;doiw_refcodelist=QLD188.*

Appendix 5 - EPBC Database Protected Matters Search

Appendix 5a - Operational Area EMBA PMST

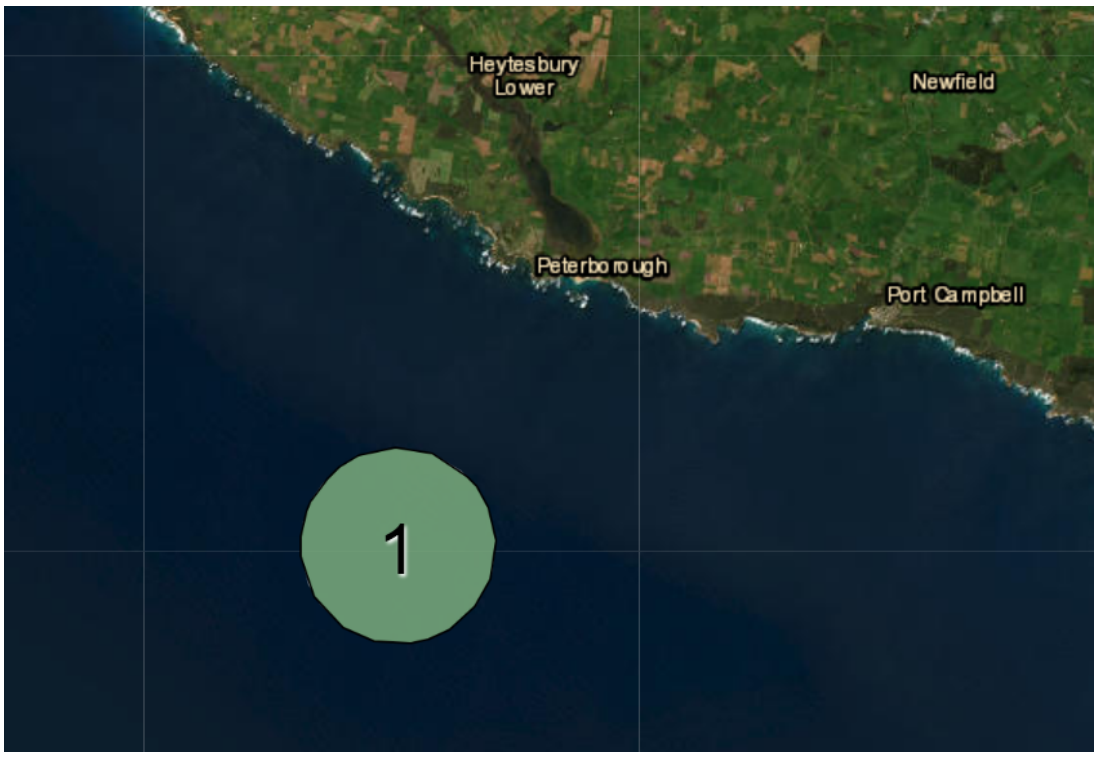
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jun-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



Operational Area

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	38
Listed Migratory Species:	39

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	63
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	14
Key Ecological Features (Marine):	None
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
FISH		
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
Seriolella brama		
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
REPTILE		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area

Scientific Name	Threatened Category	Presence Text
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Migratory Marine Species

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Thalassarche salvini](#) Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Fish		
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
[Hippocampus abdominalis](#) Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
[Histiogamphelus briggsii](#) Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
[Histiogamphelus cristatus](#) Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
[Hypselognathus rostratus](#) Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
[Kaupus costatus](#) Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Solegnathus spinosissimus](#) Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
[Stigmatopora argus](#) Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
[Stigmatopora nigra](#) Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
[Stipecampus cristatus](#) Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
[Vanacampus phillipi](#) Port Phillip Pipefish [66284]		Species or species habitat may occur within area
[Vanacampus poecilolaemus](#) Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
[Arctocephalus pusillus](#) Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area
Reptile		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Strike Oil NL Seismic Surveys	2000/107		Completed
Controlled action			
Casino Gas Field Development	2003/1295	Controlled Action	Post-Approval
Otway Development	2002/621	Controlled Action	Post-Approval
Schomberg 3D Marine Seismic Survey	2007/3754	Controlled Action	Completed
Not controlled action			
Exploration drilling for liquid/gaseous hydrocarbons	2004/1681	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Offshore exploration drilling within permit area VIC/P 37(v)	2004/1466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
'Moonlight Head' 3D seismic survey, VIC/P38(V), VIC/P43 and VIC/RL8	2005/2236	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic program VIC/P38(v), VIC/P43 and VIC/RL8	2003/1137	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Schomberg 3D Marine Seismic survey	2007/3868	Not Controlled Action (Particular Manner)	Post-Approval
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, Vic	2012/6565	Not Controlled Action (Particular Manner)	Post-Approval
Vic/P37(v) and Vic/P44 3D marine seismic survey	2003/1102	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, VIC	2012/6545	Referral Decision	Completed

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging (annual high use area)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix 5b – Ecological LOWC EMBA PMST

Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Ecologiical LOWC EMBA

Report created: 26-Aug-2025

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	97
Listed Migratory Species:	62

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	106
Whales and Other Cetaceans:	28
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	11
Regional Forest Agreements:	1
Nationally Important Wetlands:	3
EPBC Act Referrals:	60
Key Ecological Features (Marine):	1
Biologically Important Areas:	17
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Historic		
Great Ocean Road and Scenic Environs	VIC	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community	Endangered	Community likely to occur within area
Giant Kelp Marine Forests of South East Australia	Endangered	Community may occur within area
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community may occur within area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
[Anthochaera phrygia](#) Regent Honeyeater [82338]	Critically Endangered	Species or species habitat may occur within area
[Ardenna grisea](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Callocephalon fimbriatum](#) Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
[Charadrius mongolus](#) Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
CRUSTACEAN		
Euastacus bispinosus Glenelg Spiny Freshwater Crayfish, Pricklyback [81552]	Endangered	Species or species habitat likely to occur within area
FISH		
Hoplostethus atlanticus Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannoperca obscura Yarra Pygmy Perch [26177]	Endangered	Species or species habitat likely to occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
FROG		

Scientific Name	Threatened Category	Presence Text
Litoria raniformis		
Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
Antechinus minimus maritimus		
Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat known to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isoodon obesulus obesulus		
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area
Mastacomys fuscus mordicus		
Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat known to occur within area
Miniopterus orianae bassanii		
Southern Bent-wing Bat [87645]	Critically Endangered	Breeding known to occur within area
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Petauroides volans		
Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area
Petaurus australis australis		
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus trisulcatus		
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys fumeus		
Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys shortridgei		
Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat may occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
PLANT		
Amphibromus fluitans		
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area
Caladenia concolor		
Crimson Spider-orchid, Maroon Spider-orchid [5505]	Vulnerable	Species or species habitat may occur within area
Caladenia hastata		
Melblom's Spider-orchid [16118]	Endangered	Species or species habitat likely to occur within area
Eucalyptus strzeleckii		
Strzelecki Gum [55400]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat known to occur within area
Ixodia achillaeoides subsp. arenicola Sand Ixodia, Ixodia [21474]	Vulnerable	Species or species habitat may occur within area
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat known to occur within area
Prasophyllum litorale listed as Prasophyllum littorale Coastal Leek Orchid [55234]	Critically Endangered	Species or species habitat likely to occur within area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat known to occur within area
Prasophyllum suaveolens Fragrant Leek-orchid [64956]	Endangered	Species or species habitat may occur within area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat likely to occur within area
Pterostylis tenuissima Swamp Greenhood, Dainty Swamp Orchid [13139]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Senecio psilocarpus		
Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat known to occur within area
Thelymitra epipactoides		
Metallic Sun-orchid [11896]	Endangered	Species or species habitat known to occur within area
Thelymitra matthewsii		
Spiral Sun-orchid [4168]	Endangered	Species or species habitat may occur within area
Thelymitra orientalis		
Hoary Sun-orchid [88011]	Critically Endangered	Species or species habitat may occur within area
Xerochrysum palustre		
Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Lissolepis coventryi		
Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Migratory Marine Species		
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caperea marginata		
Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharias taurus		
Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus		
Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus		
Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus		
Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae		
Humpback Whale [38]		Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - WARRNAMBOOL TRAINING DEPOT [21111]	VIC
Unknown	
Commonwealth Land - [21492]	VIC

Commonwealth Land Name	State
Commonwealth Land - [21583]	VIC

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Diomedea epomophora](#) Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Diomedea exulans](#) Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Diomedea sanfordi](#) Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Eudyptula minor](#) Little Penguin [1085]		Breeding known to occur within area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area
[Gallinago megala](#) Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
[Gallinago stenura](#) Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
[Halobaena caerulea](#) Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
[Himantopus himantopus](#) Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua		
Brown Skua [85039]		Species or species habitat may occur within area
Sterna striata		
White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri		
Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei as Thalassarche sp. nov.		
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta		
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma		
Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Fish		
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus minotaur Bullneck Seahorse [66705]		Species or species habitat may occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys mollisoni Mollison's Pipefish [66260]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area

Current Scientific Name	Status	Type of Presence
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Apollo	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Aire River	Heritage River	VIC
Aire River W.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Bay of Islands Coastal Park	Conservation Park	VIC
Cape Nelson	State Park	VIC
Great Otway	National Park	VIC
Lake Gillear W.R	Natural Features Reserve	VIC
Merri	Marine Sanctuary	VIC
Port Campbell	National Park	VIC
Princetown W.R	Natural Features Reserve	VIC
The Arches	Marine Sanctuary	VIC
Twelve Apostles	Marine National Park	VIC

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
West Victoria RFA	Victoria

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Lower Aire River Wetlands	VIC
Lower Merri River Wetlands	VIC
Princetown Wetlands	VIC

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Cape Winds Offshore Windfarm Geophysical, Geotechnical and Marine Studies	2023/09629		Completed
Decommissioning of the Minerva Pipeline in Victorian state waters	2024/09879		Completed
Decommissioning of the Minerva Pipeline in Victorian state waters ? May 2025	2025/10138		Referral Decision
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia East	2024/09795		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
SMAP telecommunications submarine cable installation	2024/09989		Completed
Southern Winds Offshore Wind Project	2022/09435		Completed
Southern Winds Offshore Wind Project Initial Marine Field Investigations	2022/09436		Completed
Spinifex Offshore Wind Farm - Offshore Investigations	2024/09918		Referral Decision
Strike Oil NL Seismic Surveys	2000/107		Completed
Controlled action			
Alston-1 petroleum exploration well, permit VIC/P44	2003/1315	Controlled Action	Post-Approval
Casino Gas Field Development	2003/1295	Controlled Action	Post-Approval
Otway Development	2002/621	Controlled Action	Post-Approval
Residential Subdivision & Infrastructure Parish of Belfast	2005/1954	Controlled Action	Completed
Schomberg 3D Marine Seismic Survey	2007/3754	Controlled Action	Completed
Strike Oil Gas Exploration Well, Otway Basin (VIC/P44)	2000/97	Controlled Action	Completed
Twelve Apostles Saddle Lookout	2019/8571	Controlled Action	Post-Approval
VIC Offshore Windfarm	2021/8966	Controlled Action	Assessment Approach
VICP61 2D Marine Seismic Survey	2008/4075	Controlled Action	Completed
Not controlled action			
construction of pump station for pump diversion from the Barham River	2003/1242	Not Controlled Action	Completed
Enterprise 1 Exploration Drilling Program, near Port Campbell, Vic	2019/8438	Not Controlled Action	Completed
Exploration drilling for liquid/gaseous hydrocarbons	2004/1681	Not Controlled Action	Completed
Gas Field Development	2006/2635	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Gas Fields Development	2011/5879	Not Controlled Action	Completed
Halladale and Speculant Gas Pipeline Project, North of Port Campbell, Vic	2015/7551	Not Controlled Action	Completed
Henry-1 Exploration Well, Petroleum Permit Area VIC/P44	2005/2147	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Maintenance of Access Track and Weed Removal	2009/4973	Not Controlled Action	Completed
Nirranda South Wind Farm Pty Ltd	2002/763	Not Controlled Action	Completed
Offshore exploration drilling within permit area VIC/P 37(v)	2004/1466	Not Controlled Action	Completed
Port Campbell Headland Walking Trail Realignment	2012/6676	Not Controlled Action	Completed
Stage 1 residential subdivision, Anna Catherine Drive	2005/1992	Not Controlled Action	Completed
Track construction - Great Ocean Walk	2002/793	Not Controlled Action	Completed
VIC-P44 Stage 2 Gas Field Development	2007/3767	Not Controlled Action	Completed
Victorian Generator Project	2005/1984	Not Controlled Action	Completed
Wind Farm Construction and Operation	2001/471	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Moonlight Head' 3D seismic survey, VIC/P38(V), VIC/P43 and VIC/RL8	2005/2236	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2005/2295	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey within Torquay Sub-basin off sthn Victoria	2012/6256	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D seismic program VIC/P38(v), VIC/P43 and VIC/RL8	2003/1137	Not Controlled Action (Particular Manner)	Post-Approval
BHPBilliton Otway 3D Seismic Survey	2007/3443	Not Controlled Action (Particular Manner)	Post-Approval
Deepwater Sorell Basin 2001 Non-Exclusive 2D Seismic Survey	2001/156	Not Controlled Action (Particular Manner)	Post-Approval
Enterprise Three-dimensional Transition Zone Seismic Survey, Victoria	2016/7800	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
La Bella 3D Marine Seismic Survey, Otway Basin, VIC	2012/6683	Not Controlled Action (Particular Manner)	Post-Approval
OTE10 2D Marine Seismic Survey	2009/5223	Not Controlled Action (Particular Manner)	Post-Approval
Otway Basin Exploration Drilling Campaign, Vic	2011/6125	Not Controlled Action (Particular Manner)	Post-Approval
Santos 2D Seismic Survey VIC/P44 & VIC/P51	2003/1213	Not Controlled Action (Particular Manner)	Post-Approval
Santos Otway 3d Seismic VIC/P44	2007/3367	Not Controlled Action (Particular Manner)	Post-Approval
Schomberg 3D Marine Seismic survey	2007/3868	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Speculant 3D Transition Zone Seismic Survey	2010/5558	Not Controlled Action (Particular Manner)	Post-Approval
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, Vic	2012/6565	Not Controlled Action (Particular Manner)	Post-Approval
Torquay Sub-basin (VIC/P62) OTE12-3D Seismic Survey	2012/6655	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5700	Not Controlled Action (Particular Manner)	Post-Approval
Vic/P37(v) and Vic/P44 3D marine seismic survey	2003/1102	Not Controlled Action (Particular Manner)	Post-Approval
VIC P44 Gas Exploration Wells	2002/662	Not Controlled Action (Particular Manner)	Post-Approval
Vic-P51 and Vic-P52 2D seismic survey	2002/811	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey	2011/6156	Referral Decision	Completed
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, VIC	2012/6545	Referral Decision	Completed
VICP61 2D Marine Seismic Survey	2008/3975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Bonney Coast Upwelling	South-east

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur
Ardenna tenuirostris Short-tailed Shearwater [84292]	Breeding	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur
Morus serrator Australasian Gannet [1020]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix 5c – Light EMBA PMST

Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jun-2025

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

Light EMBA 20km Operational Area

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	81
Listed Migratory Species:	51

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	88
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	5
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	40
Key Ecological Features (Marine):	None
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Historic		
Great Ocean Road and Scenic Environs	VIC	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community	Endangered	Community likely to occur within area
Giant Kelp Marine Forests of South East Australia	Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anthochaera phrygia		
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area

Scientific Name	Threatened Category	Presence Text
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
FISH		

Scientific Name	Threatened Category	Presence Text
[Nannoperca obscura](#)		
Yarra Pygmy Perch [26177]	Endangered	Species or species habitat likely to occur within area
[Prototroctes maraena](#)		
Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area
[Seriolella brama](#)		
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
FROG		
[Litoria raniformis](#)		
Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
[Antechinus minimus maritimus](#)		
Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat known to occur within area
[Balaenoptera borealis](#)		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#)		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Balaenoptera physalus](#)		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Dasyurus maculatus maculatus (SE mainland population)](#)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
[Eubalaena australis](#)		
Southern Right Whale [40]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
[Isoodon obesulus obesulus](#)		
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area
[Mastacomys fuscus mordicus](#)		
Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat known to occur within area
[Miniopterus orianae bassanii](#)		
Southern Bent-wing Bat [87645]	Critically Endangered	Species or species habitat likely to occur within area
[Neophoca cinerea](#)		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
[Petaurus australis australis](#)		
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area
[Potorous tridactylus trisulcatus](#)		
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat likely to occur within area
[Pseudomys novaehollandiae](#)		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
[Pteropus poliocephalus](#)		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
PLANT		
[Amphibromus fluitans](#)		
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area
[Glycine latrobeana](#)		
Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area
[Haloragis exalata subsp. exalata](#)		
Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat may occur within area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat known to occur within area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat likely to occur within area
Pterostylis tenuissima Swamp Greenhood, Dainty Swamp Orchid [13139]	Vulnerable	Species or species habitat known to occur within area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat known to occur within area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat known to occur within area
Thelymitra orientalis Hoary Sun-orchid [88011]	Critically Endangered	Species or species habitat may occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Lissolepis coventryi Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Migratory Marine Species		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area

Scientific Name	Threatened Category	Presence Text
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
[Gallinago megala](#) Swinhoe's Snipe [864]		Roosting likely to occur within area
[Gallinago stenura](#) Pin-tailed Snipe [841]		Roosting likely to occur within area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus		
Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus		
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris as Puffinus tenuirostris		
Short-tailed Shearwater [82652]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Fish		
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat likely to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Bay of Islands Coastal Park	Conservation Park	VIC
Curdie Vale N.C.R.	Natural Features Reserve	VIC
Port Campbell	National Park	VIC
The Arches	Marine Sanctuary	VIC
Twelve Apostles	Marine National Park	VIC

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
West Victoria RFA	Victoria

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Decommissioning of the Minerva Pipeline in Victorian state waters	2024/09879		Completed
Decommissioning of the Minerva Pipeline in Victorian state waters ? May 2025	2025/10138		Referral Decision
SEA Gas Project transmission pipeline	2001/513		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Strike Oil NL Seismic Surveys	2000/107		Completed
Controlled action			
Casino Gas Field Development	2003/1295	Controlled Action	Post-Approval
Otway Development	2002/621	Controlled Action	Post-Approval
Schomberg 3D Marine Seismic Survey	2007/3754	Controlled Action	Completed
Strike Oil Gas Exploration Well, Otway Basin (VIC/P44)	2000/97	Controlled Action	Completed
VICP61 2D Marine Seismic Survey	2008/4075	Controlled Action	Completed
Not controlled action			
CO2 geosequestration - Otway Basin Pilot Project	2006/2699	Not Controlled Action	Completed
Enterprise 1 Exploration Drilling Program, near Port Campbell, Vic	2019/8438	Not Controlled Action	Completed
Exploration drilling for liquid/gaseous hydrocarbons	2004/1681	Not Controlled Action	Completed
Gas Field Development	2006/2635	Not Controlled Action	Completed
Gas Fields Development	2011/5879	Not Controlled Action	Completed
Halladale and Speculant Gas Pipeline Project, North of Port Campbell, Vic	2015/7551	Not Controlled Action	Completed
Henry-1 Exploration Well, Petroleum Permit Area VIC/P44	2005/2147	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Minerva Cut Back Project, Vic	2017/8036	Not Controlled Action	Completed
Nirranda South Wind Farm Pty Ltd	2002/763	Not Controlled Action	Completed
Offshore exploration drilling within permit area VIC/P 37(v)	2004/1466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Port Campbell Headland Walking Trail Realignment	2012/6676	Not Controlled Action	Completed
Track construction - Great Ocean Walk	2002/793	Not Controlled Action	Completed
VIC-P44 Stage 2 Gas Field Development	2007/3767	Not Controlled Action	Completed
Victorian Generator Project	2005/1984	Not Controlled Action	Completed
Wind Farm Construction and Operation	2001/471	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Moonlight Head' 3D seismic survey, VIC/P38(V), VIC/P43 and VIC/RL8	2005/2236	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic program VIC/P38(v), VIC/P43 and VIC/RL8	2003/1137	Not Controlled Action (Particular Manner)	Post-Approval
Enterprise Three-dimensional Transition Zone Seismic Survey, Victoria	2016/7800	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Otway Basin Exploration Drilling Campaign, Vic	2011/6125	Not Controlled Action (Particular Manner)	Post-Approval
Santos Otway 3d Seismic VIC/P44	2007/3367	Not Controlled Action (Particular Manner)	Post-Approval
Schomberg 3D Marine Seismic survey	2007/3868	Not Controlled Action (Particular Manner)	Post-Approval
Shaw River Power Station construct gas pipeline and associated infrastructure	2009/5089	Not Controlled Action (Particular Manner)	Post-Approval
Southern Gas Pipeline Project	2002/619	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
Speculant 3D Transition Zone Seismic Survey	2010/5558	Not Controlled Action (Particular Manner)	Post-Approval
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, Vic	2012/6565	Not Controlled Action (Particular Manner)	Post-Approval
Vic/P37(v) and Vic/P44 3D marine seismic survey	2003/1102	Not Controlled Action (Particular Manner)	Post-Approval
VIC P44 Gas Exploration Wells	2002/662	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, VIC	2012/6545	Referral Decision	Completed

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur

Scientific Name	Behaviour	Presence
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging (annual high use area)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix 5d – MDO EMBA PMST

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jun-2025

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
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Acknowledgements

Figure: MDO EMBA

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	94
Listed Migratory Species:	54

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	93
Whales and Other Cetaceans:	30
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	14
Regional Forest Agreements:	1
Nationally Important Wetlands:	2
EPBC Act Referrals:	82
Key Ecological Features (Marine):	2
Biologically Important Areas:	17
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Historic		
Great Ocean Road and Scenic Environs	VIC	Listed place

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Glenelg estuary and discovery bay wetlands	Within 10km of Ramsar site

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community	Endangered	Community likely to occur within area
Giant Kelp Marine Forests of South East Australia	Endangered	Community may occur within area
Karst springs and associated alkaline fens of the Naracoorte Coastal Plain Bioregion	Endangered	Community may occur within area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat may occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thinornis cucullatus cucullatus		
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
CRUSTACEAN		
Euastacus bispinosus		
Glenelg Spiny Freshwater Crayfish, Pricklyback [81552]	Endangered	Species or species habitat may occur within area
FISH		
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannoperca obscura		
Yarra Pygmy Perch [26177]	Endangered	Species or species habitat may occur within area
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area
Seriolella brama		
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
FROG		
Litoria raniformis		
Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
Antechinus minimus maritimus		
Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area
Mastacomys fuscus mordicus Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat known to occur within area
Miniopterus orianae bassanii Southern Bent-wing Bat [87645]	Critically Endangered	Roosting known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Potorous tridactylus trisulcatus		
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat known to occur within area
Pseudomys fumeus		
Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys shortridgei		
Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat may occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
PLANT		
Amphibromus fluitans		
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area
Caladenia concolor		
Crimson Spider-orchid, Maroon Spider-orchid [5505]	Vulnerable	Species or species habitat may occur within area
Caladenia hastata		
Melblom's Spider-orchid [16118]	Endangered	Species or species habitat likely to occur within area
Eucalyptus strzeleckii		
Strzelecki Gum [55400]	Vulnerable	Species or species habitat known to occur within area
Glycine latrobeana		
Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area
Haloragis exalata subsp. exalata		
Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Ixodia achillaeoides subsp. arenicola Sand Ixodia, Ixodia [21474]	Vulnerable	Species or species habitat likely to occur within area
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat may occur within area
Prasophyllum litorale listed as Prasophyllum littorale Coastal Leek Orchid [55234]	Critically Endangered	Species or species habitat likely to occur within area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat known to occur within area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat likely to occur within area
Pterostylis tenuissima Swamp Greenhood, Dainty Swamp Orchid [13139]	Vulnerable	Species or species habitat known to occur within area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat known to occur within area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat known to occur within area
Thelymitra matthewsii Spiral Sun-orchid [4168]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thelymitra orientalis		
Hoary Sun-orchid [88011]	Critically Endangered	Species or species habitat may occur within area
Xerochrysum palustre		
Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Lissolepis coventryi		
Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Eubalaena australis as Balaena glacialis australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus		
Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus		
Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus		
Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae		
Humpback Whale [38]		Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Unknown	
Commonwealth Land - [21492]	VIC
Commonwealth Land - [21583]	VIC

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Fish		
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus minotaur Bullneck Seahorse [66705]		Species or species habitat may occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys mollisoni Mollison's Pipefish [66260]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Apollo	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Aire River	Heritage River	VIC
Aire River W.R.	Natural Features Reserve	VIC
Bay of Islands Coastal Park	Conservation Park	VIC
Cape Nelson	State Park	VIC
Discovery Bay	Marine National Park	VIC
Discovery Bay Coastal Park	Conservation Park	VIC
Great Otway	National Park	VIC
Marengo N.C.R.	Nature Conservation Reserve	VIC
Marengo Reefs	Marine Sanctuary	VIC
Port Campbell	National Park	VIC
Princetown W.R	Natural Features Reserve	VIC
Stony Creek (Otways)	Reference Area	VIC
The Arches	Marine Sanctuary	VIC
Twelve Apostles	Marine National Park	VIC

Regional Forest Agreements	[Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
West Victoria RFA	Victoria

Nationally Important Wetlands

[Resource Information]

Wetland Name	State
Lower Aire River Wetlands	VIC
Princetown Wetlands	VIC

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Cape Winds Offshore Windfarm Geophysical, Geotechnical and Marine Studies	2023/09629		Completed
Decommissioning of the Minerva Pipeline in Victorian state waters	2024/09879		Completed
Decommissioning of the Minerva Pipeline in Victorian state waters ? May 2025	2025/10138		Referral Decision
Geographe-A gas exploration well	2000/82		Completed
Hydrocarbon exploration wells	2003/1062		Completed
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia East	2024/09795		Completed
Otway Astrolabe 3D Marine Seismic Survey, Otway Basin	2012/6421		Completed
SMAP telecommunications submarine cable installation	2024/09989		Completed
Southern Winds Offshore Wind Project	2022/09435		Completed
Southern Winds Offshore Wind Project Initial Marine Field Investigations	2022/09436		Completed
Spinifex Offshore Surveys	2022/09359		Completed
Spinifex Offshore Wind Farm - Offshore Investigations	2024/09918		Referral Decision
Strike Oil NL Seismic Surveys	2000/107		Completed
Thylacine-A Exploration Well	2000/81		Completed
Vic-P51 and Vic-P52 3D seismic survey	2002/799		Completed
Controlled action			
Alston-1 petroleum exploration well, permit VIC/P44	2003/1315	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Casino Gas Field Development	2003/1295	Controlled Action	Post-Approval
Otway Development	2002/621	Controlled Action	Post-Approval
Residential Subdivision & Infrastructure Parish of Belfast	2005/1954	Controlled Action	Completed
Schomberg 3D Marine Seismic Survey	2007/3754	Controlled Action	Completed
Strike Oil Gas Exploration Well, Otway Basin (VIC/P44)	2000/97	Controlled Action	Completed
Twelve Apostles Saddle Lookout	2019/8571	Controlled Action	Post-Approval
VIC Offshore Windfarm	2021/8966	Controlled Action	Assessment Approach
VICP61 2D Marine Seismic Survey	2008/4075	Controlled Action	Completed
Not controlled action			
Amrit-1 exploration well	2004/1572	Not Controlled Action	Completed
construction of pump station for pump diversion from the Barham River	2003/1242	Not Controlled Action	Completed
Drilling of Callister-1 exploration well in VIC/P51	2004/1633	Not Controlled Action	Completed
Enterprise 1 Exploration Drilling Program, near Port Campbell, Vic	2019/8438	Not Controlled Action	Completed
Exploration drilling for liquid/gaseous hydrocarbons	2004/1681	Not Controlled Action	Completed
Gas Field Development	2006/2635	Not Controlled Action	Completed
Gas Fields Development	2011/5879	Not Controlled Action	Completed
Halladale and Speculant Gas Pipeline Project, North of Port Campbell, Vic	2015/7551	Not Controlled Action	Completed
Henry-1 Exploration Well, Petroleum Permit Area VIC/P44	2005/2147	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Nirranda South Wind Farm Pty Ltd	2002/763	Not Controlled Action	Completed
Offshore exploration drilling within permit area VIC/P 37(v)	2004/1466	Not Controlled Action	Completed
Port Campbell Headland Walking Trail Realignment	2012/6676	Not Controlled Action	Completed
Residential/Resort/Golf Course development	2002/907	Not Controlled Action	Completed
Stage 1 residential subdivision, Anna Catherine Drive	2005/1992	Not Controlled Action	Completed
Track construction - Great Ocean Walk	2002/793	Not Controlled Action	Completed
VIC-P44 Stage 2 Gas Field Development	2007/3767	Not Controlled Action	Completed
Victorian Generator Project	2005/1984	Not Controlled Action	Completed
West Triton Drilling Program - Otway Basin	2007/3909	Not Controlled Action	Completed
Wind Farm Construction and Operation	2001/471	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Moonlight Head' 3D seismic survey, VIC/P38(V), VIC/P43 and VIC/RL8	2005/2236	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2005/2295	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey, Petroleum Exploration Permit Area EPP27	2006/2776	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in VIC/P50 and VIC/P46	2004/1810	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey VIC/P50	2005/2313	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D Siesmic Marine Survey	2008/4074	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey near King Island	2004/1461	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey within Torquay Sub-basin off sthn Victoria	2012/6256	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic program VIC/P38(v), VIC/P43 and VIC/RL8	2003/1137	Not Controlled Action (Particular Manner)	Post-Approval
Astrolabe 3D Marine Seismic Survey	2011/6048	Not Controlled Action (Particular Manner)	Post-Approval
Bernoulli 3D Seismic Survey	2006/3053	Not Controlled Action (Particular Manner)	Post-Approval
BHPBilliton Otway 3D Seismic Survey	2007/3443	Not Controlled Action (Particular Manner)	Post-Approval
Deepwater Sorell Basin 2001 Non-Exclusive 2D Seismic Survey	2001/156	Not Controlled Action (Particular Manner)	Post-Approval
Drill and Profile Exploration Well Somerset 1, License Area T34P	2009/5037	Not Controlled Action (Particular Manner)	Post-Approval
Enterprise Three-dimensional Transition Zone Seismic Survey, Victoria	2016/7800	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
La Bella 3D Marine Seismic Survey, Otway Basin, VIC	2012/6683	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
OTE10 2D Marine Seismic Survey	2009/5223	Not Controlled Action (Particular Manner)	Post-Approval
Otway Basin Exploration Drilling Campaign, Vic	2011/6125	Not Controlled Action (Particular Manner)	Post-Approval
Santos 2D Seismic Survey VIC/P44 & VIC/P51	2003/1213	Not Controlled Action (Particular Manner)	Post-Approval
Santos Otway 3d Seismic VIC/P44	2007/3367	Not Controlled Action (Particular Manner)	Post-Approval
Schomberg 3D Marine Seismic survey	2007/3868	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Survey in Petroleum Permit Area EPP27	2002/648	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Survey VIC-P46	2002/826	Not Controlled Action (Particular Manner)	Post-Approval
Speculant 3D Transition Zone Seismic Survey	2010/5558	Not Controlled Action (Particular Manner)	Post-Approval
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, Vic	2012/6565	Not Controlled Action (Particular Manner)	Post-Approval
Torquay Sub-basin (VIC/P62) OTE12-3D Seismic Survey	2012/6655	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5700	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Vic/P37(v) and Vic/P44 3D marine seismic survey	2003/1102	Not Controlled Action (Particular Manner)	Post-Approval
VIC P44 Gas Exploration Wells	2002/662	Not Controlled Action (Particular Manner)	Post-Approval
Vic-P51 and Vic-P52 2D seismic survey	2002/811	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D & 3D Seismic Surveys - Permit Area - VIC/P50	2008/4517	Referral Decision	Completed
3D Marine Seismic Survey	2011/6156	Referral Decision	Completed
3D Seismic Survey	2008/4014	Referral Decision	Completed
Portland Wave Energy Project	2008/3946	Referral Decision	Completed
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, VIC	2012/6545	Referral Decision	Completed
VICP61 2D Marine Seismic Survey	2008/3975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Bonney Coast Upwelling	South-east
West Tasmania Canyons	South-east

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Foraging	Likely to occur
Ardenna tenuirostris		
Short-tailed Shearwater [84292]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur
Morus serrator Australasian Gannet [1020]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging (annual high	Known to occur

Scientific Name	Behaviour	Presence
	use area)	
[Balaenoptera musculus brevicauda](#)		
Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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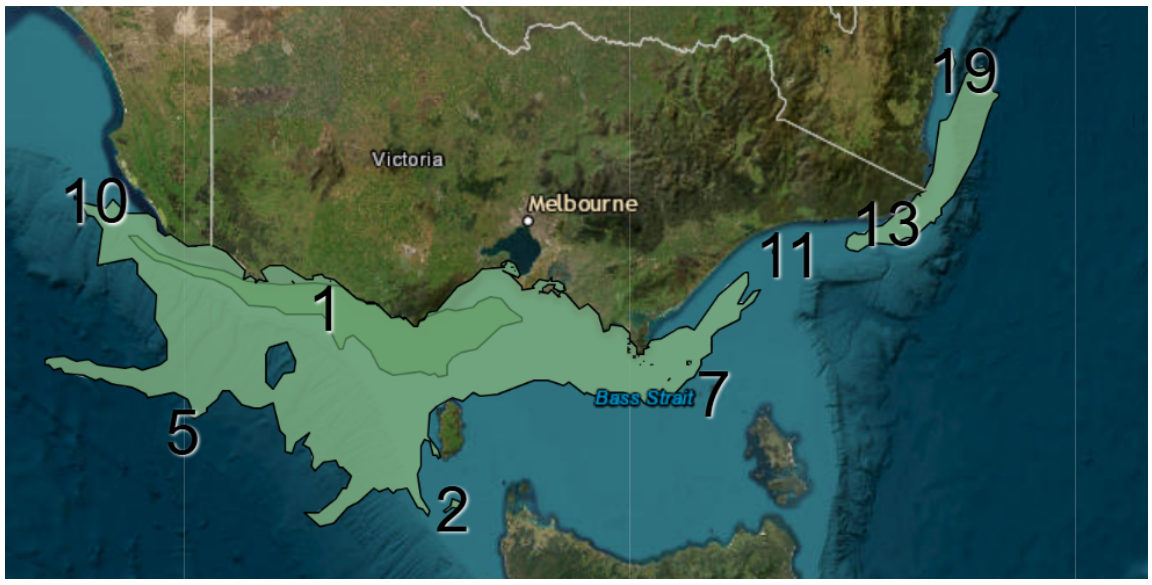
Appendix 5e – Monitoring Area PMST

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 22-Jul-2025



Monitoring Area

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	3
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	19
Listed Threatened Species:	175
Listed Migratory Species:	85

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	75
Commonwealth Heritage Places:	11
Listed Marine Species:	143
Whales and Other Cetaceans:	33
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	10
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	171
Regional Forest Agreements:	5
Nationally Important Wetlands:	27
EPBC Act Referrals:	262
Key Ecological Features (Marine):	6
Biologically Important Areas:	45
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Historic		
Great Ocean Road and Scenic Environs	VIC	Listed place
Point Nepean Defence Sites and Quarantine Station Area	VIC	Listed place
Quarantine Station and Surrounds	VIC	Within listed place

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Corner inlet	Within Ramsar site
Glenelg estuary and discovery bay wetlands	Within Ramsar site
Lavinia	Within 10km of Ramsar site
Piccaninnie ponds karst wetlands	Within Ramsar site
Port phillip bay (western shoreline) and bellarine peninsula	Within Ramsar site
Western port	Within Ramsar site

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Assemblages of species associated with open-coast salt-wedge estuaries of western and central	Endangered	Community likely to occur within area

Community Name	Threatened Category	Presence Text
Victoria ecological community		
Brogo Vine Forest of the South East Corner Bioregion	Endangered	Community may occur within area
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area
Giant Kelp Marine Forests of South East Australia	Endangered	Community may occur within area
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area
Illawarra and south coast lowland forest and woodland ecological community	Critically Endangered	Community may occur within area
Karst springs and associated alkaline fens of the Naracoorte Coastal Plain Bioregion	Endangered	Community likely to occur within area
King Island scrub complex	Endangered	Community likely to occur within area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Lowland Grassy Woodland in the South East Corner Bioregion	Critically Endangered	Community likely to occur within area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community likely to occur within area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (Eucalyptus ovata / E. brookeriana)	Critically Endangered	Community likely to occur within area

Community Name	Threatened Category	Presence Text
Tasmanian white gum (Eucalyptus viminalis) wet forest	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Acanthiza pusilla magnirostris		
King Island Brown Thornbill, Brown Thornbill (King Island) [91709]	Endangered	Species or species habitat likely to occur within area
Acanthornis magna greeniana		
King Island Scrubtit, Scrubtit (King Island) [82329]	Critically Endangered	Species or species habitat likely to occur within area
Anthochaera phrygia		
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area
Aquila audax fleayi		
Tasmanian Wedge-tailed Eagle, Wedge-tailed Eagle (Tasmanian) [64435]	Endangered	Species or species habitat may occur within area
Ardenna grisea		
Sooty Shearwater [82651]	Vulnerable	Breeding known to occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii graptogyne South-eastern Red-tailed Black-Cockatoo [25982]	Endangered	Foraging, feeding or related behaviour known to occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area
Ceyx azureus diemenensis Tasmanian Azure Kingfisher [25977]	Endangered	Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Roosting known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route known to occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Platycercus caledonicus brownii Green Rosella (King Island) [67041]	Vulnerable	Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Strepera fuliginosa colei Black Currawong (King Island) [67113]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Thinornis cucullatus cucullatus		
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
CRUSTACEAN		
Euastacus bidawalus		
Bidhawal Crayfish, Bidawal Crayfish, East Gippsland Spiny Crayfish [83136]	Endangered	Species or species habitat known to occur within area
Euastacus bispinosus		
Glenelg Spiny Freshwater Crayfish, Pricklyback [81552]	Endangered	Species or species habitat known to occur within area
Euastacus diversus		
Orbost Spiny Crayfish [66782]	Endangered	Species or species habitat may occur within area
FISH		
Epinephelus daemelii		
Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Gadopsis sp. SWV		
Western Victorian Blackfish [90722]	Endangered	Species or species habitat likely to occur within area
Galaxiella pusilla		
Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Endangered	Species or species habitat known to occur within area
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannoperca obscura		
Yarra Pygmy Perch [26177]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Nannoperca variegata		
Variegated Pygmy Perch, Ewens Pygmy Perch, Golden Pygmy Perch [26178]	Vulnerable	Species or species habitat known to occur within area
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area
Rexea solandri (eastern Australian population)		
Eastern Gemfish [76339]	Conservation Dependent	Species or species habitat likely to occur within area
Seriolella brama		
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
FROG		
Heleioporus australiacus flavopunctatus		
Southern Owl Frog, Southern Giant Burrowing Frog [92014]	Endangered	Species or species habitat likely to occur within area
Litoria aurea		
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area
Litoria raniformis		
Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
Litoria watsoni		
Southern Heath Frog, Watson's Tree Frog [91509]	Endangered	Species or species habitat known to occur within area
Mixophyes balbus		
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat may occur within area
Uperoleia martini		
Martin's Toadlet [1873]	Endangered	Species or species habitat known to occur within area
INSECT		
Synemon plana		
Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Antechinus minimus maritimus		
Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat known to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isoodon obesulus obesulus		
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area
Mastacomys fuscus mordicus		
Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat known to occur within area
Miniopterus orianae bassanii		
Southern Bent-wing Bat [87645]	Critically Endangered	Breeding known to occur within area
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat known to occur within area
Perameles gunnii Victorian subspecies		
Eastern Barred Bandicoot (Mainland) [88020]	Endangered	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
Petauroides volans		
Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area
Petaurus australis australis		
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area
Potorous longipes		
Long-footed Potoroo [217]	Endangered	Species or species habitat known to occur within area
Potorous tridactylus trisulcatus		
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat known to occur within area
Pseudomys fumeus		
Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area
Pseudomys shortridgei		
Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat known to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
OTHER		
Hyridella glenelgensis		
Glenelg Freshwater Mussel [82953]	Critically Endangered	Species or species habitat may occur within area
PLANT		
Acacia constablei		
Narrabarba Wattle [10798]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Acacia lanigera var. gracilipes [31652]	Endangered	Species or species habitat may occur within area
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area
Astelia australiana Tall Astelia [10851]	Vulnerable	Species or species habitat may occur within area
Astrotricha sp. Howe Range (D.E.Albrecht 1054) Long-leaf Star-hair [85676]	Critically Endangered	Species or species habitat likely to occur within area
Astrotricha sp. Wingan Inlet (J.A.Jeanes 2268) Wingan Star-hair [85675]	Endangered	Species or species habitat likely to occur within area
Caladenia calcicola Limestone Spider-orchid [10065]	Vulnerable	Species or species habitat likely to occur within area
Caladenia colorata Coloured Spider-orchid, Small Western Spider-orchid, Painted Spider-orchid [54999]	Endangered	Species or species habitat known to occur within area
Caladenia concolor Crimson Spider-orchid, Maroon Spider-orchid [5505]	Vulnerable	Species or species habitat may occur within area
Caladenia hastata Melblom's Spider-orchid [16118]	Endangered	Species or species habitat likely to occur within area
Caladenia insularis French Island Spider-orchid [24372]	Vulnerable	Species or species habitat known to occur within area
Caladenia orientalis Eastern Spider Orchid [83410]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia ornata Ornate Pink Fingers [76213]	Vulnerable	Species or species habitat known to occur within area
Caladenia robinsonii Frankston Spider-orchid [24375]	Endangered	Species or species habitat likely to occur within area
Caladenia tensa Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat may occur within area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat known to occur within area
Calochilus pulchellus Pretty Beard Orchid, Pretty Beard-orchid [84677]	Endangered	Species or species habitat may occur within area
Correa lawrenceana var. genoensis Genoa River Correa [66626]	Endangered	Species or species habitat may occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat known to occur within area
Deyeuxia ramosa Climbing Bent-grass [87970]	Critically Endangered	Species or species habitat likely to occur within area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat may occur within area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat may occur within area
Eucalyptus strzeleckii Strzelecki Gum [55400]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Euphrasia collina subsp. muelleri Purple Eyebright, Mueller's Eyebright [16151]	Endangered	Species or species habitat known to occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area
Grevillea infecunda Anglesea Grevillea [22026]	Vulnerable	Species or species habitat known to occur within area
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat known to occur within area
Hiya distans listed as Hypolepis distans Scrambling Ground-fern [92548]	Endangered	Species or species habitat likely to occur within area
Ixodia achillaeoides subsp. arenicola Sand Ixodia, Ixodia [21474]	Vulnerable	Species or species habitat known to occur within area
Lachnagrostis adamsonii Adamson's Blown-grass, Adamson's Blowngrass [76211]	Endangered	Species or species habitat may occur within area
Leiocarpa gatesii Wrinkled Buttons [76212]	Vulnerable	Species or species habitat known to occur within area
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat known to occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat known to occur within area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area
Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat likely to occur within area
Pomaderris halmaturina subsp. halmaturina Kangaroo Island Pomaderris [21964]	Vulnerable	Species or species habitat known to occur within area
Pomaderris parrisiae Parris' Pomaderris [22119]	Vulnerable	Species or species habitat likely to occur within area
Prasophyllum diversiflorum Gorae Leek-orchid [13210]	Endangered	Species or species habitat likely to occur within area
Prasophyllum frenchii Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]	Endangered	Species or species habitat known to occur within area
Prasophyllum litorale listed as Prasophyllum littorale Coastal Leek Orchid [55234]	Critically Endangered	Species or species habitat known to occur within area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat known to occur within area
Prasophyllum suaveolens Fragrant Leek-orchid [64956]	Endangered	Species or species habitat may occur within area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat known to occur within area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Pterostylis tenuissima Swamp Greenhood, Dainty Swamp Orchid [13139]	Vulnerable	Species or species habitat known to occur within area
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat may occur within area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat likely to occur within area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat known to occur within area
Spyridium cinereum Tiny Spyridium [13564]	Endangered	Species or species habitat known to occur within area
Taraxacum cygnorum Coast Dandelion, Native Dandelion [2508]	Vulnerable	Species or species habitat known to occur within area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat known to occur within area
Thelymitra matthewsii Spiral Sun-orchid [4168]	Endangered	Species or species habitat known to occur within area
Thelymitra orientalis Hoary Sun-orchid [88011]	Critically Endangered	Species or species habitat known to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat known to occur within area
REPTILE		

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Lissolepis coventryi Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
SHARK		
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Congregation or aggregation known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area
Centrophorus harrissoni Harrisson's Dogfish, Endeavour Dogfish, Dumb Gulper Shark, Harrison's Deepsea Dogfish [68444]	Conservation Dependent	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat known to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Breeding known to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Congregation or aggregation known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Breeding known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Eubalaena australis as Balaena glacialis australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus		
Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus		
Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus		
Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae		
Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mobula birostris as Manta birostris		
Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Roosting known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa incana Wandering Tattler [831]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - CROWS NEST CAMP - QUEENSCLIFF [21028]	VIC
Defence - CROWS NEST CAMP - QUEENSCLIFF [21027]	VIC
Defence - CROWS NEST CAMP - QUEENSCLIFF [21026]	VIC
Defence - CROWS NEST CAMP - QUEENSCLIFF [21029]	VIC

Commonwealth Land Name	State
Defence - HMAS CERBERUS [20098]	VIC
Defence - HMAS CERBERUS [20090]	VIC
Defence - HMAS CERBERUS [20096]	VIC
Defence - HMAS CERBERUS [20093]	VIC
Defence - HMAS CERBERUS [20095]	VIC
Defence - HMAS CERBERUS [20094]	VIC
Defence - HMAS CERBERUS [20091]	VIC
Defence - HMAS CERBERUS [20097]	VIC
Defence - HMAS CERBERUS [20102]	VIC
Defence - HMAS CERBERUS [20104]	VIC
Defence - HMAS CERBERUS [20100]	VIC
Defence - HMAS CERBERUS [20101]	VIC
Defence - HMAS CERBERUS [20103]	VIC
Defence - HMAS CERBERUS [20099]	VIC
Defence - HMAS CERBERUS [20082]	VIC
Defence - HMAS CERBERUS [20086]	VIC
Defence - HMAS CERBERUS [20087]	VIC
Defence - HMAS CERBERUS [20083]	VIC
Defence - HMAS CERBERUS [20081]	VIC
Defence - HMAS CERBERUS [20089]	VIC
Defence - HMAS CERBERUS [20092]	VIC
Defence - HMAS CERBERUS [20085]	VIC
Defence - HMAS CERBERUS [20088]	VIC
Defence - HMAS CERBERUS [20080]	VIC
Defence - HMAS CERBERUS [20084]	VIC
Defence - STAFF COLLEGE-FORT QUEENSCLIFF [21034]	VIC
Defence - STAFF COLLEGE-FORT QUEENSCLIFF [21033]	VIC

Commonwealth Land Name	State
Defence - STAFF COLLEGE-FORT QUEENSCLIFF [21032]	VIC
Defence - STAFF COLLEGE-FORT QUEENSCLIFF [21030]	VIC
Defence - STAFF COLLEGE-FORT QUEENSCLIFF [21031]	VIC
Defence - SWAN ISLAND TRAINING AREA [21448]	VIC
Defence - SWAN ISLAND TRAINING AREA [21447]	VIC
Defence - SWAN ISLAND TRAINING AREA [21446]	VIC
Defence - TRAINING CENTRE (Norris Barracks) - Portsea [21025]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21008]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21012]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21009]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21017]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21023]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21022]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21024]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21021]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21020]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21019]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21013]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21011]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21010]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21016]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21014]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21015]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21018]	VIC
Defence - Training Depot, Darts RD 3305 Portland [21007]	VIC
Defence - WARRNAMBOOL TRAINING DEPOT [21111]	VIC
Defence - WEST HEAD GUNNERY RANGE [21112]	VIC

Commonwealth Land Name	State
Transport and Regional Services - Australian Maritime Safety Authority	
Commonwealth Land - Australian Maritime Safety Authority [41288]	SA
Commonwealth Land - Australian Maritime Safety Authority [41289]	SA
Unknown	
Commonwealth Land - [21489]	VIC
Commonwealth Land - [60114]	TAS
Commonwealth Land - [21488]	VIC
Commonwealth Land - [21496]	VIC
Commonwealth Land - [21498]	VIC
Commonwealth Land - [21490]	VIC
Commonwealth Land - [21492]	VIC
Commonwealth Land - [21497]	VIC
Commonwealth Land - [21491]	VIC
Commonwealth Land - [21570]	VIC
Commonwealth Land - [22391]	VIC
Commonwealth Land - [21509]	VIC
Commonwealth Land - [21582]	VIC
Commonwealth Land - [21583]	VIC
Commonwealth Land - [21487]	VIC

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Historic		
Cape Northumberland Lighthouse	SA	Listed place
Cape Wickham Lighthouse	TAS	Listed place
Fort Queenscliff	VIC	Listed place
Gabo Island Lighthouse	VIC	Listed place
HMAS Cerberus Central Area Group	VIC	Listed place
Montague Island Lighthouse	NSW	Listed place
Sorrento Post Office	VIC	Listed place

Name	State	Status
Swan Island Defence Precinct	VIC	Listed place
Wilsons Promontory Lighthouse	VIC	Listed place
Natural		
HMAS Cerberus Marine and Coastal Area	VIC	Listed place
Swan Island and Naval Waters	VIC	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat known to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Breeding known to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting known to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Roosting known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area
Morus capensis Cape Gannet [59569]		Breeding known to occur within area
Morus serrator Australasian Gannet [1020]		Breeding known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area overfly marine area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Pelecanoides urinatrix Common Diving-Petrel [1018]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini		
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis		
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis		
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes		
Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola		
Wood Sandpiper [829]		Roosting known to occur within area overfly marine area
Tringa incana as Heteroscelus incanus		
Wandering Tattler [831]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
[Acentronura tentaculata](#) Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
[Campichthys tryoni](#) Tryon's Pipefish [66193]		Species or species habitat may occur within area
[Cosmocampus howensis](#) Lord Howe Pipefish [66208]		Species or species habitat may occur within area
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
[Hippocampus abdominalis](#) Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
[Hippocampus minotaur](#) Bullneck Seahorse [66705]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys mollisoni Mollison's Pipefish [66260]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Vanacampus vercoi Verco's Pipefish [66286]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat known to occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Current Scientific Name	Status	Type of Presence
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Apollo	Multiple Use Zone (IUCN VI)
Beagle	Multiple Use Zone (IUCN VI)
East Gippsland	Multiple Use Zone (IUCN VI)
Franklin	Multiple Use Zone (IUCN VI)
Zeehan	Multiple Use Zone (IUCN VI)
Beagle	National Park Zone (IUCN II)
Franklin	National Park Zone (IUCN II)
Nelson	National Park Zone (IUCN II)
Zeehan	National Park Zone (IUCN II)
Zeehan	Special Purpose Zone (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Aire River	Heritage River	VIC
Aire River W.R.	Natural Features Reserve	VIC
Aireys Inlet B.R.	Natural Features Reserve	VIC
Anglesea B.R.	Natural Features Reserve	VIC
Anser Island	Reference Area	VIC
Baawang	Reference Area	VIC
Bald Hills B.R.	Natural Features Reserve	VIC
Balnarring G95 B.R.	Natural Features Reserve	VIC
Barham Paradise S.R.	Natural Features Reserve	VIC
Barunguba Montague Island	Nature Reserve	NSW
Barwon Bluff	Marine Sanctuary	VIC
Bass River SS.R.	Natural Features Reserve	VIC
Batemans	Marine Park	NSW
Bats Ridge W.R	Nature Conservation Reserve	VIC
Bay of Islands Coastal Park	Conservation Park	VIC
Bellarine I110 B.R.	Natural Features Reserve	VIC
Beowa	National Park	NSW
Beware Reef	Marine Sanctuary	VIC
Bolwarra H43 B.R.	Natural Features Reserve	VIC
Bolwarra H44 B.R.	Natural Features Reserve	VIC
Bolwarra H45 B.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Breamlea F.F.R.	Nature Conservation Reserve	VIC
Buckley N.C.R.	Natural Features Reserve	VIC
Bunurong	Marine National Park	VIC
Canunda	National Park	SA
Cape Conran Coastal Park	Conservation Park	VIC
Cape Howe	Wilderness Zone	VIC
Cape Howe	Marine National Park	VIC
Cape Liptrap Coastal Park	Conservation Park	VIC
Cape Nelson	State Park	VIC
Cape Patterson N.C.R	Natural Features Reserve	VIC
Cape Wickham	Conservation Area	TAS
Cape Wickham	State Reserve	TAS
Carpenter Rocks	Conservation Park	SA
Cataraqui Point	Conservation Area	TAS
Churchill Island	Marine National Park	VIC
Cone Islet	Conservation Area	TAS
Conewarre K47 SS.R.	Natural Features Reserve	VIC
Conewarre K48 SS.R.	Natural Features Reserve	VIC
Corner Inlet Marine and Coastal Park	National Parks Act Schedule 4 park or reserve	VIC
Crib Point G228 B.R.	Natural Features Reserve	VIC
Crib Point G229 B.R.	Natural Features Reserve	VIC
Croajingolong	National Park	VIC
Curtis Island	Nature Reserve	TAS

Protected Area Name	Reserve Type	State
Devils Tower	Nature Reserve	TAS
Dingley Dell	Conservation Park	SA
Disappointment Bay	State Reserve	TAS
Discovery Bay	Marine National Park	VIC
Discovery Bay Coastal Park	Conservation Park	VIC
Douglas Point	Conservation Park	SA
Drakes B.R.	Natural Features Reserve	VIC
Dry Creek	Forest Reserve	SA
Eagle Rock	Marine Sanctuary	VIC
East Gippsland Coastal streams	Natural Catchment Area	VIC
East Moncoeur Island	Conservation Area	TAS
Edna Bowman N.C.R.	Natural Features Reserve	VIC
Ewens Ponds	Conservation Park	SA
Fingal B.R	Natural Features Reserve	VIC
Flinders G234 B.R.	Natural Features Reserve	VIC
Flinders N.F.R.	Natural Features Reserve	VIC
French Island	National Park	VIC
French Island (north)	Reference Area	VIC
French Island G230 B.R	Natural Features Reserve	VIC
Glenelg River	Heritage River	VIC
Goose Lagoon W.R	Natural Features Reserve	VIC
Gorae B.R.	Natural Features Reserve	VIC
Great Otway	National Park	VIC

Protected Area Name	Reserve Type	State
Hedditch Hill S.R.	Natural Features Reserve	VIC
Hogan Group	Conservation Area	TAS
Johanna Falls S.R.	Natural Features Reserve	VIC
Johnstones Creek F.R	Nature Conservation Reserve	VIC
Kangerong N.C.R	Natural Features Reserve	VIC
Kentbruck H14 B.R	Natural Features Reserve	VIC
Kentbruck H50 B.R.	Natural Features Reserve	VIC
Kent Group	National Park	TAS
Kilcunda N.C.R.	Natural Features Reserve	VIC
Lady Julia Percy Island W.R.	Nature Conservation Reserve	VIC
Lake Aringa W.R	Nature Conservation Reserve	VIC
Lake Connewarre W.R	Natural Features Reserve	VIC
Lake Gillear W.R	Natural Features Reserve	VIC
Latrobe B.R.	Natural Features Reserve	VIC
Lavinia	State Reserve	TAS
Lawrence Rocks W.R.	Nature Conservation Reserve	VIC
Lily Pond B.R.	Natural Features Reserve	VIC
Lonsdale Lakes W.R	Nature Conservation Reserve	VIC
Lower Glenelg	National Park	VIC
Lower Glenelg River	Conservation Park	SA
Lower South East	Marine Park	SA

Protected Area Name	Reserve Type	State
Main Ridge N.C.R.	Natural Features Reserve	VIC
Marengo N.C.R.	Nature Conservation Reserve	VIC
Marengo Reefs	Marine Sanctuary	VIC
Merri	Marine Sanctuary	VIC
Merricks Creek B.R.	Natural Features Reserve	VIC
Mornington Peninsula	National Park	VIC
Mount Richmond	National Park	VIC
Mount Vereker Creek	Natural Catchment Area	VIC
Mouzie B.R	Natural Features Reserve	VIC
Mouzie N.F.R	Natural Features Reserve	VIC
Mushroom Reef	Marine Sanctuary	VIC
Nadgee	Nature Reserve	NSW
Narrawong F.R.	Nature Conservation Reserve	VIC
Nelson SS.R.	Natural Features Reserve	VIC
Nene Valley	Conservation Park	SA
New Year Island	Game Reserve	TAS
Nooramunga Marine & Coastal Park	National Parks Act Schedule 4 park or reserve	VIC
NOORAMUNGA STATE FAUNAL RESERVE	Nature Conservation Reserve	VIC
North East Islet	Nature Reserve	TAS
Painkalac Creek	Reference Area	VIC
Parker River	Reference Area	VIC
Phillip Island Nature Park	Other	VIC

Protected Area Name	Reserve Type	State
Piccaninnie Ponds	Conservation Park	SA
Point Addis	Marine National Park	VIC
Point Danger	Marine Sanctuary	VIC
Point Hicks	Marine National Park	VIC
Point Nepean	National Park	VIC
Port Campbell	National Park	VIC
Portland H46 B.R.	Natural Features Reserve	VIC
Portland H47 B.R.	Natural Features Reserve	VIC
Port Phillip Heads	Marine National Park	VIC
Princetown W.R	Natural Features Reserve	VIC
Queenscliff N.F.R	Natural Features Reserve	VIC
Rame Head	Remote and Natural Area - Schedule 6, National Parks Act	VIC
Reef Island and Bass River Mouth N.C.R	Natural Features Reserve	VIC
Rodondo Island	Nature Reserve	TAS
Salt Lagoon, St Leonards W.R	Nature Conservation Reserve	VIC
Sandpatch	Wilderness Zone	VIC
Seal Creek	Reference Area	VIC
Seal Islands W.R.	Nature Conservation Reserve	VIC
Seal Rocks	Conservation Area	TAS
Seal Rocks	State Reserve	TAS
Shallow Inlet Marine and Coastal Park	National Parks Act Schedule 4 park or reserve	VIC
Southern Wilsons Promontory	Remote and Natural Area - Schedule 6, National Parks Act	VIC

Protected Area Name	Reserve Type	State
Stokes Point	Conservation Area	TAS
Stony Creek (Otways)	Reference Area	VIC
Sugarloaf Rock	Conservation Area	TAS
Swan Bay - Edwards Point W.R	Nature Conservation Reserve	VIC
The Arches	Marine Sanctuary	VIC
Tower Hill W.R	Natural Features Reserve	VIC
Trewalla H48 B.R.	Natural Features Reserve	VIC
Trewalla H49 B.R.	Natural Features Reserve	VIC
Twelve Apostles	Marine National Park	VIC
Tyrendarra F.R	Nature Conservation Reserve	VIC
Unnamed (No.HA1038)	Heritage Agreement	SA
Unnamed (No.HA1404)	Heritage Agreement	SA
Unnamed (No.HA1457)	Heritage Agreement	SA
Unnamed (No.HA42)	Heritage Agreement	SA
Unnamed (No.HA497)	Heritage Agreement	SA
Unnamed C0293	Private Nature Reserve	VIC
Unnamed P0176	Private Nature Reserve	VIC
Ventnor B.R.	Natural Features Reserve	VIC
Vereker Creek	Reference Area	VIC
Waratah B.R	Natural Features Reserve	VIC
West Moncoeur Island	Nature Reserve	TAS
Wild Dog B.R.	Natural Features Reserve	VIC
Wild Dog Creek SS.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Wilsons Promontory	National Park	VIC
Wilsons Promontory	Wilderness Zone	VIC
Wilsons Promontory	Marine National Park	VIC
Wilsons Promontory Islands	Remote and Natural Area - Schedule 6, National Parks Act	VIC
Wilsons Promontory Marine Park	National Parks Act Schedule 4 park or reserve	VIC
Wilsons Promontory Marine Reserve	National Parks Act Schedule 4 park or reserve	VIC
Wongarra B.R.	Natural Features Reserve	VIC
Wonthaggi G237 B.R.	Natural Features Reserve	VIC
Wonthaggi G239 B.R.	Natural Features Reserve	VIC
Wonthaggi G240 B.R.	Natural Features Reserve	VIC
Wonthaggi G241 B.R.	Natural Features Reserve	VIC
Wonthaggi Wetlands Reserve	Natural Features Reserve	VIC
Yallock-Bulluk Marine and Coastal Park	National Parks Act Schedule 3 Other Parks	VIC
Yambuk F.F.R.	Nature Conservation Reserve	VIC
Yambuk Wetlands N.C.R.	Natural Features Reserve	VIC
Yanakie F.R	Nature Conservation Reserve	VIC

Regional Forest Agreements

[Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
East Gippsland RFA	Victoria

RFA Name	State
Eden RFA	New South Wales
Gippsland RFA	Victoria
Tasmania RFA	Tasmania
West Victoria RFA	Victoria

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Aire River	VIC
Anderson Inlet	VIC
Benedore River	VIC
Corner Inlet	VIC
Ewens Ponds	SA
Glenelg Estuary	VIC
Glenelg River	VIC
Lake Connewarre State Wildlife Reserve	VIC
Long Swamp	VIC
Lower Aire River Wetlands	VIC
Lower Merri River Wetlands	VIC
Mallacoota Inlet Wetlands	VIC
Mud Islands	VIC
Nadgee Lake and tributary wetlands	NSW
Pearshape Lagoon 1	TAS
Pearshape Lagoon 2	TAS
Pearshape Lagoon 3	TAS
Pearshape Lagoon 4	TAS
Piccaninnie Ponds	SA
Powlett River Mouth	VIC
Princetown Wetlands	VIC

Wetland Name	State
Shallow Inlet Marine & Coastal Park	VIC
Swan Bay & Swan Island	VIC
Thurra River	VIC
Tower Hill	VIC
Western Port	VIC
Yambuk Wetlands	VIC

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Apollo Bay to Skenes Creek Coastal Trail	2022/09274		Assessment
Aurora Green Offshore Wind Farm Preliminary Surveys	2024/09968		Completed
Barwon Heads Road Reserve Road to Lower Duneed Road Upgrade Project	2023/09724		Completed
Blue Mackerel North Offshore Wind Farm Marine Surveys	2024/09934		Completed
Blue Marlin Offshore Wind Energy Project	2023/09532		Completed
Cape Winds Offshore Windfarm Geophysical, Geotechnical and Marine Studies	2023/09629		Completed
City Of Greater Geelong Mosquito Control Program 2021-2030, Vic	2020/8782		Approval
Decommissioning of the Minerva Pipeline in Victorian state waters	2024/09879		Completed
Decommissioning of the Minerva Pipeline in Victorian state waters ? May 2025	2025/10138		Referral Decision
Establishment of a 6 turbine windfarm near Wonthaggi	2002/820		Completed
Geographe-A gas exploration well	2000/82		Completed
Gippsland Dawn Offshore Wind Project Geophysical and Geotechnical Investigations	2024/10030		Referral Decision
Gippsland Offshore Wind Farm Marine Survey Investigations	2023/09682		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Gippsland Skies Offshore Wind Project marine surveys (investigations)	2024/09991		Referral Decision
Greater Gippsland Offshore Wind Project	2022/09379		Assessment
Greater Gippsland Offshore Wind Project Initial Marine Field Investigations	2022/09374		Completed
Great Ocean Road Coastal Trail (GORCT) ? Fairhaven to Grey River	2024/10073		Completed
Hydrocarbon exploration wells	2003/1062		Completed
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia East	2024/09795		Completed
Navigator North Offshore Wind Farm ? Early Marine Survey Investigations	2024/10093		Referral Decision
Normanville Energy Park	2024/10070		Assessment
Offshore Tidal Energy Facility and Submarine Cable	2008/4480		Completed
Otway Astrolabe 3D Marine Seismic Survey, Otway Basin	2012/6421		Completed
Point Nepean Research & Education Field Station	2024/09963		Completed
Portland Energy Park	2024/09947		Assessment
Preliminary Site Investigations for Great Eastern Offshore Wind Project	2024/09890		Referral Decision
Seadragon Offshore Wind, Early Marine Surveys	2023/09670		Completed
SEA Gas Project transmission pipeline	2001/513		Completed
Shearwater 2D and 3D marine seismic survey	2005/2180		Completed
SMAP telecommunications submarine cable installation	2024/09989		Completed
South East Australia Carbon Capture and Storage Project, Commonwealth waters	2023/09732		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Southern Winds Offshore Wind Project	2022/09435		Completed
Southern Winds Offshore Wind Project Initial Marine Field Investigations	2022/09436		Completed
Spinifex Offshore Surveys	2022/09359		Completed
Spinifex Offshore Wind Farm - Offshore Investigations	2024/09918		Referral Decision
Strike Oil NL Seismic Surveys	2000/107		Completed
Thylacine-A Exploration Well	2000/81		Completed
Vic-P51 and Vic-P52 3D seismic survey	2002/799		Completed
Controlled action			
Alston-1 petroleum exploration well, permit VIC/P44	2003/1315	Controlled Action	Post-Approval
Bald Hills Wind Farm 80 Turbines	2002/730	Controlled Action	Post-Approval
Casino Gas Field Development	2003/1295	Controlled Action	Post-Approval
Crib Point to Pakenham Gas Pipeline, Vic	2018/8297	Controlled Action	Completed
Establishment of plantation for use of effluent water	2003/1063	Controlled Action	Completed
Gas Import Facility, Crib Point, Vic	2018/8298	Controlled Action	Completed
Glenelg Dolomite Quarry	2017/8021	Controlled Action	Post-Approval
Green Point Wind Farm	2001/529	Controlled Action	Post-Approval
Kentbruck Green Power Hub, Vic	2019/8510	Controlled Action	Assessment Approach
Lonsdale Golf Club Redevelopment	2003/969	Controlled Action	Post-Approval
Lorne Golf Course redevelopment	2004/1513	Controlled Action	Post-Approval
Mosquito Control	2005/2132	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Otway Development	2002/621	Controlled Action	Post-Approval
Pacific Hydro (Portland) Wind Farm SW Victoria	2000/18	Controlled Action	Post-Approval
Pelican Point residential subdivision	2006/2529	Controlled Action	Completed
Port Phillip Bay Channel Deepening	2002/576	Controlled Action	Post-Approval
Redevelopment of post office and construction of dwellings	2007/3639	Controlled Action	Completed
Residential and Golf Course Development Project	2003/1144	Controlled Action	Post-Approval
Residential Subdivision & Infrastructure Parish of Belfast	2005/1954	Controlled Action	Completed
Schomberg 3D Marine Seismic Survey	2007/3754	Controlled Action	Completed
Star of the South Offshore Wind Farm Project	2020/8650	Controlled Action	Guidelines Issued
Strike Oil Gas Exploration Well, Otway Basin (VIC/P44)	2000/97	Controlled Action	Completed
Twelve Apostles Saddle Lookout	2019/8571	Controlled Action	Post-Approval
VIC Offshore Windfarm	2021/8966	Controlled Action	Assessment Approach
VICP61 2D Marine Seismic Survey	2008/4075	Controlled Action	Completed
Victorian Desalination Project, Bass Coast	2008/3948	Controlled Action	Post-Approval
Wind Turbines	2001/439	Controlled Action	Completed
Yolla Gas Field (TRL1) Development	2001/321	Controlled Action	Post-Approval
Not controlled action			
2004/2005 drilling program for exploration and production (VIC 01-06, 09-11, 16, 18 & 19 and VIC/RL	2003/1282	Not Controlled Action	Completed
2D seismic Survey in VIC/P55, VIC/RL2 and VIC/P41	2004/1876	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
accomodation units and associatedadministration and recreational facilities	2001/430	Not Controlled Action	Completed
Airey Inlet water reclamation plant to Anglesea sewerage system	2006/2539	Not Controlled Action	Completed
Allendale wind farm	2007/3549	Not Controlled Action	Completed
Alteration of Grass Maintenance Regime within Powling St Wetlands	2012/6527	Not Controlled Action	Completed
Amrit-1 exploration well	2004/1572	Not Controlled Action	Completed
Anglesea Mine South Wall Vegetation removal, Anglesea, Vic	2017/8060	Not Controlled Action	Completed
Apollo Bay Water Storage Basin, VIC	2012/6484	Not Controlled Action	Completed
Aquacullture facility for rainbow trout and yabbies and recreational facilities	2002/822	Not Controlled Action	Completed
Barwon Heads Rd gas pipeline installation	2006/2769	Not Controlled Action	Completed
Barwon Heads Stormwater Outfall upgrade, Victoria	2016/7650	Not Controlled Action	Completed
Biodiversity Impacts Audit	2011/6191	Not Controlled Action	Completed
Bluff Heights Estate Stages 2 to 4	2003/1047	Not Controlled Action	Completed
Boneo Park Equestrian Centre	2008/4639	Not Controlled Action	Completed
CO2 geosequestration - Otway Basin Pilot Project	2006/2699	Not Controlled Action	Completed
Communications tower extension	2003/1099	Not Controlled Action	Completed
Construct a Recycled Water Pipeline from Somers Treatment Plant to Blue Scope S	2009/4982	Not Controlled Action	Completed
Construction and operation of Barwon Water biosolids treatment facility	2008/4345	Not Controlled Action	Completed
Construction of a flexi mat boat ramp	2011/5838	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Construction of an ocean access boat ramp at Bastion Point	2004/1407	Not Controlled Action	Completed
Construction of Barwon Heads Bridge	2005/2375	Not Controlled Action	Completed
Construction of Infrastructure to Extract, Treat & Transfer Groundwater to Wurde	2008/4104	Not Controlled Action	Completed
Construction of Overtaking Lanes on Great Ocean Rd	2008/4044	Not Controlled Action	Completed
construction of pump station for pump diversion from the Barham River	2003/1242	Not Controlled Action	Completed
Construction of the Edgars Road Extension, from Childs Road, Lalor to Cooper Street, Epping	2003/1135	Not Controlled Action	Completed
Cowes Primary School Gymnasium	2020/8683	Not Controlled Action	Completed
Development of Pt Nepean Quarantine Station (former) National Centre for Coasts and Climate	2008/4653	Not Controlled Action	Completed
Divestment of Norris Barracks	2003/963	Not Controlled Action	Completed
Dredging of Tuross Lake channel and depositon of spoil in lake	2004/1554	Not Controlled Action	Completed
Drilling of Callister-1 exploration well in VIC/P51	2004/1633	Not Controlled Action	Completed
Eight Mile Creek Drainage Works, Peacocks Road, Eight Mile Creek, SA	2014/7170	Not Controlled Action	Completed
Enterprise 1 Exploration Drilling Program, near Port Campbell, Vic	2019/8438	Not Controlled Action	Completed
Exploration drilling for liquid/gaseous hydrocarbons	2004/1681	Not Controlled Action	Completed
Fabrication and Spooling of Pipe Strings at Crib Point	2008/4127	Not Controlled Action	Completed
Ferry Service Infrastructure Development	2001/269	Not Controlled Action	Completed
Flinders Backlog Sewer Project	2005/2275	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Gas Field Development	2006/2635	Not Controlled Action	Completed
Gas Fields Development	2011/5879	Not Controlled Action	Completed
Gas Pipeline Installation	2005/2495	Not Controlled Action	Completed
Gippsland Basin Seismic Programme	2004/1866	Not Controlled Action	Completed
Gleneig Spiny Crayfish Habitat Rehabilitation	2011/6164	Not Controlled Action	Completed
Golflinks Road Residential Development & Water Storage Facility at Barwon Heads	2004/1793	Not Controlled Action	Completed
Grevillea infecunda tip cuttings and soil samples	2005/1979	Not Controlled Action	Completed
Halladale and Speculant Gas Pipeline Project, North of Port Campbell, Vic	2015/7551	Not Controlled Action	Completed
Hemingway1/Oil Exploration	2001/177	Not Controlled Action	Completed
Henry-1 Exploration Well, Petroleum Permit Area VIC/P44	2005/2147	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Installation of a 35 metre telecommunications facility at Jirrahlinga Animal San	2003/1151	Not Controlled Action	Completed
Installation of optic fibre cable from Inverloch, Victoria to Stanley, Tasmania	2002/906	Not Controlled Action	Completed
Kelly Swamp Boardwalk Construction	2010/5371	Not Controlled Action	Completed
Kipper Tuna Turrum Project Maintenance Dredging	2010/5430	Not Controlled Action	Completed
Kongorong Wind Farm	2002/568	Not Controlled Action	Completed
Lot 5 Pelican Point Road, Pelican Point SA - Proposed New Dwelling	2021/9011	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Maintenance and priority works to heritage buildings at Point Nepean Quarantine	2006/3151	Not Controlled Action	Completed
Maintenance dredging of Yaringa Channel	2004/1360	Not Controlled Action	Completed
Maintenance Dredging South Channel 2012	2011/6198	Not Controlled Action	Completed
Maintenance of Access Track and Weed Removal	2009/4973	Not Controlled Action	Completed
Maintenance works at Barwon Heads Bridge	2003/1199	Not Controlled Action	Completed
Marine and Freshwater Resources Institute (MAFRI) Facility	2000/121	Not Controlled Action	Completed
Melville 1 Oil Exploration Well	2001/167	Not Controlled Action	Completed
Merricks Beach Backlog Sewer Project	2010/5300	Not Controlled Action	Completed
Minerva Cut Back Project, Vic	2017/8036	Not Controlled Action	Completed
Newfield wind farm	2007/3226	Not Controlled Action	Completed
Newhaven Yacht Squadron marina extension	2004/1450	Not Controlled Action	Completed
Nirranda South Wind Farm Pty Ltd	2002/763	Not Controlled Action	Completed
Northright-1 Exploration Well	2001/209	Not Controlled Action	Completed
Ocean Grove rising main 2 upgrade	2009/4978	Not Controlled Action	Completed
Ocean Grove Rising Main 2 Upgrade (OGRM2) - East Section & River Crossing	2010/5508	Not Controlled Action	Completed
Oceanlinx South Australia 1mW Greenwave Project	2012/6528	Not Controlled Action	Completed
Offshore exploration drilling within permit area VIC/P 37(v)	2004/1466	Not Controlled Action	Completed
Offshore Petroleum Exploration	2001/289	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Optic fibre cable installation - San Remo to Cowes	2005/2386	Not Controlled Action	Completed
Piccaninnie Ponds flow path restoration project, SA	2013/6711	Not Controlled Action	Completed
Pipeline easement regrowth removal	2011/5817	Not Controlled Action	Completed
Point Nepean Quarantine Station (former)/Restoration of Medical Superintendent's	2006/3149	Not Controlled Action	Completed
Port Campbell Headland Walking Trail Realignment	2012/6676	Not Controlled Action	Completed
Portland Landfill Borehole Installation, Vic	2017/7886	Not Controlled Action	Completed
Port Phillip Channel Deepening Project - Trial Dredge Program	2005/2164	Not Controlled Action	Completed
Proposed replacement of existing road culvert	2013/7077	Not Controlled Action	Completed
Queenscliff Harbour Redevelopment	2004/1352	Not Controlled Action	Completed
Railway Bridge (H0151) Partial Demolition, Merri River	2010/5534	Not Controlled Action	Completed
Redevelopment Project to Upgrade and Extend the Portland Trawler Wharf	2008/4317	Not Controlled Action	Completed
Rehabilitation of Lake Connewarre State Game Reserve	2002/708	Not Controlled Action	Completed
Remedial Works to the Swan Island Bridge	2003/1129	Not Controlled Action	Completed
Replacement of sewer pipelines	2002/623	Not Controlled Action	Completed
Residential/Resort/Golf Course development	2002/907	Not Controlled Action	Completed
Residential Development, 409 The Esplanade, St Leonards	2006/2950	Not Controlled Action	Completed
Residential Dwelling	2004/1896	Not Controlled Action	Completed
Ryan Corner Wind Farm	2005/2142	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Sole-2 appraisal gas well, VIC/RL3	2002/636	Not Controlled Action	Completed
Sole gas field development	2003/937	Not Controlled Action	Completed
Stage 1 residential subdivision, Anna Catherine Drive	2005/1992	Not Controlled Action	Completed
St Quentin Consulting Pty Ltd /Residential development/305 Great Ocean Road, Jan Juc/VIC/Development	2014/7184	Not Controlled Action	Completed
Telstra optic fibre cable across Bass Strait - Sub bottom profiler Surve	2002/779	Not Controlled Action	Completed
To construct a shared trail within the Arthurs Seat Road, road reserve south side from Mornington Fl	2004/1565	Not Controlled Action	Completed
Torquay Sewerage Strategy - pipe replacement between Torquay and the Black Rock	2004/1704	Not Controlled Action	Completed
Track construction - Great Ocean Walk	2002/793	Not Controlled Action	Completed
Transfer of 90ha Point Nepean Quarantine Station from Commonwealth to Victorian	2008/4521	Not Controlled Action	Completed
Upgrade and Repairs to Flinders Pier	2008/4331	Not Controlled Action	Completed
Venus Bay Outfall Extension	2004/1555	Not Controlled Action	Completed
VIC-P44 Stage 2 Gas Field Development	2007/3767	Not Controlled Action	Completed
Victorian Generator Project	2005/1984	Not Controlled Action	Completed
West Triton Drilling Program - Gippsland Basin	2007/3915	Not Controlled Action	Completed
West Triton Drilling Program - Otway Basin	2007/3909	Not Controlled Action	Completed
Wind Farm Construction and Operation	2001/471	Not Controlled Action	Completed
Not controlled action (particular manner)			

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
'Moonlight Head' 3D seismic survey, VIC/P38(V), VIC/P43 and VIC/RL8	2005/2236	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2005/2295	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey, EPP33	2004/1794	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey in Permit Areas T/32P and T/33P	2002/845	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2008/3962	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2003/1214	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey, Petroleum Exploration Permit Area EPP27	2006/2776	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in the Sole gas field and adjacent acreage in the Gippsland Basin (VIC RL/3 & VIC/	2002/871	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in VIC/P50 and VIC/P46	2004/1810	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Program in Bass Strait	2008/4040	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey VIC/P50	2005/2313	Not Controlled Action (Particular Manner)	Post-Approval
2D Siesmic Marine Survey	2008/4074	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D marine seismic survey near King Island	2004/1461	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey within Torquay Sub-basin off sthn Victoria	2012/6256	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic program VIC/P38(v), VIC/P43 and VIC/RL8	2003/1137	Not Controlled Action (Particular Manner)	Post-Approval
Apache 3D seismic exploration survey	2006/3146	Not Controlled Action (Particular Manner)	Post-Approval
Aroo Chappell 3D seismic survey	2010/5701	Not Controlled Action (Particular Manner)	Post-Approval
Astrolabe 3D Marine Seismic Survey	2011/6048	Not Controlled Action (Particular Manner)	Post-Approval
Barwon Heads Rising Main No.11 Sewerage Pipe Upgrade	2008/4091	Not Controlled Action (Particular Manner)	Post-Approval
Bass Basin 2D and 3D seismic surveys (T/38P & T/37P)	2007/3650	Not Controlled Action (Particular Manner)	Post-Approval
Benbows Paddock residential development, Cape Bridgewater	2007/3247	Not Controlled Action (Particular Manner)	Post-Approval
Bernoulli 3D Seismic Survey	2006/3053	Not Controlled Action (Particular Manner)	Post-Approval
BHPBilliton Otway 3D Seismic Survey	2007/3443	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Bitumen Storage Facility	2007/3676	Not Controlled Action (Particular Manner)	Post-Approval
Bream 3D seismic survey	2006/2556	Not Controlled Action (Particular Manner)	Post-Approval
Construction of bridge across Barwon River	2006/2947	Not Controlled Action (Particular Manner)	Post-Approval
Construct private dwelling	2008/4234	Not Controlled Action (Particular Manner)	Post-Approval
Construct single dwelling	2008/4504	Not Controlled Action (Particular Manner)	Post-Approval
Controlled Burn, Understorey Clearance and Removal of UXO	2003/1030	Not Controlled Action (Particular Manner)	Post-Approval
Deepwater Sorell Basin 2001 Non-Exclusive 2D Seismic Survey	2001/156	Not Controlled Action (Particular Manner)	Post-Approval
Drill and Profile Exploration Well Somerset 1, License Area T34P	2009/5037	Not Controlled Action (Particular Manner)	Post-Approval
Enterprise Three-dimensional Transition Zone Seismic Survey, Victoria	2016/7800	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of the Craigow-1 and Tolpuddle-1 wells	2010/5725	Not Controlled Action (Particular Manner)	Post-Approval
Fuelbreak construction	2009/4915	Not Controlled Action (Particular Manner)	Post-Approval
Gas Pipeline	2000/20	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Geelong Bypass Section 3	2005/2099	Not Controlled Action (Particular Manner)	Post-Approval
Gippsland 2D Marine Seismic Survey - VIC/P-63, VIC/P-64 and T/46P	2009/5241	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Inspection of project vessels for presence of invasive marine pests in Commonwealth waters off Victo	2012/6362	Not Controlled Action (Particular Manner)	Post-Approval
Labatt 3D Seismic Survey T/47P Bass Strait	2007/3759	Not Controlled Action (Particular Manner)	Post-Approval
La Bella 3D Marine Seismic Survey, Otway Basin, VIC	2012/6683	Not Controlled Action (Particular Manner)	Post-Approval
Maintenance Dredging Program 2012-21 in Port of Melbourne	2012/6332	Not Controlled Action (Particular Manner)	Post-Approval
Northern Fields 3D Seismic Survey	2001/140	Not Controlled Action (Particular Manner)	Post-Approval
OTE10 2D Marine Seismic Survey	2009/5223	Not Controlled Action (Particular Manner)	Post-Approval
Otway Basin Exploration Drilling Campaign, Vic	2011/6125	Not Controlled Action (Particular Manner)	Post-Approval
Residential Development and Associated Infrastructure at Port Fairy	2012/6687	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Santos 2D Seismic Survey VIC/P44 & VIC/P51	2003/1213	Not Controlled Action (Particular Manner)	Post-Approval
Santos Otway 3d Seismic VIC/P44	2007/3367	Not Controlled Action (Particular Manner)	Post-Approval
Schomberg 3D Marine Seismic survey	2007/3868	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Exploration in Permit VIC/P41	2001/267	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Survey	2001/206	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Survey in Petroleum Permit Area EPP27	2002/648	Not Controlled Action (Particular Manner)	Post-Approval
Seismic Survey VIC-P46	2002/826	Not Controlled Action (Particular Manner)	Post-Approval
Shaw River Power Station construct gas pipeline and associated infrastructure	2009/5089	Not Controlled Action (Particular Manner)	Post-Approval
Shaw River Power Station Project - Water Supply Pipeline	2009/5091	Not Controlled Action (Particular Manner)	Post-Approval
Southern Flanks 2D Marine Seismic Survey	2010/5288	Not Controlled Action (Particular Manner)	Post-Approval
Southern Gas Pipeline Project	2002/619	Not Controlled Action (Particular Manner)	Post-Approval
Southern Margins 3D Seismic Survey VIC/P55	2007/3780	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Southern Margins T/35P and T/36P 3D Seismic Surveys	2007/3817	Not Controlled Action (Particular Manner)	Post-Approval
Speculant 3D Transition Zone Seismic Survey	2010/5558	Not Controlled Action (Particular Manner)	Post-Approval
Surface Geochemical Exploration Program, TAS	2010/5780	Not Controlled Action (Particular Manner)	Post-Approval
Tap Oil Ltd Molson 2D Seismic Survey T47P	2008/3967	Not Controlled Action (Particular Manner)	Post-Approval
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, Vic	2012/6565	Not Controlled Action (Particular Manner)	Post-Approval
Torquay Sub-basin (VIC/P62) OTE12-3D Seismic Survey	2012/6655	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5700	Not Controlled Action (Particular Manner)	Post-Approval
Vegetation clearance and residential subdivision near Mt Gambier	2004/1370	Not Controlled Action (Particular Manner)	Post-Approval
Vic/P37(v) and Vic/P44 3D marine seismic survey	2003/1102	Not Controlled Action (Particular Manner)	Post-Approval
VIC P44 Gas Exploration Wells	2002/662	Not Controlled Action (Particular Manner)	Post-Approval
Vic-P51 and Vic-P52 2D seismic survey	2002/811	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Wolseley 3D seismic acquisition survey	2010/5703	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D & 3D Seismic Surveys - Permit Area - VIC/P50	2008/4517	Referral Decision	Completed
2D Seismic Survey	2008/3978	Referral Decision	Completed
3D Marine Seismic Survey	2011/6156	Referral Decision	Completed
3D Seismic Survey	2008/4014	Referral Decision	Completed
8 Lot Industrial Subdivision	2008/4527	Referral Decision	Completed
All actions taken in response to the current severe bushfires in Victoria.	2009/4787	Referral Decision	Completed
Alteration Reconstruction Restoration and Repairs to Buildings	2008/4179	Referral Decision	Completed
Beardie-1 Field wildcat oil well	2001/469	Referral Decision	Completed
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed
Portland Wave Energy Project	2008/3946	Referral Decision	Completed
Residential Development Elizabeth Avenue, Rosebud West, VIC	2015/7603	Referral Decision	Completed
Shark 3D Seismic Survey	2007/3294	Referral Decision	Completed
Stanton 3D Marine Seismic Survey	2013/6764	Referral Decision	Completed
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, VIC	2012/6545	Referral Decision	Completed
Upgrade of Services Infrastructure Point Nepean Quarantine Station	2008/4591	Referral Decision	Completed
VICP61 2D Marine Seismic Survey	2008/3975	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Wind Farm	2001/139	Referral Decision	Completed
Wolseley 3D Seismic Acquisition Survey in Permit T/32P	2010/5291	Referral Decision	Completed
Works to the buildings and surrounds at the former Point Nepean Quarantine Stati	2008/4156	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Big Horseshoe Canyon	South-east
Bonney Coast Upwelling	South-east
Canyons on the eastern continental slope	Temperate east
Shelf rocky reefs	Temperate east
Upwelling East of Eden	South-east
West Tasmania Canyons	South-east

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur
Seabirds		
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging	Known to occur
Ardenna grisea Sooty Shearwater [82651]	Breeding	Known to occur
Ardenna grisea Sooty Shearwater [82651]	Foraging	Likely to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur
Ardenna tenuirostris Short-tailed Shearwater [84292]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Ardenna tenuirostris Short-tailed Shearwater [82652]	Breeding	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Likely to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Likely to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur
Eudyptula minor Little Penguin [1085]	Breeding	Likely to occur
Eudyptula minor Little Penguin [1085]	Breeding	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging	Known to occur
Macronectes giganteus Southern Giant Petrel [1060]	Foraging	Known to occur
Macronectes halli Northern Giant Petrel [1061]	Foraging	Known to occur
Morus serrator Australasian Gannet [1020]	Aggregation	Known to occur
Morus serrator Australasian Gannet [1020]	Foraging	Known to occur
Oceanites oceanites Wilsons Storm Petrel [1034]	Migration	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Breeding	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Procellaria parkinsoni Black Petrel [1048]	Foraging	Likely to occur
Pterodroma macroptera Great-winged Petrel [1035]	Foraging	Likely to occur
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur
Thalassarche cauta steadi White-capped Albatross [82344]	Foraging	Known to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Likely to occur
Thalasseus bergii Crested Tern [83000]	Breeding	Known to occur
Thalasseus bergii Crested Tern [83000]	Foraging	Likely to occur

Scientific Name	Behaviour	Presence
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Known to occur
Sharks		
Carcharias taurus Grey Nurse Shark [64469]	Foraging	Known to occur
Carcharias taurus Grey Nurse Shark [64469]	Migration	Known to occur
Carcharodon carcharias White Shark [64470]	Breeding (nursery area)	Known to occur
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Bioregional Assessments		[Resource Information]
SubRegion	BioRegion	Website
Gippsland	Gippsland Basin	BA website

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix 5f – Noise EMBA PMST

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 29-Oct-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

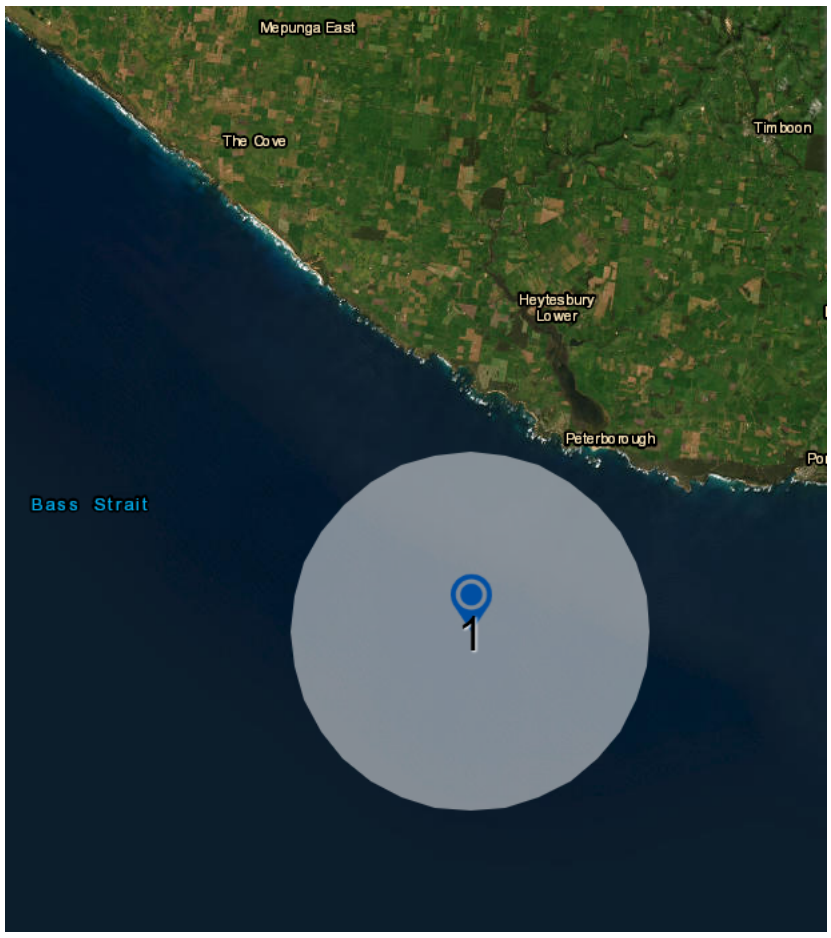

Figure: Amplitude Drilling EP Noise 8.02 km EMBA

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	77
Listed Migratory Species:	47

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	81
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	18
Key Ecological Features (Marine):	None
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Historic			
Great Ocean Road and Scenic Environs	VIC	Listed place	In buffer area only

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In feature area
Commonwealth Marine Areas (EPBC Act)	In buffer area only

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Giant Kelp Marine Forests of South East Australia	Endangered	Community may occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pachyptila turtur subantarctica](#) Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Pterodroma leucoptera leucoptera](#) Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area
[Pterodroma mollis](#) Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Sternula albifrons](#) Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Thalassarche bulleri](#) Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche bulleri platei](#) Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only
FISH			
Nannoperca obscura Yarra Pygmy Perch [26177]	Endangered	Species or species habitat may occur within area	In buffer area only
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Seriolella brama			
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
FROG			
Litoria raniformis			
Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			
Antechinus minimus maritimus			
Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Balaenoptera musculus			
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Balaenoptera physalus			
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In buffer area only
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Isoodon obesulus obesulus			
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Mastacomys fuscus mordicus			
Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Miniopterus orianae bassanii Southern Bent-wing Bat [87645]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Potorous tridactylus trisulcatus Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
PLANT			
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Thelymitra orientalis Hoary Sun-orchid [88011]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Lissolepis coventryi Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat likely to occur within area	In buffer area only
SHARK			
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area	In feature area
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In feature area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
[Ardenna carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
[Ardenna grisea](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area
[Diomedea antipodensis](#) Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea epomophora](#) Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea exulans](#) Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Diomedea sanfordi](#) Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
[Macronectes halli](#) Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In buffer area only
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In buffer area only
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area overfly marine area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Stercorarius antarcticus as Catharacta skua			
Brown Skua [85039]		Species or species habitat may occur within area	In feature area
Sterna striata			
White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons			
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri			
Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov.			
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche chrysostoma			
Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Fish			
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In feature area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In feature area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area	In feature area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area	In feature area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area	In feature area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area	In feature area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area	In feature area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In feature area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In feature area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In feature area
Mammal			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
[Arctocephalus pusillus](#) Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
Reptile			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area

Whales and Other Cetaceans		[Resource Information]	
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area	In feature area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In feature area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Bay of Islands Coastal Park	Conservation Park	VIC	In buffer area only
Port Campbell	National Park	VIC	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
West Victoria RFA	Victoria	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Strike Oil NL Seismic Surveys	2000/107		Completed	In feature area
Controlled action				
Casino Gas Field Development	2003/1295	Controlled Action	Post-Approval	In feature area
Otway Development	2002/621	Controlled Action	Post-Approval	In feature area
Schomberg 3D Marine Seismic Survey	2007/3754	Controlled Action	Completed	In buffer area only
Not controlled action				
Exploration drilling for liquid/gaseous hydrocarbons	2004/1681	Not Controlled Action	Completed	In feature area
Henry-1 Exploration Well, Petroleum Permit Area VIC/P44	2005/2147	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In buffer area only
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Offshore exploration drilling within permit area VIC/P 37(v)	2004/1466	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
'Moonlight Head' 3D seismic survey, VIC/P38(V), VIC/P43 and VIC/RL8	2005/2236	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
3D seismic program VIC/P38(v), VIC/P43 and VIC/RL8	2003/1137	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Enterprise Three-dimensional Transition Zone Seismic Survey, Victoria	2016/7800	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Schomberg 3D Marine Seismic survey	2007/3868	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, Vic	2012/6565	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Vic/P37(v) and Vic/P44 3D marine seismic survey	2003/1102	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
VIC P44 Gas Exploration Wells	2002/662	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, VIC	2012/6545	Referral Decision	Completed	In buffer area only

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur	In feature area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur	In feature area
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur	In feature area
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur	In feature area
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur	In feature area
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur	In feature area
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur	In feature area
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging (annual high use area)	Known to occur	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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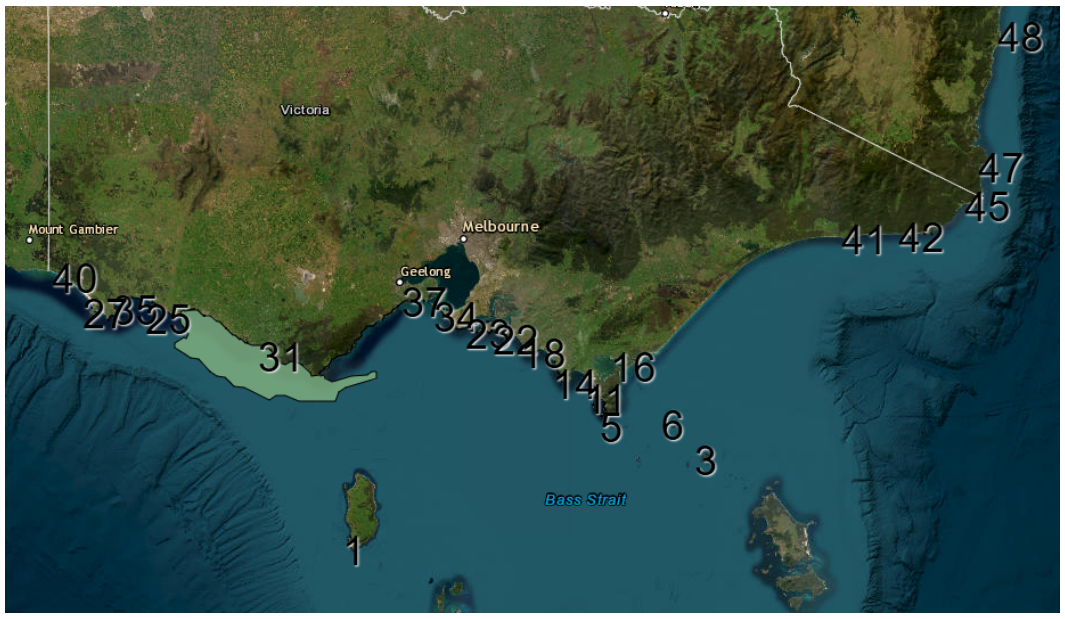
Appendix 5g – Social EMBA PMST

Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.



Report created: 26-Aug-2025

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

Social EMBA

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	98
Listed Migratory Species:	64

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	108
Whales and Other Cetaceans:	28
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	18
Regional Forest Agreements:	1
Nationally Important Wetlands:	3
EPBC Act Referrals:	64
Key Ecological Features (Marine):	1
Biologically Important Areas:	16
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Historic		
Great Ocean Road and Scenic Environs	VIC	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community	Endangered	Community likely to occur within area
Giant Kelp Marine Forests of South East Australia	Endangered	Community may occur within area
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community likely to occur within area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini		
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thinornis cucullatus cucullatus		
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
CRUSTACEAN		
Euastacus bispinosus		
Glenelg Spiny Freshwater Crayfish, Pricklyback [81552]	Endangered	Species or species habitat likely to occur within area
FISH		
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannoperca obscura		
Yarra Pygmy Perch [26177]	Endangered	Species or species habitat likely to occur within area
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Seriolella brama](#) Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
FROG		
[Litoria raniformis](#) Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
[Antechinus minimus maritimus](#) Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat known to occur within area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Isoodon obesulus obesulus](#) Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area
[Mastacomys fuscus mordicus](#) Broad-toothed Rat (mainland), Tooarrana [87617]	Endangered	Species or species habitat known to occur within area
[Miniopterus orianae bassanii](#) Southern Bent-wing Bat [87645]	Critically Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus trisulcatus Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat known to occur within area
Pseudomys fumeus Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
PLANT		
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area
Caladenia concolor Crimson Spider-orchid, Maroon Spider-orchid [5505]	Vulnerable	Species or species habitat may occur within area
Eucalyptus strzeleckii Strzelecki Gum [55400]	Vulnerable	Species or species habitat known to occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Grevillea infecunda Anglesea Grevillea [22026]	Vulnerable	Species or species habitat likely to occur within area
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat known to occur within area
Leiocarpa gatesii Wrinkled Buttons [76212]	Vulnerable	Species or species habitat known to occur within area
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat known to occur within area
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat known to occur within area
Prasophyllum suaveolens Fragrant Leek-orchid [64956]	Endangered	Species or species habitat may occur within area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat likely to occur within area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat likely to occur within area
Pterostylis tenuissima Swamp Greenhood, Dainty Swamp Orchid [13139]	Vulnerable	Species or species habitat known to occur within area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	Species or species habitat known to occur within area
Thelymitra matthewsii Spiral Sun-orchid [4168]	Endangered	Species or species habitat known to occur within area
Thelymitra orientalis Hoary Sun-orchid [88011]	Critically Endangered	Species or species habitat may occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Lissolepis coventryi Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat known to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Migratory Marine Species		
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caperea marginata		
Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharias taurus		
Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus		
Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus		
Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus		
Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae		
Humpback Whale [38]		Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - WARRNAMBOOL TRAINING DEPOT [21111]	VIC
Unknown	
Commonwealth Land - [21492]	VIC
Commonwealth Land - [21583]	VIC

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus		
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris as Puffinus tenuirostris		
Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area overfly marine area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
[Tringa glareola](#) Wood Sandpiper [829]		Roosting known to occur within area overfly marine area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Fish		
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
[Hippocampus abdominalis](#) Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
[Hippocampus minotaur](#) Bullneck Seahorse [66705]		Species or species habitat may occur within area
[Histiogamphelus briggsii](#) Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
[Histiogamphelus cristatus](#) Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
[Hypselognathus rostratus](#) Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
[Kaupus costatus](#) Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys mollisoni Mollison's Pipefish [66260]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Arctocephalus pusillus		
Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat likely to occur within area
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Current Scientific Name	Status	Type of Presence
[Berardius arnuxii](#) Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat likely to occur within area
[Lissodelphis peronii](#) Southern Right Whale Dolphin [44]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Apollo	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Aire River	Heritage River	VIC
Aire River W.R.	Natural Features Reserve	VIC
Bay of Islands Coastal Park	Conservation Park	VIC
Eagle Rock	Marine Sanctuary	VIC
Great Otway	National Park	VIC
Lake Gillear W.R	Natural Features Reserve	VIC
Lily Pond B.R.	Natural Features Reserve	VIC
Marengo N.C.R.	Nature Conservation Reserve	VIC
Marengo Reefs	Marine Sanctuary	VIC
Merri	Marine Sanctuary	VIC
Port Campbell	National Park	VIC
Princetown W.R	Natural Features Reserve	VIC
Stony Creek (Otways)	Reference Area	VIC
The Arches	Marine Sanctuary	VIC
Twelve Apostles	Marine National Park	VIC
Unnamed P0176	Private Nature Reserve	VIC
Wild Dog Creek SS.R.	Natural Features Reserve	VIC

Protected Area Name	Reserve Type	State
Yambuk F.F.R.	Nature Conservation Reserve	VIC

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
West Victoria RFA	Victoria

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Lower Aire River Wetlands	VIC
Lower Merri River Wetlands	VIC
Princetown Wetlands	VIC

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Apollo Bay to Skenes Creek Coastal Trail	2022/09274		Assessment
Decommissioning of the Minerva Pipeline in Victorian state waters	2024/09879		Completed
Decommissioning of the Minerva Pipeline in Victorian state waters ? May 2025	2025/10138		Referral Decision
Great Ocean Road Coastal Trail (GORCT) ? Fairhaven to Grey River	2024/10073		Completed
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia East	2024/09795		Completed
SMAP telecommunications submarine cable installation	2024/09989		Completed
Spinifex Offshore Wind Farm - Offshore Investigations	2024/09918		Referral Decision
Strike Oil NL Seismic Surveys	2000/107		Completed
Controlled action			
Alston-1 petroleum exploration well, permit VIC/P44	2003/1315	Controlled Action	Post-Approval
Casino Gas Field Development	2003/1295	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Establishment of plantation for use of effluent water	2003/1063	Controlled Action	Completed
Lorne Golf Course redevelopment	2004/1513	Controlled Action	Post-Approval
Otway Development	2002/621	Controlled Action	Post-Approval
Residential Subdivision & Infrastructure Parish of Belfast	2005/1954	Controlled Action	Completed
Schomberg 3D Marine Seismic Survey	2007/3754	Controlled Action	Completed
Strike Oil Gas Exploration Well, Otway Basin (VIC/P44)	2000/97	Controlled Action	Completed
Twelve Apostles Saddle Lookout	2019/8571	Controlled Action	Post-Approval
VICP61 2D Marine Seismic Survey	2008/4075	Controlled Action	Completed
Not controlled action			
Airey Inlet water reclamation plant to Anglesea sewerage system	2006/2539	Not Controlled Action	Completed
construction of pump station for pump diversion from the Barham River	2003/1242	Not Controlled Action	Completed
Enterprise 1 Exploration Drilling Program, near Port Campbell, Vic	2019/8438	Not Controlled Action	Completed
Exploration drilling for liquid/gaseous hydrocarbons	2004/1681	Not Controlled Action	Completed
Gas Field Development	2006/2635	Not Controlled Action	Completed
Gas Fields Development	2011/5879	Not Controlled Action	Completed
Grevillea infecunda tip cuttings and soil samples	2005/1979	Not Controlled Action	Completed
Halladale and Speculant Gas Pipeline Project, North of Port Campbell, Vic	2015/7551	Not Controlled Action	Completed
Henry-1 Exploration Well, Petroleum Permit Area VIC/P44	2005/2147	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Maintenance of Access Track and Weed Removal	2009/4973	Not Controlled Action	Completed
Nirranda South Wind Farm Pty Ltd	2002/763	Not Controlled Action	Completed
Offshore exploration drilling within permit area VIC/P 37(v)	2004/1466	Not Controlled Action	Completed
Port Campbell Headland Walking Trail Realignment	2012/6676	Not Controlled Action	Completed
Proposed replacement of existing road culvert	2013/7077	Not Controlled Action	Completed
Residential/Resort/Golf Course development	2002/907	Not Controlled Action	Completed
Stage 1 residential subdivision, Anna Catherine Drive	2005/1992	Not Controlled Action	Completed
Track construction - Great Ocean Walk	2002/793	Not Controlled Action	Completed
VIC-P44 Stage 2 Gas Field Development	2007/3767	Not Controlled Action	Completed
Victorian Generator Project	2005/1984	Not Controlled Action	Completed
Wind Farm Construction and Operation	2001/471	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Moonlight Head' 3D seismic survey, VIC/P38(V), VIC/P43 and VIC/RL8	2005/2236	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2005/2295	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey within Torquay Sub-basin off sthn Victoria	2012/6256	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic program VIC/P38(v), VIC/P43 and VIC/RL8	2003/1137	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
BHPBilliton Otway 3D Seismic Survey	2007/3443	Not Controlled Action (Particular Manner)	Post-Approval
Deepwater Sorell Basin 2001 Non-Exclusive 2D Seismic Survey	2001/156	Not Controlled Action (Particular Manner)	Post-Approval
Enterprise Three-dimensional Transition Zone Seismic Survey, Victoria	2016/7800	Not Controlled Action (Particular Manner)	Post-Approval
Fuelbreak construction	2009/4915	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
La Bella 3D Marine Seismic Survey, Otway Basin, VIC	2012/6683	Not Controlled Action (Particular Manner)	Post-Approval
OTE10 2D Marine Seismic Survey	2009/5223	Not Controlled Action (Particular Manner)	Post-Approval
Otway Basin Exploration Drilling Campaign, Vic	2011/6125	Not Controlled Action (Particular Manner)	Post-Approval
Santos Otway 3d Seismic VIC/P44	2007/3367	Not Controlled Action (Particular Manner)	Post-Approval
Schomberg 3D Marine Seismic survey	2007/3868	Not Controlled Action (Particular Manner)	Post-Approval
Speculant 3D Transition Zone Seismic Survey	2010/5558	Not Controlled Action (Particular Manner)	Post-Approval
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, Vic	2012/6565	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Torquay Sub-basin (VIC/P62) OTE12-3D Seismic Survey	2012/6655	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5700	Not Controlled Action (Particular Manner)	Post-Approval
Vic/P37(v) and Vic/P44 3D marine seismic survey	2003/1102	Not Controlled Action (Particular Manner)	Post-Approval
VIC P44 Gas Exploration Wells	2002/662	Not Controlled Action (Particular Manner)	Post-Approval
Vic-P51 and Vic-P52 2D seismic survey	2002/811	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey	2011/6156	Referral Decision	Completed
The Enterprise 3D Seismic Acquisition Survey, Otway Basin, VIC	2012/6545	Referral Decision	Completed
VICP61 2D Marine Seismic Survey	2008/3975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Bonney Coast Upwelling	South-east

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Foraging	Likely to occur

Scientific Name	Behaviour	Presence
Ardenna tenuirostris Short-tailed Shearwater [84292]	Breeding	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Foraging	Known to occur
Diomedea exulans antipodensis Antipodean Albatross [82269]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur
Thalassarche bulleri Bullers Albatross [64460]	Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging	Known to occur
Thalassarche melanophris Black-browed Albatross [66472]	Foraging	Known to occur
Thalassarche melanophris impavida Campbell Albatross [82449]	Foraging	Known to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging (annual high	Known to occur

Scientific Name	Behaviour	Presence
	use area)	
[Balaenoptera musculus brevicauda](#)		
Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix 6 - Oil Spill Trajectory Modelling

EAST COAST GAS SUPPLY

Oil Spill Modelling

MAQ1314J
East Coast Gas Supply
Oil Spill Modelling
Rev2
10 January 2024

Document status

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Rev0	Draft report issued for client's review	Jeremie Bernard Dr Larissa Perez	Jeremie Bernard Dr Ryan Dunn	Dr. Sasha Zigic	3 November 2023
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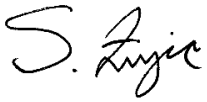
Approval for issue

Dr. Sasha Zigic  8 December 2023

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TERMS AND ABBREVIATIONS

AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZECC	Australian and New Zealand Environment and Conservation Council
API	American Petroleum Institute gravity. A measure of how heavy or light a petroleum liquid is compared to water.
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASTM	American Society for Testing and Materials
BIA	Biologically Important Area
Bonn Agreement	An agreement for cooperation in dealing with pollution of the North Sea by oil and other harmful substances, 1983, includes: Governments of the Kingdom of Belgium, the Kingdom of Denmark, the French Republic, the Federal Republic of Germany, the Republic of Ireland, the Kingdom of the Netherlands, the Kingdom of Norway, the Kingdom of Sweden, the United Kingdom of Great Britain and Northern Ireland and the European Union.
BP	Boiling point. The temperature at which the vapor pressure of the liquid is equal to the pressure exerted on it by the surrounding atmosphere
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CFSR	Climate Forecast System Reanalysis
Decay	The process where oil components are changed either chemically or biologically (biodegradation) to another compound. It includes breakdown to simpler organic carbon compounds by bacteria and other organisms, photo-oxidation by solar energy, and other chemical reactions.
Deterministic oil spill modelling	Oil spill modelling involving a computer simulation of a single hypothetical oil spill event subject to a single sequence of wind, current and other sea conditions over time. Single oil spill modelling, also referred to as “deterministic modelling” provides a simulation of one possible outcome of a given spill scenario, subject to the metocean conditions that are imposed. Single oil spill modelling is commonly used to consider the fate and effects of ‘worst-case’ oil spill scenarios that are carefully selected in consideration of the nature and scale of the offshore petroleum activity and the local environment (NOPSEMA, 2017). Because the outcomes of a single oil spill simulation can only represent the outcome of that scenario under one sequence of metocean conditions, worst-case conditions are often identified from stochastic modelling. It is impossible to calculate the likelihood of any outcome from a single oil spill simulation. Single oil spill modelling is generally used for response planning, preparedness planning and for supporting oil spill response operations in the event of an actual spill
Dynamic viscosity	The dynamic viscosity of a fluid expresses its resistance to shearing flows, where adjacent layers move parallel to each other with different speeds.
Floating oil exposure	Contact by floating oil on the sea surface at concentrations equal to or exceeding defined threshold concentrations. The consequence will vary depending on the threshold and the receptors
GODAE	Global Ocean Data Assimilation Experiment
HYCOM	Hybrid Coordinate Ocean Model. A data-assimilative, three-dimensional ocean model
HYDROMAP	Advanced ocean/coastal tidal model used to predict tidal water levels, current speed and current direction.
IMCRA	Integrated marine and coastal regionalisation areas
IOA	Index of Agreement
ITOPF	International Tanker Owners Pollution Federation Limited
KEF	Key Ecological Feature
LGA	Local Government Areas
MAE	Mean Absolute Error
MAHs	Monoaromatic Hydrocarbons
MNP	Marine National Park

MP	Marine Park
NASA	National Aeronautics and Space Administration (USA)
NCEP	National Centres for Environmental Prediction (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NP	National Park
NR	Nature Reserve
PAH	Polynuclear Aromatic Hydrocarbons
Pour Point	The pour point of a liquid is the temperature below which the liquid loses its flow characteristics
ppb	Parts per billion (concentration)
psu	Practical salinity units
Ramsar site	A site listed under the Ramsar Convention on wetlands which is an international intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.
RSB	Reefs, Shoals and Banks
Shoreline accumulation	Arrival of oil at or near shorelines at on-water concentrations equal to or exceeding defined threshold concentrations. Shoreline contact is judged for floating oil arriving within a 2 km buffer zone from any shoreline as a conservative measure
SIMAP	Spill Impact Model Application Package. SIMAP is designed to simulate the fate and effects of spilled hydrocarbons for surface or subsea releases
SRTM	Shuttle Radar Topography Mission
State Waters	Low water mark seaward for three nautical miles
STB	Standard Barrel
Stochastic oil spill modelling	Stochastic oil spill modelling is created by overlaying and statistically analysing the outcomes of many single oil-spill simulations of a defined spill scenario, where each simulation was subject to a different sequence of metocean conditions, selected objectively (typically by random selection) from a long sequence of historic conditions for the study area. Analysis of this larger set of simulations provides a more accurate indication of the area of hydrocarbon exposure and indicates which locations are more likely to be exposed (as well as other statistics). Stochastic oil spill modelling avoids biases that affect single oil spill modelling (due to the reliance on only one possible sequence of conditions). However, when interpreting stochastic modelling, which is based on a wide range of potential conditions that might happen to occur, it is essential to understand that calculations will encompass a much larger area than could be exposed in any single spill event, where a more limited set of conditions will occur. Consequently, it is misleading to imply that the region derived from stochastic modelling indicate the outcomes expected from a single spill event (NOPSEMA, 2017) Stochastic modelling is generally used for risk assessment and preparedness planning by indicating locations that could be exposed and may require response or subsequent impact assessment
Sub-LGA	Sub-Local Government Areas
TOPEX/Poseidon	A joint satellite mission between NASA and CNES to map ocean surface topography using an array of satellites equipped with detailed altimeters
US EPA	United States Environmental Protection Agency
World Ocean Atlas	A collection of physicochemical parameters (e.g. temperature, salinity, oxygen, phosphate, silicate, and nitrate) based on profile data from the World Ocean Database (NCEI, 2021) established by NOAA's National Centers for Environmental Information (NCEI)
WGS 1984	World Geodetic System 1984 (WGS84); reference coordinate system

EXECUTIVE SUMMARY

Background

Cooper Energy (Cooper) is progressing plans to drill the Elanora-1 ST1, Pecten East-2 and Annie-2 wells in the Otway Basin, Victoria.

In order to inform the offshore environmental impact and risk assessments Cooper commissioned RPS to conduct a detailed oil spill modelling study assessing the following hypothetical scenarios:

- **Scenario 1**: A 105,289 bbl (16,740 m^3) subsurface release of condensate over 102 days following a loss of well control (LOWC) incident at Elanora-1 ST1.
- **Scenario 2**: An 83,273 bbl (13,239 m^3) subsurface release of condensate over 102 days following a LOWC incident at Pecten East-2; and
- **Scenario 3**: A 66,430 bbl (10,562 m^3) subsurface release of condensate over 104 days following a LOWC incident at Annie-2.

Note, the 104-day model duration for Scenario 3 relates to slightly more conservative response time for the relief well to kill Annie-2. This duration was carried over from the specifications of the original Annie-2 modelling.

The modelling assessment was undertaken on a seasonal basis (summer – November to April, and winter – May to October), with 100 modelling simulations completed for each season.

The purpose of the modelling is to provide an understanding of a conservative 'outer envelope' of the potential area of exposure in the unlikely event of hydrocarbon spill. The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that would be implemented in response to the spill. Therefore, the modelling results represent the maximum extent of hydrocarbon exposure.

The spill modelling was performed using an advanced three-dimensional trajectory and fates model; Spill Impact Model Application Program (SIMAP). The SIMAP model calculates the transport, spreading, entrainment and evaporation of spilled hydrocarbons over time, based on the prevailing wind and current conditions and the physical and chemical properties.

Methodology

The modelling study was carried out in several stages. Firstly, a 10-year wind and current dataset (2010–2019) was generated and the currents included the combined influence of three-dimensional large-scale ocean currents and tidal currents. Secondly, the currents, winds and detailed condensate characteristics were used as inputs in the three-dimensional oil spill model (SIMAP) to simulate the drift, spread, weathering and fate of the spilled oil.

As spills can occur during any set of wind and current conditions, modelling was conducted using a stochastic (random or non-deterministic) approach, which involved running 100 randomly selected single trajectory simulations per season, per scenario, with each simulation having the same spill information (location, spill volume, duration and composition of hydrocarbons) but varying start times. This ensured that each spill simulation was subject to a unique set of wind and current conditions.

The SIMAP system, the methods and analysis presented herein, use modelling algorithms which have been anonymously peer reviewed and published in international journals. Further, RPS warrants that this work meets and exceeds the ASTM Standard F2067-22 "*Standard Practice for Development and Use of Oil Spill Models*".

Condensate Properties

An exploration well has been drilled within the Annie field with hydrocarbon properties being known for that location. Annie condensate has a higher residuals profile when compared with other offset fields representing a more conservative analogue and therefore Annie condensate was selected for all scenarios

modelled in this assessment. While a comprehensive oil assay for Annie-1 condensate was provided by the client (Core Lab RFL201903231), it should be noted that essential data pertaining to the pour point, dynamic viscosity, and aromatic content for distinct boiling point ranges were absent from the dataset. Consequently, a pragmatic approach was adopted to supplement these missing values by sourcing relevant information from the Minerva condensate assay data. Minerva condensate is found in a nearby reservoir.

The Annie-2 condensate has an API of 41.0, density of 820.0 kg/m^3 (at 16 ºC), with low viscosity (1.063 cP at 20 ºC) classifying it as a Group II (light-persistent) oil according to the International Tankers Owners Pollution Federation (ITOPF, 2020) and US EPA/USCG classifications. The condensate comprises a significant portion of volatiles and semi- to low-volatiles (82.5% total) with 17.5% residual components. This means the condensate will evaporate readily when on the water surface, with the persistent components to remain on the water surface or in the water column over time.

Results

Scenario: 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1

- The maximum distance and corresponding direction from the release location to the low (1–10 g/m^2) and moderate (10–50 g/m^2) floating oil exposure zones was 75.7 km (east, winter) and 11.7 km (east-southeast, summer), respectively. There was no floating oil exposure predicted above the high (>50 g/m^2) threshold.
- The probability of accumulation to any shoreline at, or above, the low (10 g/m^2) threshold was 100%. The minimum time before oil accumulation at, or above, the low threshold was 1.83 days whilst the maximum total volume ashore for a single spill trajectory was 251.0 m^3, and the maximum length of shoreline with accumulation above the low, moderate and high thresholds were 295.0 km, 48.0 km and 1.0 km, respectively, all occurring during winter.
- Excluding the BIAs that the release location resides within, the highest probabilities of low (10 ppb) dissolved hydrocarbon exposure were 15% (Southern Right Whale – Aggregation BIA, summer) and 21% (Short-tailed Shearwater – Foraging BIA, winter).
- Except for the receptors the release location is located within, during summer the highest probability of low (10 ppb) entrained hydrocarbon exposure was 100% recorded for Southern Right Whale – Aggregation BIA. Additional receptors including LGAs, sub-LGAs, and AMPs were predicted with entrained hydrocarbon exposure (refer to Table 11.9). During winter, several receptors, including the Apollo AMP, Southern Right Whale – Aggregation and White-faced Storm-petrel - Foraging BIAs revealed 100% probability of low entrained hydrocarbon exposure.

Scenario: 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2

- The maximum distance and corresponding direction from the release location to the low and moderate exposure zones was 74.4 km (east-southeast, winter) and 15.2 km (east-southeast, winter), respectively. There was no floating oil exposure observed above the high threshold.
- The probability of accumulation to any shoreline at, or above, the low threshold was 100%. The minimum time before oil accumulation at, or above, the low threshold was 1.17 days whilst the maximum total volume ashore for a single spill trajectory was 406.6 m^3, and the maximum length of shoreline accumulation at the low, moderate and high thresholds were 269.0 km (summer), 75.0 km (summer) and 6.0 km (winter), respectively.
- Excluding the BIAs that the release location resides within, the highest probability of low dissolved hydrocarbon exposure was 21% during summer (Short-tailed Shearwater - Foraging) and 59% during winter (Short-tailed Shearwater - Foraging).
- The highest probability of low entrained hydrocarbon exposure was recorded at 100% for receptors that the release location doesn't reside within, including Southern Right Whale – Aggregation BIA and

Warrnambool Plain IBRA. Additional receptors including sub-LGAs, and AMPs were predicted with entrained hydrocarbon exposure.

Scenario: 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2

- The maximum distance and corresponding direction from the release location to the low and moderate exposure zones was 55.7 km (east, winter) and 3.2 km (east, winter), respectively. There was no floating oil exposure predicted above the high threshold.
- The probability of accumulation to any shoreline at, or above, the low threshold was 100%. The minimum time before oil accumulation at, or above, the low threshold was 0.96 day whilst the maximum total volume ashore for a single spill trajectory was 312.1 m^3, and the maximum length of shoreline accumulation at the low, moderate and high thresholds were 224.0 km (winter), 62.0 km (winter) and 6.0 km (winter), respectively.
- Excluding the BIAs that the release location resides within, the highest probability of low dissolved hydrocarbon exposure was 10% during summer and 33% during winter at the Short-tailed Shearwater – Foraging BIA receptor.
- The highest probability of low entrained hydrocarbon exposure was recorded at 100% for receptors that the release location doesn't reside within, including Short-tailed Shearwater – Foraging, Southern Right Whale – Aggregation BIAs and Warrnambool Plain IBRA. Additional receptors including sub-LGAs, and AMPs were predicted with entrained hydrocarbon exposure.

1 INTRODUCTION

1.1 Background

Cooper Energy (Cooper) is progressing plans to drill the Elanora-1 ST1, Pecten East-2 and Annie-2 wells in the Otway Basin (Figure 1.1).

In order to inform the offshore environmental impact and risk assessments Cooper commissioned RPS to conduct a detailed oil spill modelling study assessing the following hypothetical scenarios:

- **Scenario 1**: A 105,289 bbl (16,740 m^3) subsurface release of condensate over 102 days following a loss of well control (LOWC) incident at Elanora-1 ST1;
- **Scenario 2**: An 83,273 bbl (13,239 m3) subsurface release of condensate over 102 days following a LOWC incident at Pecten East-2; and
- **Scenario 3**: A 66,430 bbl (10,562 m^3) subsurface release of condensate over 104 days following a LOWC incident at Annie-2.

Note, the 104-day model duration for Scenario 3 relates to slightly more conservative response time for the relief well to kill Annie-2. This duration was carried over from the specifications of the original Annie-2 modelling.

The coordinates for the release location used for the above mentioned scenarios are presented in Table 1.1 and are illustrated in Figure 1.1.

The modelling assessment was undertaken on a seasonal basis (summer – November to April, and winter – May to October), with 100 simulations completed for each season.

The purpose of the modelling is to provide an understanding of a conservative 'outer envelope' of the potential area of exposure in the unlikely event of hydrocarbon spill. The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that would be implemented in response to the spill, except well kill via a relief well at the specified modelled days. Therefore, the modelling results represent the maximum extent of hydrocarbon exposure.

The spill modelling was performed using an advanced three-dimensional trajectory and fates model; Spill Impact Model Application Program (SIMAP). The SIMAP model calculates the transport, spreading, entrainment and evaporation of spilled hydrocarbons over time, based on the prevailing wind and current conditions and the physical and chemical properties.

Note that the oil spill model, the method and analysis presented herein uses modelling algorithms which have been anonymously peer reviewed and published in international journals. Furthermore, RPS warrants that this work meets and exceeds the American Society for Testing and Materials (ASTM) Standard F2067-22 "*Standard Practice for Development and Use of Oil Spill Models*".

Table 1.1 Coordinates of the release locations.

Infrastructure	Latitude	Longitude	Water Depth (m)
Elanora-1 ST1	38° 47' 41.5" S	142° 37' 56.5" E	75
Pecten East-2	38° 37' 59.7" S	142° 40' 9.7" E	55
Annie-2	38° 41' 1.68" S	142° 49' 28.56" E	56

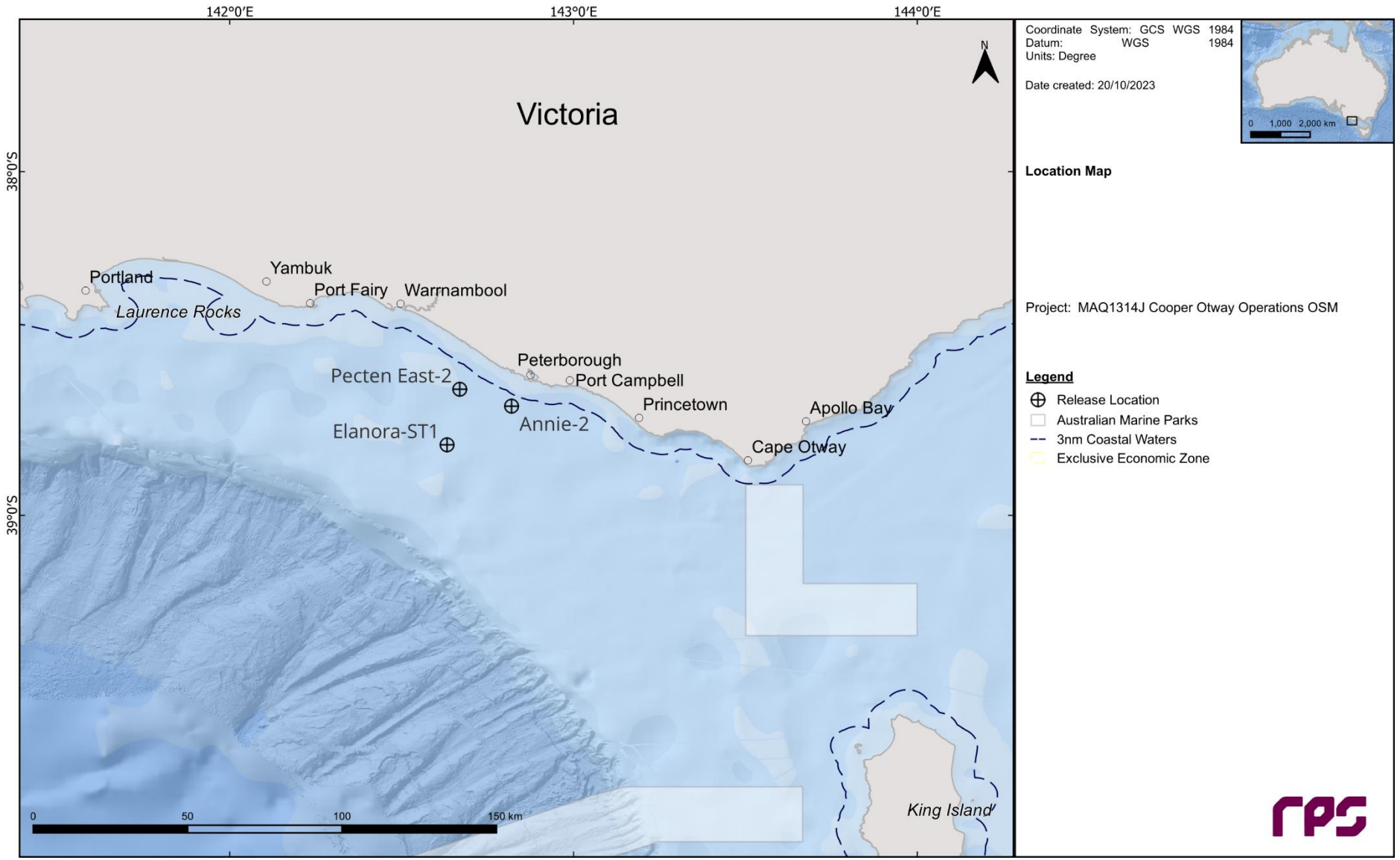

Figure 1.1 Map of the Elanora-1 ST1, Pecten East-2 and Annie-2 release locations.

1.2 What is Oil Spill Modelling?

Oil spill modelling is a valuable tool widely used for risk assessment, emergency response and contingency planning where it can be particularly helpful to proponents and decision makers. By modelling a series of the most likely oil spill scenarios, decisions concerning suitable response measures and strategic locations for deploying equipment and materials can be made, and the locations at most risk can be identified. The two types of oil spill modelling often used are stochastic (Section 1.2.1) and deterministic (Section 1.2.2) modelling.

1.2.1 Stochastic Modelling (Multiple Spill Simulations)

Stochastic oil spill modelling is created by overlaying a great number (often hundreds) of individual, computer-simulated hypothetical spills (NOPSEMA, 2018; Figure 1.2).

Stochastic modelling is a common means of assessing the potential risks from oil spills related to new projects and facilities. Stochastic modelling typically utilises hydrodynamic data for the location in combination with historic wind data. Typically, 100 iterations of the model will be run utilising the data that is most relevant to the season or timing of the project.

The outcomes are often presented as a probability of exposure and is primarily used for risk assessment purposes in view to understand the range of environments that may be affected or impacted by a spill. Elements of the stochastic modelling can also be used in oil spill preparedness and planning.

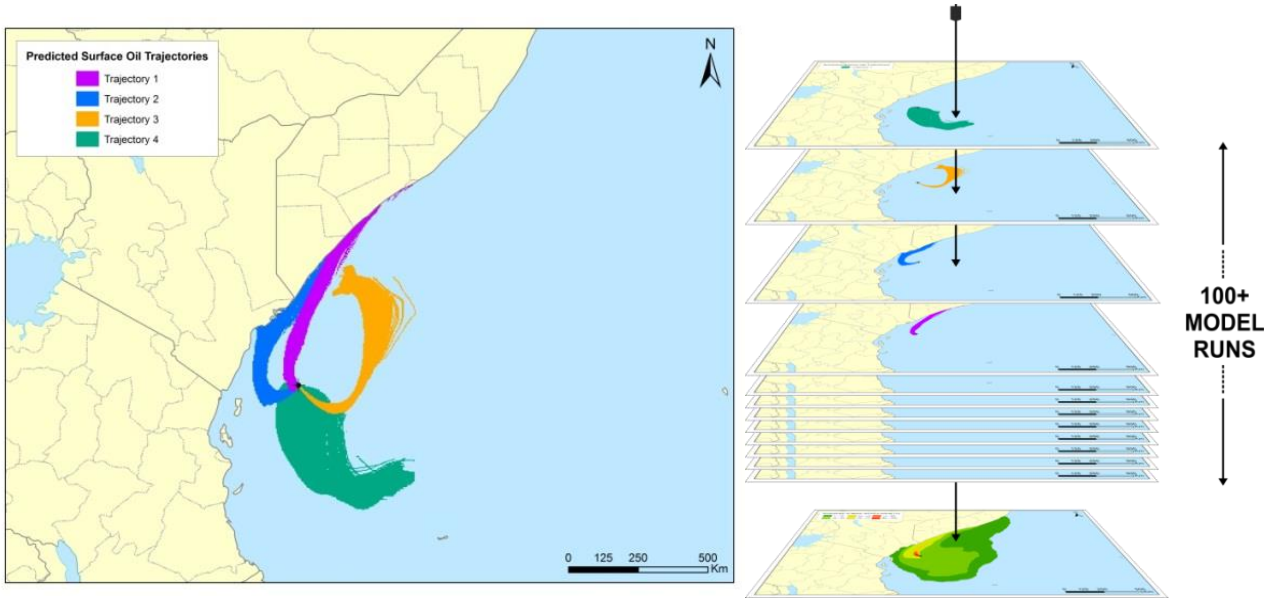

Figure 1.2 Examples of four individual spill trajectories (four replicate simulations) predicted by SIMAP for a spill scenario. The frequency of contact with given locations is used to calculate the probability of impacts during a spill. Essentially, all model runs are overlain (shown as the stacked runs on the right) and the number of times that trajectories contact a given location at a concentration is used to calculate the probability.

1.2.2 Deterministic Modelling (Single Spill Simulation)

Deterministic modelling is the predictive modelling of a single incident subject to a single sample of wind and weather conditions over time (NOPSEMA, 2018; Figure 1.3).

Deterministic modelling is often paired with stochastic modelling to place the large stochastic footprint into perspective. This deterministic analysis is generally a single run selected from the stochastic analysis and serves as the basis for developing the plans and equipment needs for a realistic spill response. Deterministic spills can be selected on several basis such as minimum time to shoreline, largest swept area, maximum volume ashore, longest length of shoreline contacted by oil or largest area of entrained or dissolved hydrocarbons.

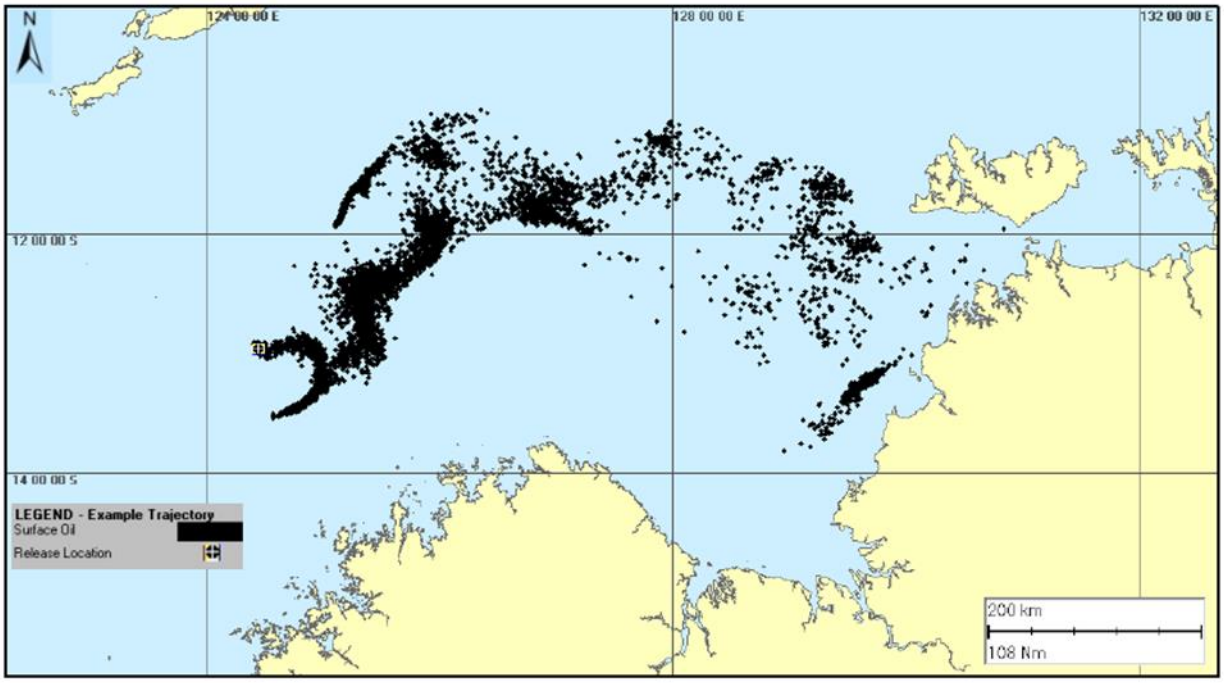

Figure 1.3 Example of an individual spill trajectory predicted by SIMAP for a spill scenario. Note, this image represents surface oil as spillets and do not take any thresholds into consideration.

2 SCOPE OF WORK

The scope of work included the following components:

- Generate 10 years of winds and three-dimensional currents from 2010 to 2019 (inclusive). The currents included the combined influence of tidal and ocean currents;
- Include the wind and current data and characteristics of the condensate as input into the three-dimensional oil spill model (SIMAP), to model the movement, spreading, weathering and shoreline contact by hydrocarbons over time;
- Use SIMAP's stochastic model (also known as a probability model) to calculate exposure to surrounding waters and shorelines. This involved running 100 randomly selected single trajectory simulations per scenario (per season), with each simulation having the same spill information (spill volume, duration and composition of hydrocarbons) but varying start times. This ensured that each spill simulation was subject to a unique set of wind and current conditions;
- Results were assessed to determine the exposure to surrounding waters and contact to shorelines based upon the thresholds outlined in the NOPSEMA Oil Spill Modelling Bulletin (NOPSEMA, 2019); and
- The stochastic modelling results were reviewed, and the "worst case" deterministic runs were identified and presented based on the following criteria (if applicable):
    a. Largest swept area for surface oil above 10 g/m^2;
    b. Largest volume of oil ashore;
    c. Longest length of shoreline with oil accumulation above 100 g/m^2;
    d. Largest area of entrained hydrocarbon exposure above 100 ppb; and
    e. Largest area of dissolved hydrocarbon exposure above 50 ppb.

3 REGIONAL CURRENTS

The Bass Strait is a body of water separating Tasmania from the southern Australian mainland, specifically the state of Victoria. The strait is a relatively shallow area of the continental shelf, connecting the southeast Indian Ocean with the Tasman Sea. Currents within the straight are primarily driven by tides, winds, incident continental shelf waves and density driven flows; high winds and strong tidal currents are frequent within the area (Jones, 1980).

The varied geography and bathymetry of the region, in addition to the forcing of the south-eastern Indian Ocean and local meteorology lead to complex shelf and slope circulation patterns (Middleton & Bye, 2007). Figure 3.1 displays seasonal current trends within the Bass Strait. During winter there is a strong eastward water flow due to the strengthening of the South Australian Current (fed by the Leeuwin Current in the Northwest Shelf), which bifurcates with one extension moving though the Bass Strait, and another forming the Zeehan Current off western Tasmania (Sandery & Kämpf, 2007). During summer, water flow reverses off Tasmania, King Island and the Otway Basin travelling eastward, as the coastal current develops due to south-easterly winds.

To accurately describe the variability in currents between the inshore and offshore region, a hybrid regional dataset was developed by combining ocean predictions obtained from HYCOM (Hybrid Coordinate Ocean Model) with surface tidal currents developed by RPS. The following sections provide a summary of the hybrid regional dataset.

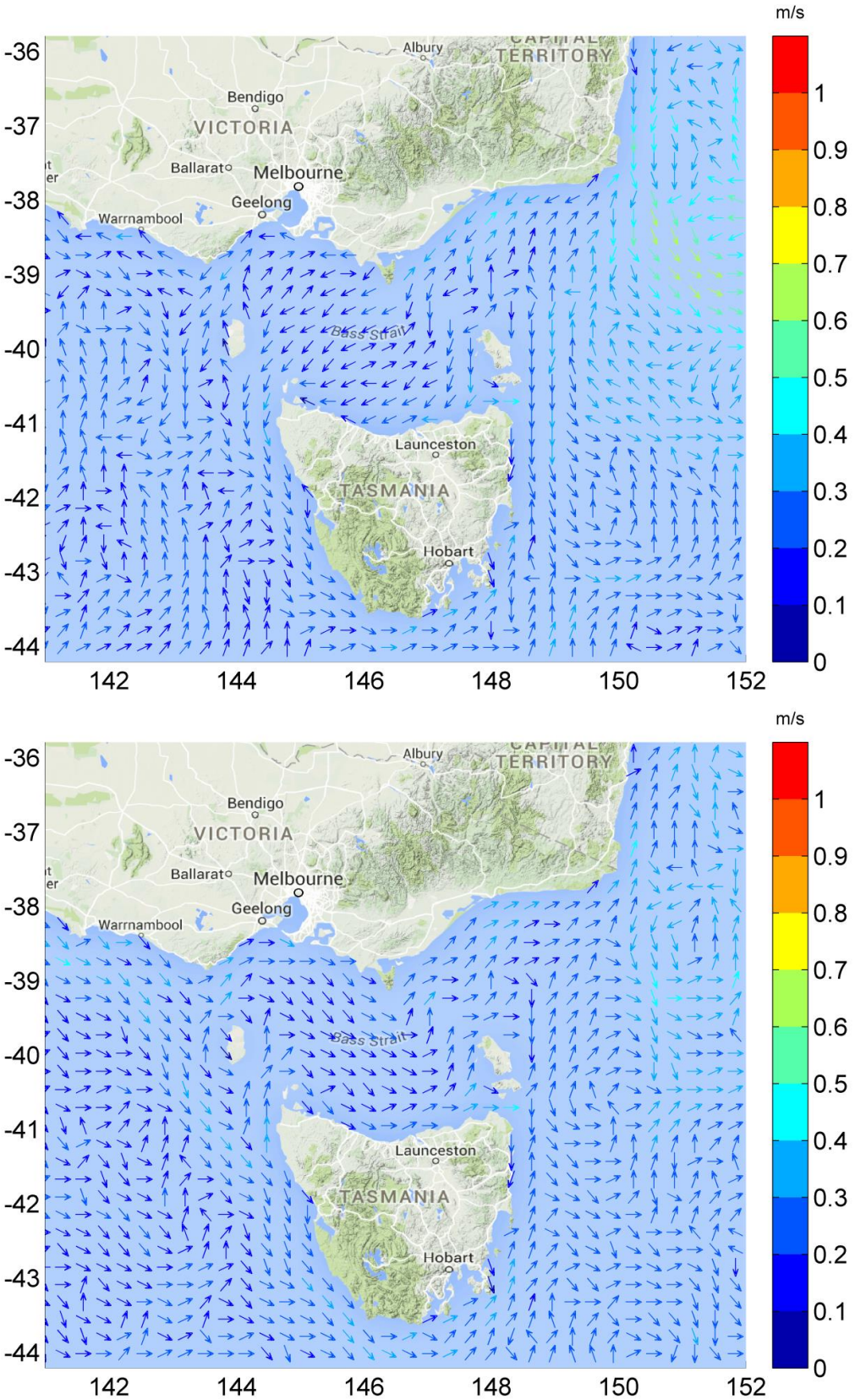

Figure 3.1 HYCOM averaged seasonal surface drift currents during summer (upper image) and winter (lower image).

3.1 Tidal currents

Tidal current data was generated using RPS's advanced ocean/coastal model, HYDROMAP. The HYDROMAP model has been thoroughly tested and verified through field measurements throughout the world for more than 30 years (Isaji & Spaulding, 1984; Isaji, et al., 2001; Zigic, et al., 2003). HYDROMAP tidal current data has been used as input to forecast (in the future) and hindcast (in the past) pollutant spills in Australian waters and forms part of the Australian National Oil Spill Emergency Response System operated by AMSA (Australian Maritime Safety Authority).

HYDROMAP employs a sophisticated sub-gridding strategy, which supports up to six levels of spatial resolution, halving the grid cell size as each level of resolution is employed. The sub-gridding allows for higher resolution of currents within areas of greater bathymetric and coastline complexity, and/or of interest to a study.

The numerical solution methodology follows that of Davies (1977a and 1977b) with further developments for model efficiency by Owen (1980) and Gordon (1982). A more detailed presentation of the model can be found in Isaji and Spaulding (1984) and Isaji et al. (2001).

3.1.1 Grid Setup

The tidal model domain is sub-gridded to a resolution of 500 m for shallow and coastal regions, starting from an offshore (or deep water) resolution of 8 km. The finer grids are progressively allocated in a step-wise fashion to more accurately resolve flows along the coastline, around islands and over regions with more complex bathymetry. Figure 3.2 shows the tidal model grid covering the study domain.

A combination of datasets was used and merged to describe the shape of the seabed within the grid domain (Figure 3.3). These included spot depths and contours which were digitised from nautical charts released by the hydrographic offices as well as Geoscience Australia database and depths extracted from the Shuttle Radar Topography Mission (SRTM30_PLUS) Plus dataset (see Becker et al., 2009).

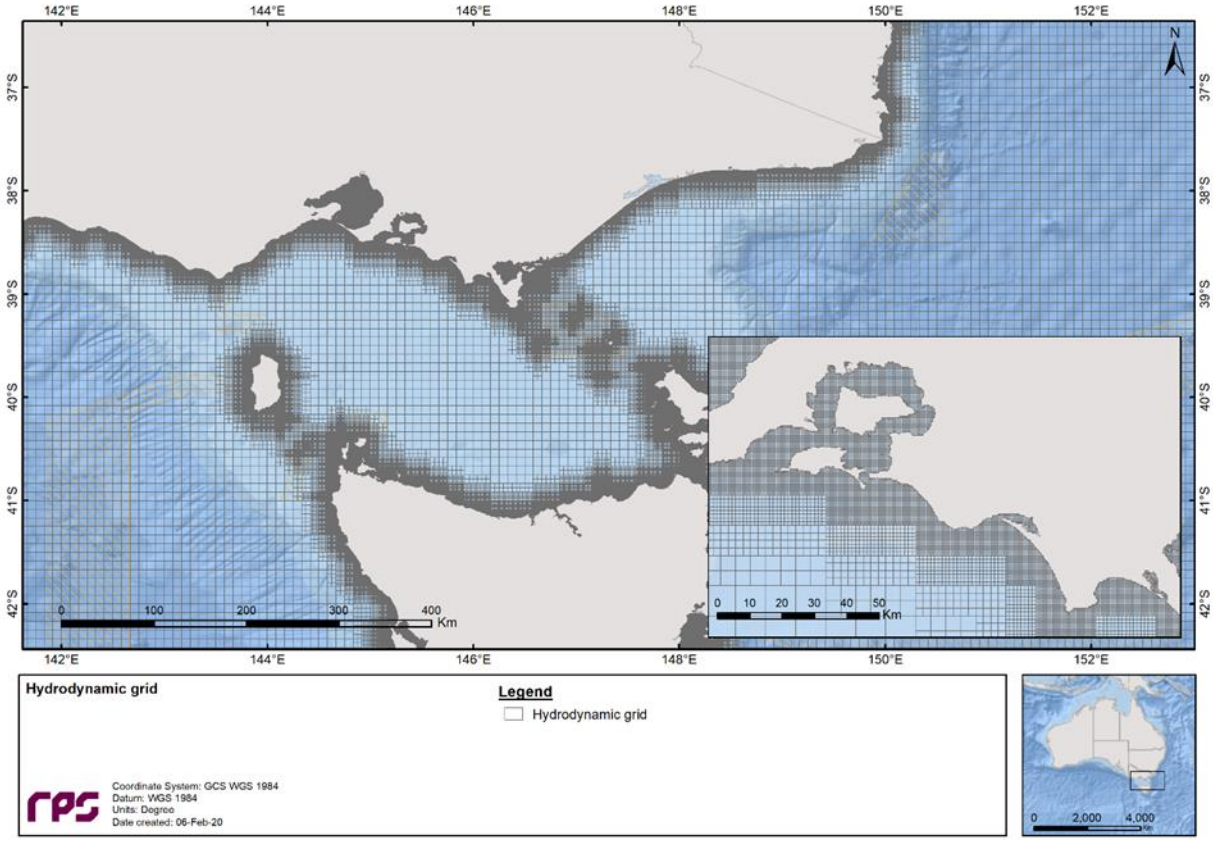

Figure 3.2 Sample of the model grid used to generate the tidal currents for the study region. Higher resolution areas are shown by the denser mesh.

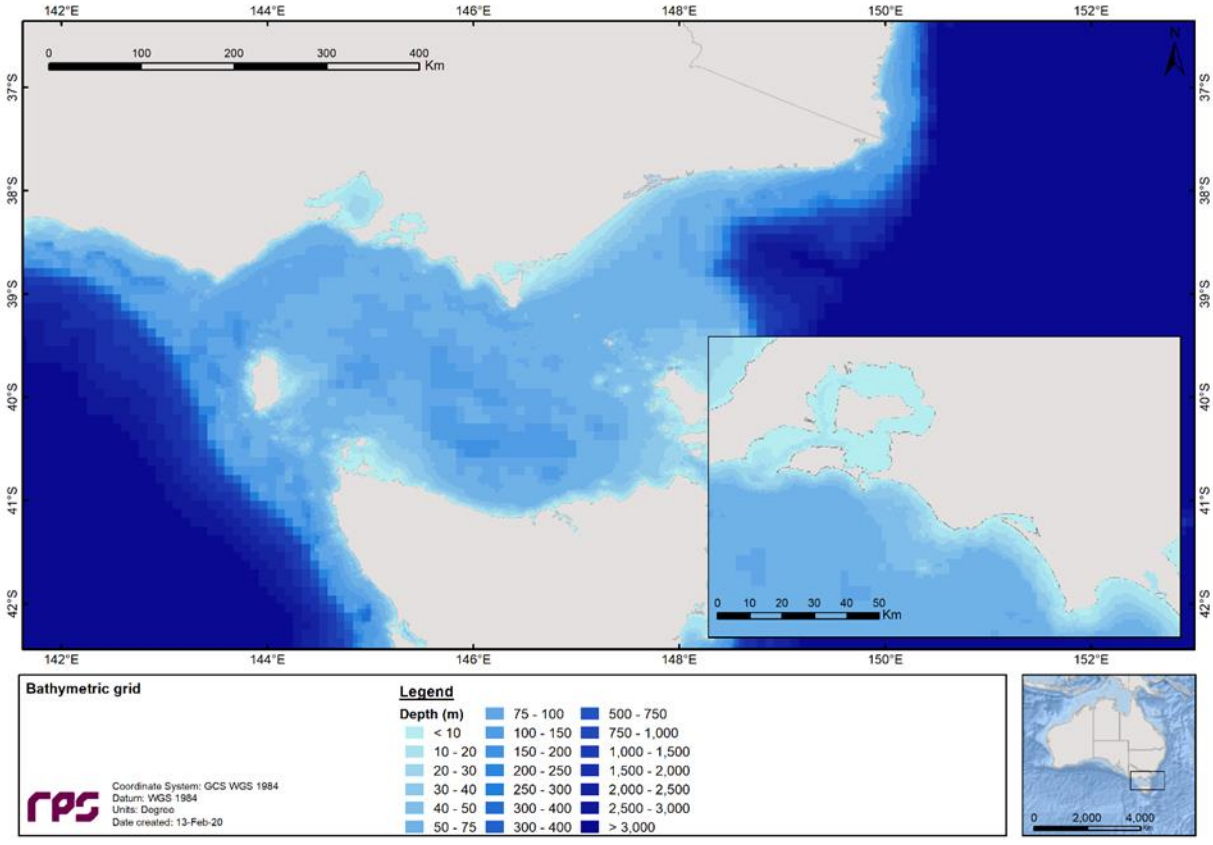

Figure 3.3 Bathymetry defined throughout the tidal model domain.

3.1.2 Tidal Conditions

The ocean boundary data for the regional model was obtained from satellite measured altimetry data (TOPEX/Poseidon 8.0) which provided estimates of the eight dominant tidal constituents at a horizontal scale of approximately 0.25 degrees. The eight major tidal constituents used were K_2, S_2, M_2, N_2, K_1, P_1, O_1 and Q_1. Using the tidal data, time series surface heights were calculated along the open boundaries for the simulation period.

The Topex/Poseidon satellite data has a resolution of 0.25 degrees globally, with higher resolution in coastal regions, and is produced and quality controlled by NASA (National Aeronautics and Space Administration). The data capturing satellites, equipped with two altimeters capable of taking sea level measurements accurate to less than ± 5 cm, measured oceanic surface elevations (and the resultant tides) for the period 1992–2005. In total these satellites carried out 62,000 orbits of the planet. The Topex/Poseidon tidal data has been widely used amongst the oceanographic community, being refereced in more than 2,100 research publications (e.g. Andersen, 1995; Ludicone et al., 1998; Matsumoto et al., 2000; Kostianoy et al., 2003; Yaremchuk & Tangdong, 2004; Qiu & Chen 2010). The Topex/Poseidon tidal data is considered suitably accurate for this study.

3.1.3 Surface Elevation Validation

To ensure that tidal predictions were accurate, predicted surface elevations were compared to data observed at a location situated within the study area (Figure 3.4).

To provide a statistical measure of the model performance, the Index of Agreement (IOA – Willmott, 1981) and the Mean Absolute Error (MAE – Willmott, 1982; Willmott & Matsuura, 2005) were used.

The MAE (Eq.1) is simply the average of the absolute values of the difference between the model-predicted (P) and observed (O) variables. It is a more natural measure of the average error (Willmott & Matsuura, 2005) and more readily understood. The MAE is determined by:

$$MAE = N^{-1} \sum_{i=1}^{N} |P_i - O_i| \qquad \text{Eq.1}$$

Where: N = Number of observations

P_i = Model predicted surface elevation

O_i = Observed surface elevation

The Index of Agreement (IOA; Eq. 2) in contrast, gives a non-dimensional measure of model accuracy or performance. A perfect agreement between the model predicted and observed surface elevations exists if the index gives an agreement value of 1, and complete disagreement between model and observed surface elevations will produce an index measure of 0 (Wilmott, 1981). Willmott et al. (1985) also suggests that values larger than 0.5 may represent good model performance. The IOA is determined by:

$$IOA = 1 - \frac{\sum |X_{model} - X_{obs}|^2}{\sum (|X_{model} - \overline{X_{obs}}| + |X_{obs} - \overline{X_{obs}}|)^2} \qquad \text{Eq.2}$$

Where: X_{model} = Model predicted surface elevation

X_{obs} = Observed surface elevation

Clearly, a greater IOA and lower MAE represent a better model performance.

Figure 3.5 and Figure 3.6 illustrate a comparison of the predicted and observed surface elevations in February 2017. As shown on the graph, the model accurately reproduced the phase and amplitudes throughout the spring and neap tidal cycles.

Table 3.1 shows the IOA and MAE values for the selected tide station locations indicating that the model is performing well.

Table 3.1 Statistical comparison between the observed and HYDROMAP predicted surface elevations.

Tide Station	IOA	MAE (m)
Gabo Island	0.98	0.08
Port MacDonnell	0.98	0.05
Port Welshpool	0.92	0.30
Portland	0.97	0.07
Stack Island	0.96	0.22

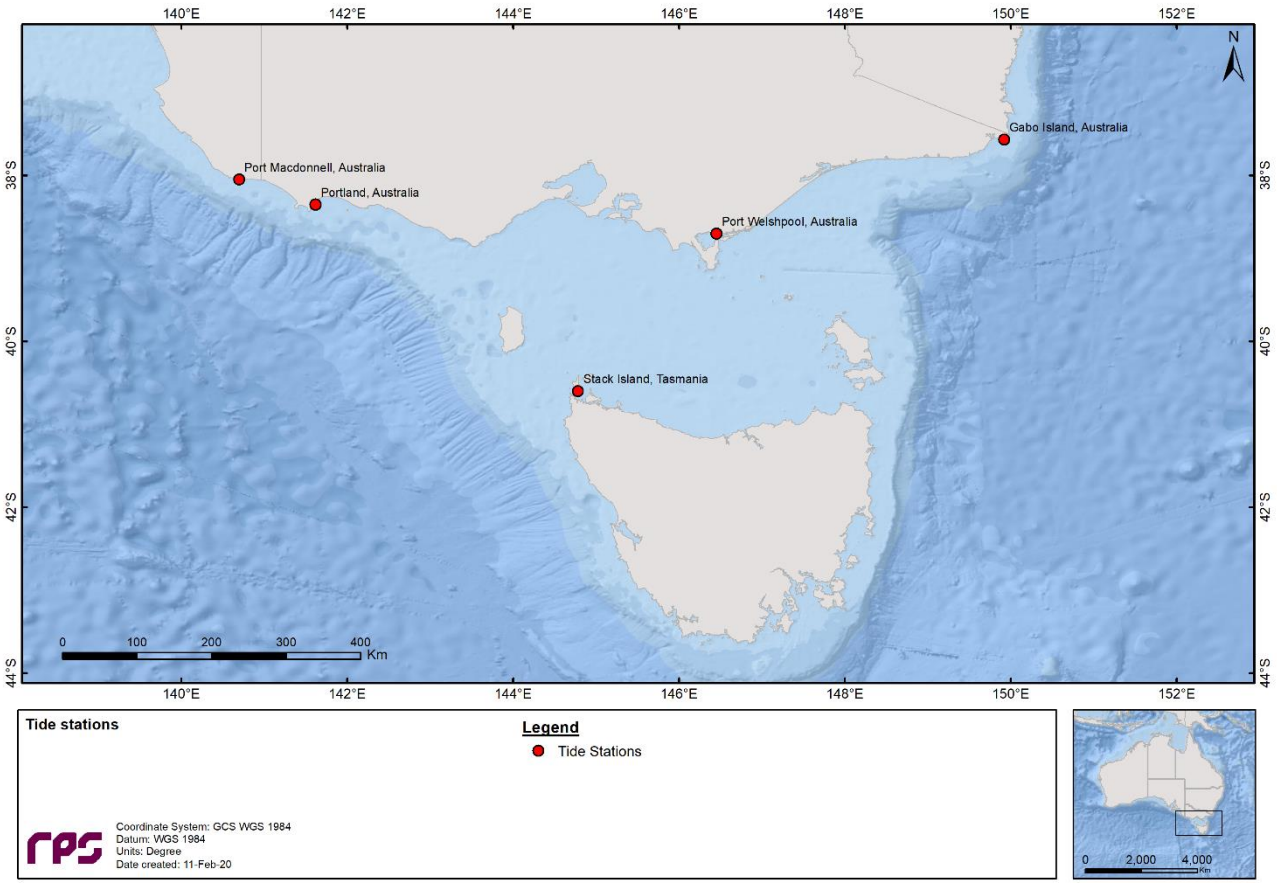

Figure 3.4 Location of the tide stations used in the surface elevation validation.

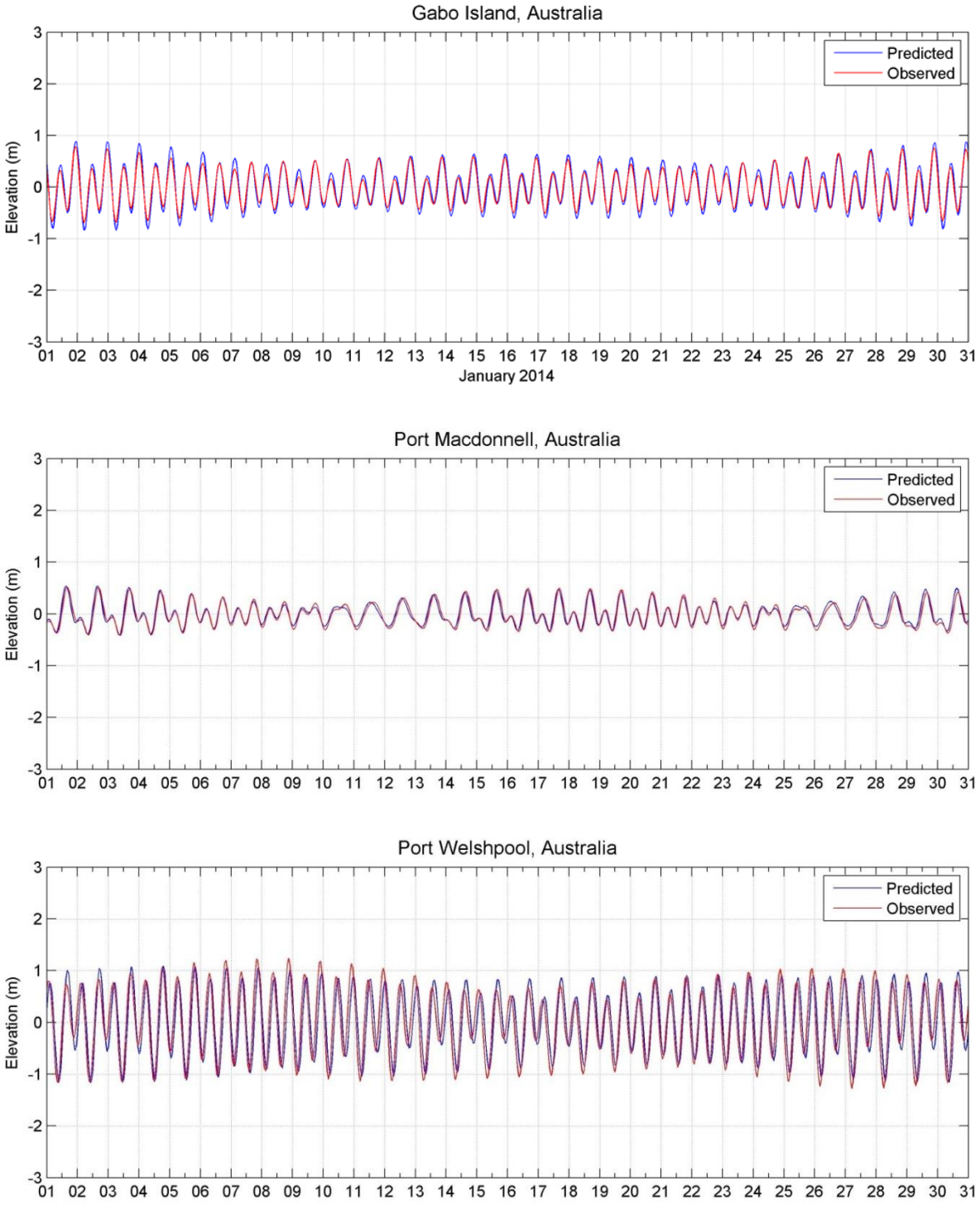

Figure 3.5 Comparison between HYDROMAP predicted (blue line) and observed (red line) surface elevation at tidal stations Gabo Island (upper image), Port MacDonnell (middle image) and Port Welshpool (lower image).

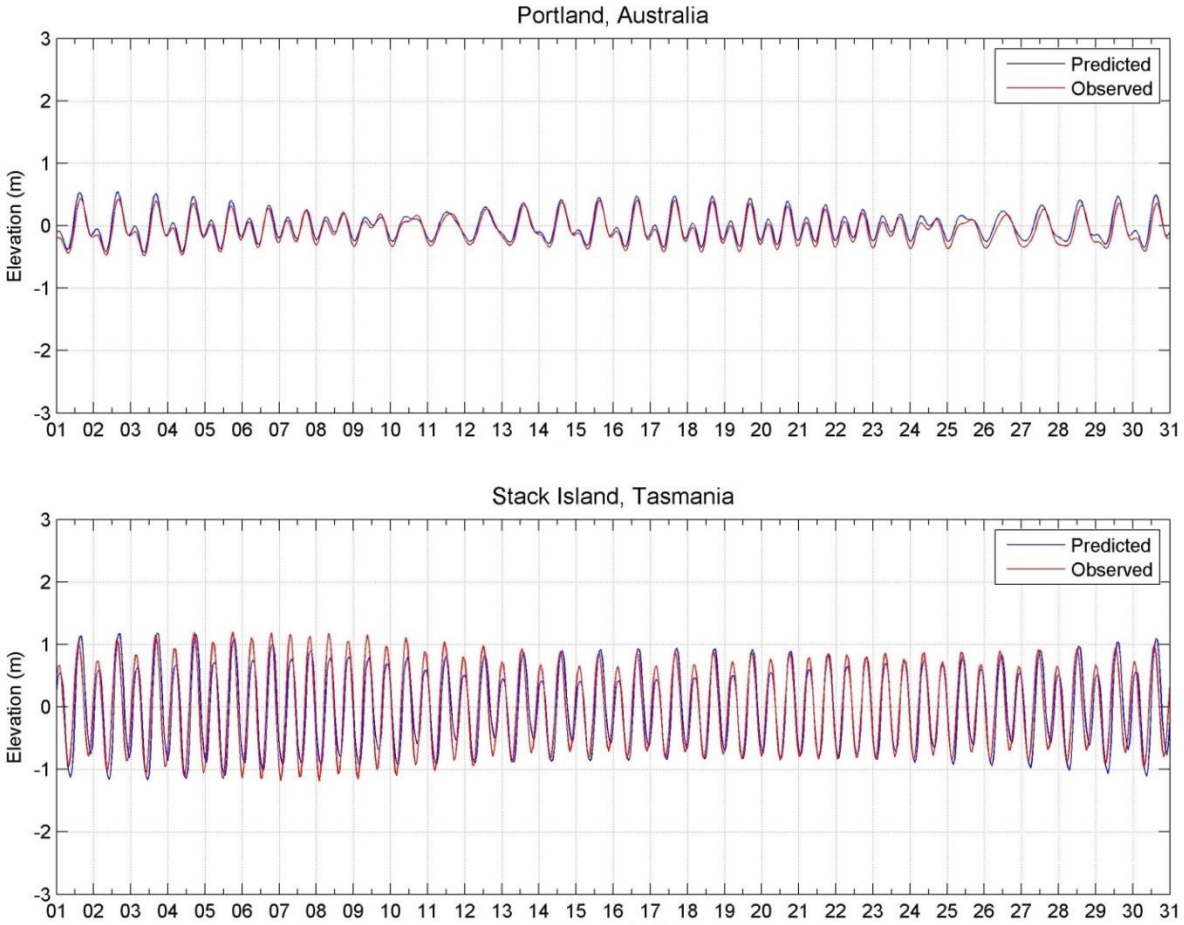

Figure 3.6 Comparison between HYDROMAP predicted (blue line) and observed (red line) surface elevation at tidal stations Portland (upper image) and Stack Island (lower image).

3.2 Ocean Currents

Data describing the flow of ocean currents for the years 2010 to 2019 (inclusive) was obtained from HYCOM (Hybrid Coordinate Ocean Model, Chassignet et al., 2007), which is operated by the HYCOM Consortium, sponsored by the Global Ocean Data Assimilation Experiment (GODAE). HYCOM is a data-assimilative, three-dimensional ocean model that is run as a hindcast (for a past period), assimilating time-varying observations of sea surface height, sea surface temperature and in-situ temperature and salinity measurements (Chassignet et al., 2009). The HYCOM predictions for drift currents are produced at a horizontal spatial resolution of approximately 8.25 km (1/12th of a degree) over the region, at a frequency of once per day. HYCOM uses isopycnal layers in the open, stratified ocean, but uses the layered continuity equation to make a dynamically smooth transition to a terrain-following coordinate in shallow coastal regions, and to z-level coordinates in the mixed layer and/or unstratified seas.

3.3 Surface Currents

Table 3.2 to Table 3.4 present the average and maximum surface current speeds nearby the Elanora-1 ST1 (Isabella), Pecten East-2 and Annie-2 wells by combining the ocean and tidal currents.

Near the Elanora-1 ST1 well current speeds varied throughout the year with maximum current speeds ranging between approximately 0.68 m/s (January) and 1.07 m/s (July). The dominant surface current direction was identified as easterly (towards the east) during the whole year, except for January and February.

Nearby Pecten-East 2, maximum current speeds ranged between 0.66 m/s (February) and 1.08 m/s (September). Current direction varied throughout the year, flowing mostly towards the east-southeast during winter months.

Close to Annie-2, maximum current speeds varied between 0.72 m/s (February) and 1.10 m/s (September). Similar to Pecten-East 2, current directions predominantly flowed east-southeast during winter months.

Figure 3.7 to Figure 3.12 show the monthly and total surface current rose distributions for the selected locations.

Note the convention for defining current direction is the direction the current flows towards, which is used to reference current direction throughout this report. Each branch of the rose represents the currents flowing to that direction, with north to the top of the diagram. Sixteen directions are used. The branches are divided into segments of different colour, which represent the current speed ranges for each direction. Speed intervals of 0.1 m/s are predominantly used in these current roses. The length of each coloured segment is relative to the proportion of currents flowing within the corresponding speed and direction.

Table 3.2 Predicted monthly average and maximum surface current speeds for Elanora-1 ST1 well. The data was derived by combining the HYCOM ocean data and HYDROMAP tidal data from 2010–2019 (inclusive).

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction(s) (Towards)
January	0.16	0.68	West
February	0.16	0.71	West
March	0.16	0.93	East
April	0.15	0.87	East
May	0.19	0.96	East
June	0.20	1.05	East
July	0.24	1.07	East
August	0.23	1.05	East
September	0.20	1.01	East
October	0.19	0.91	East
November	0.17	0.75	East
December	0.18	0.75	East
Minimum	**0.15**	**0.68**	-
Maximum	**0.24**	**1.07**	

Table 3.3 Predicted monthly average and maximum surface current speeds for Pecten East-2 well. The data was derived by combining the HYCOM ocean data and HYDROMAP tidal data from 2010–2019 (inclusive).

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction(s) (Towards)
January	0.17	0.68	West-northwest
February	0.19	0.66	West-northwest
March	0.18	0.86	West
April	0.15	0.75	East
May	0.19	0.91	East-southeast
June	0.19	1.05	East-southeast
July	0.24	0.99	East-southeast
August	0.23	1.02	East-southeast
September	0.20	1.08	East-southeast
October	0.19	0.92	East
November	0.17	0.74	East
December	0.18	0.80	East
Minimum	**0.15**	**0.66**	-
Maximum	**0.24**	**1.08**	

Table 3.4 Predicted monthly average and maximum surface current speeds for Annie-2 well. The data was derived by combining the HYCOM ocean data and HYDROMAP tidal data from 2010–2019 (inclusive).

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction(s) (Towards)
January	0.17	0.77	West
February	0.19	0.72	West
March	0.18	0.92	West
April	0.15	0.83	East
May	0.19	0.90	East-southeast
June	0.19	1.07	East-southeast
July	0.24	1.05	East-southeast
August	0.23	1.05	East-southeast
September	0.20	1.10	East
October	0.20	0.88	East
November	0.18	0.82	East
December	0.18	0.92	East
Minimum	**0.15**	**0.72**	-
Maximum	**0.24**	**1.10**	

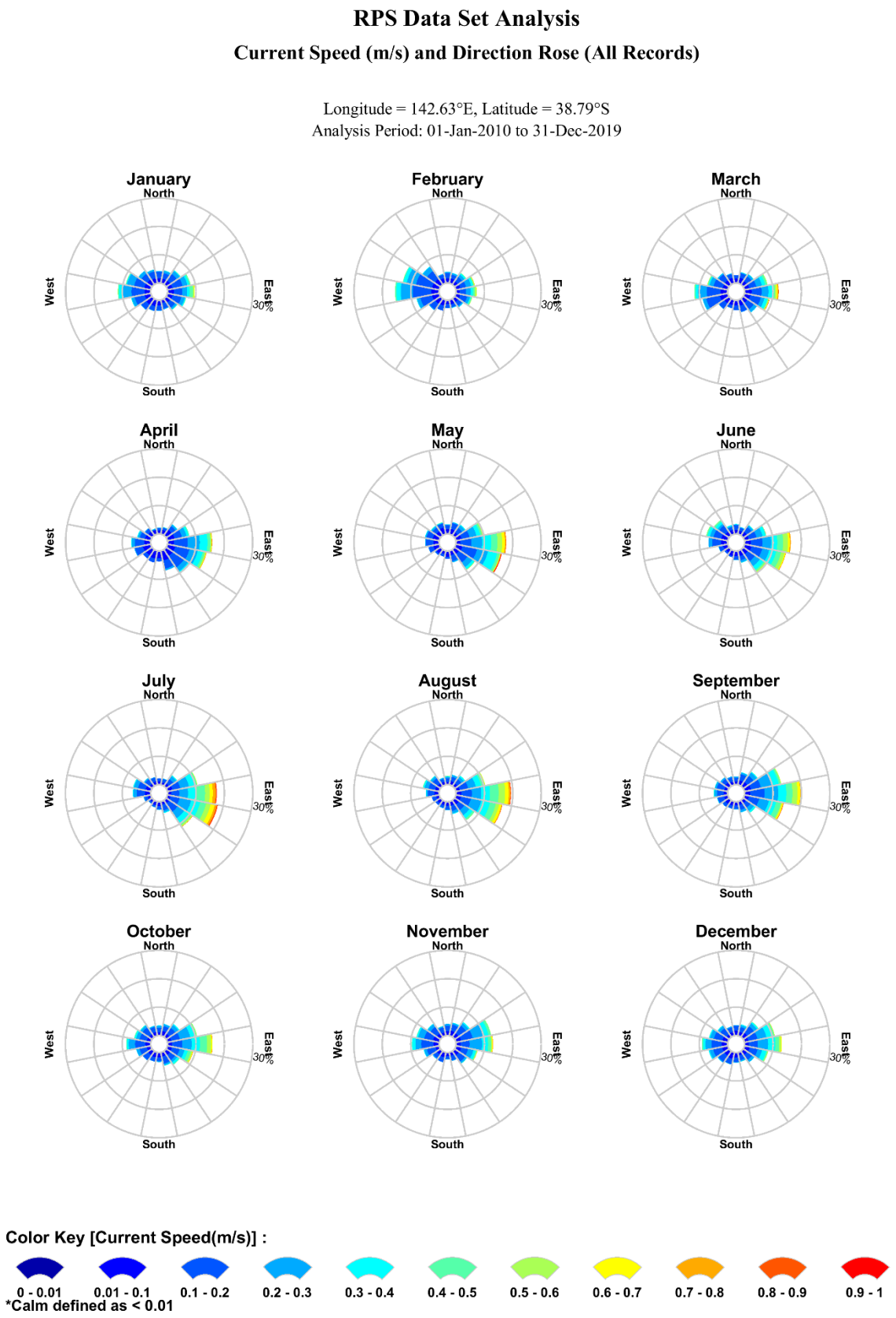

Figure 3.7 Monthly surface current rose plots nearby the Elanora-1 ST1 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

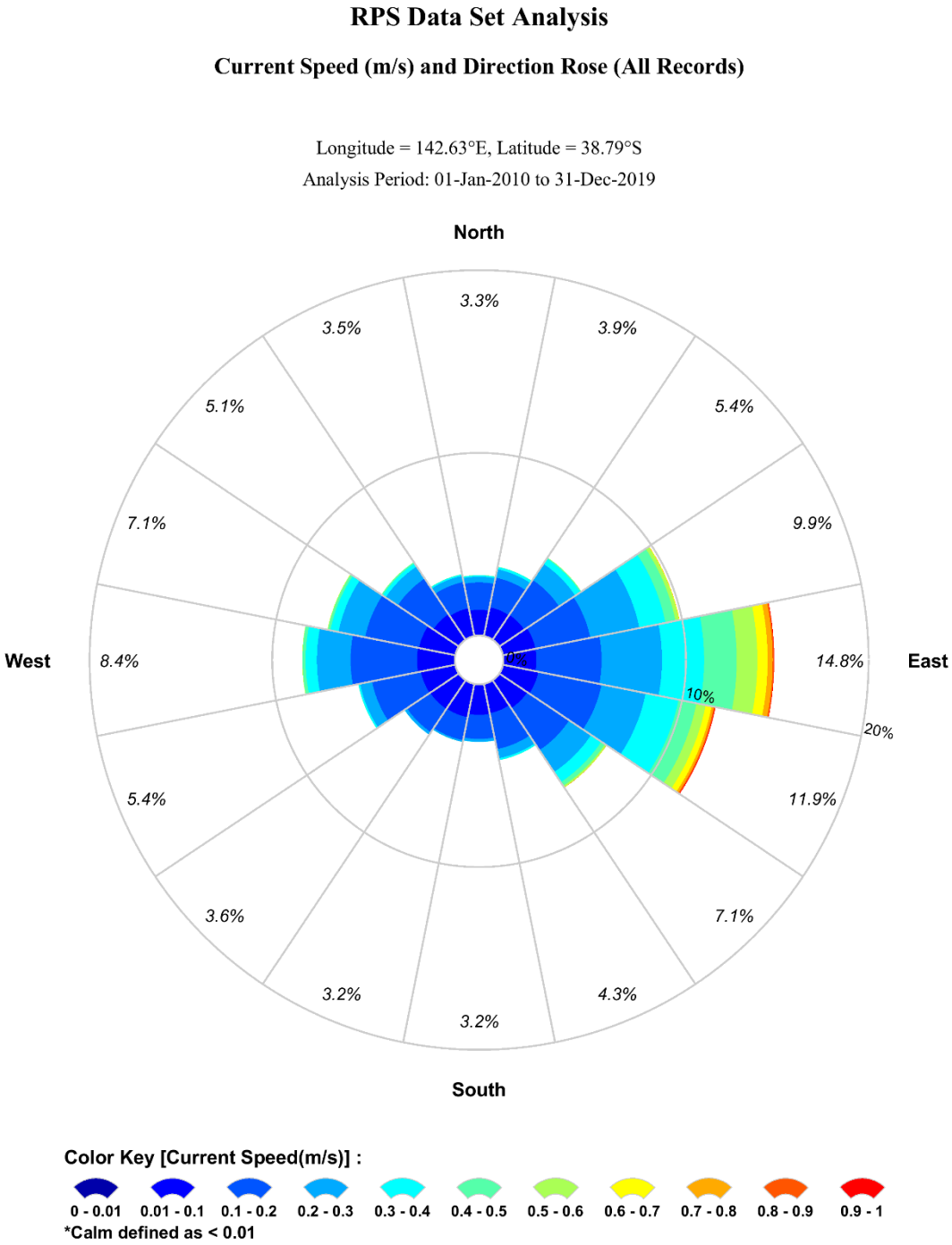

Figure 3.8 Total surface current rose plot nearby the Elanora-1 ST1 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

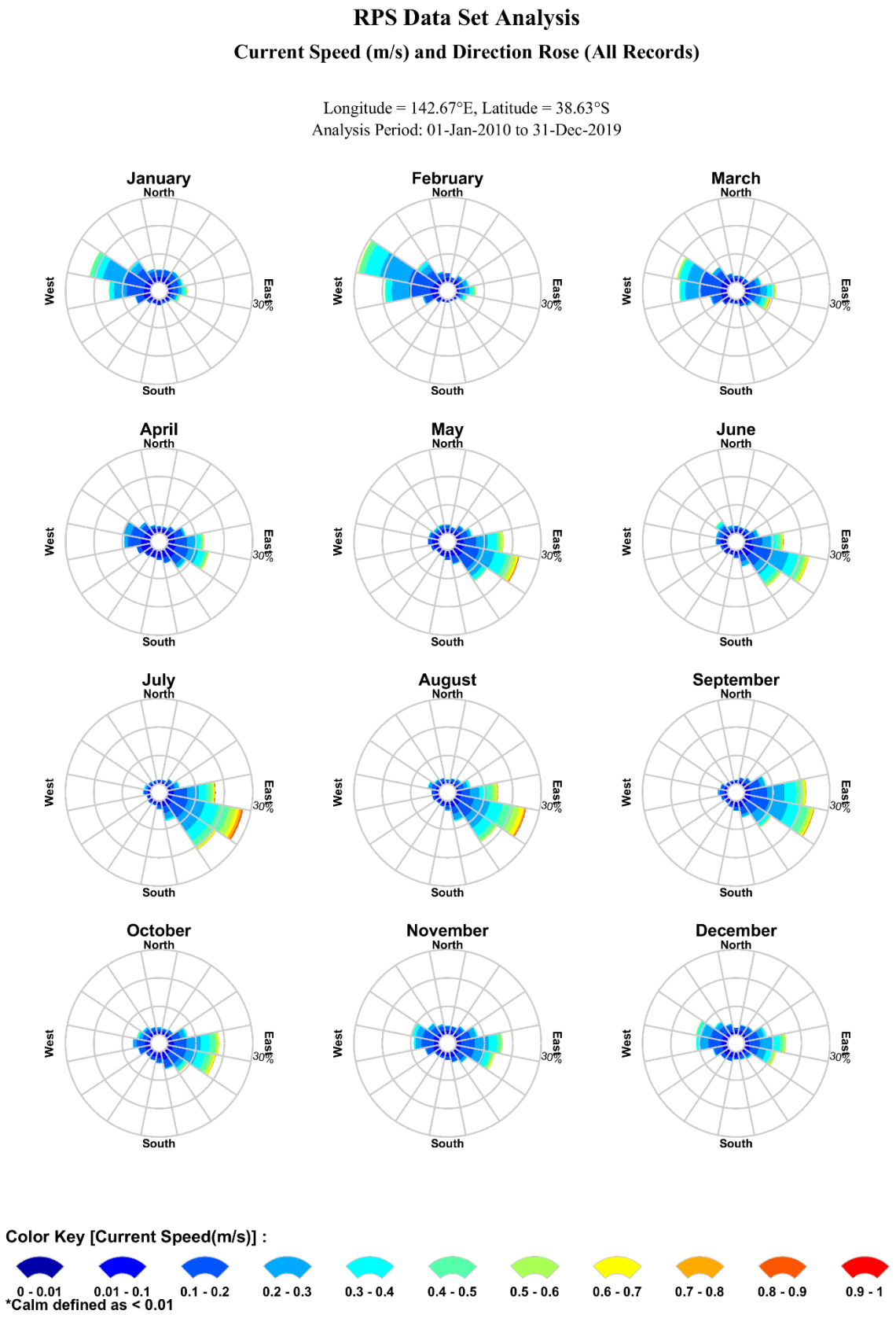

Figure 3.9 Monthly surface current rose plots nearby the Pecten East-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

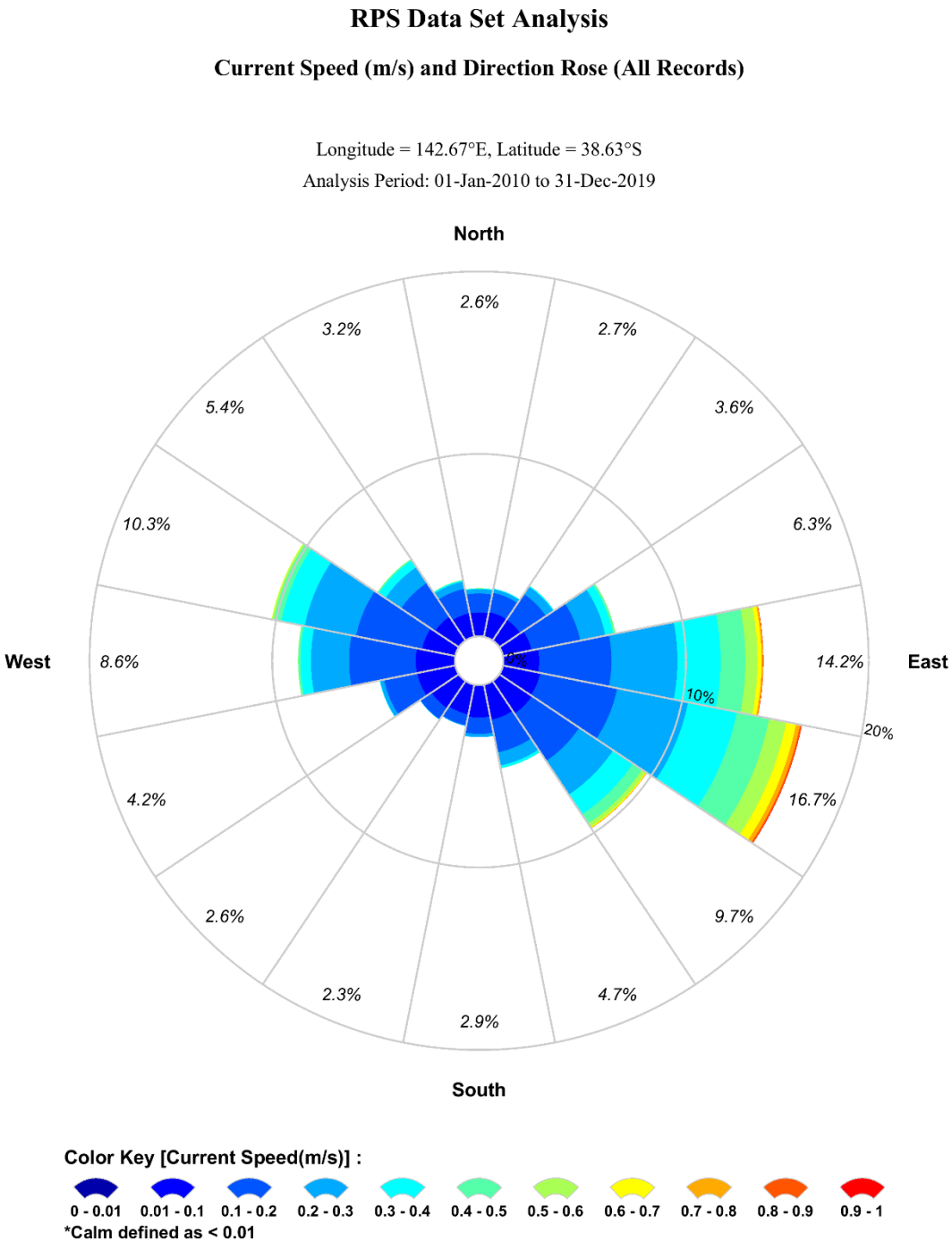

Figure 3.10 Total surface current rose plot nearby the Pecten East-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

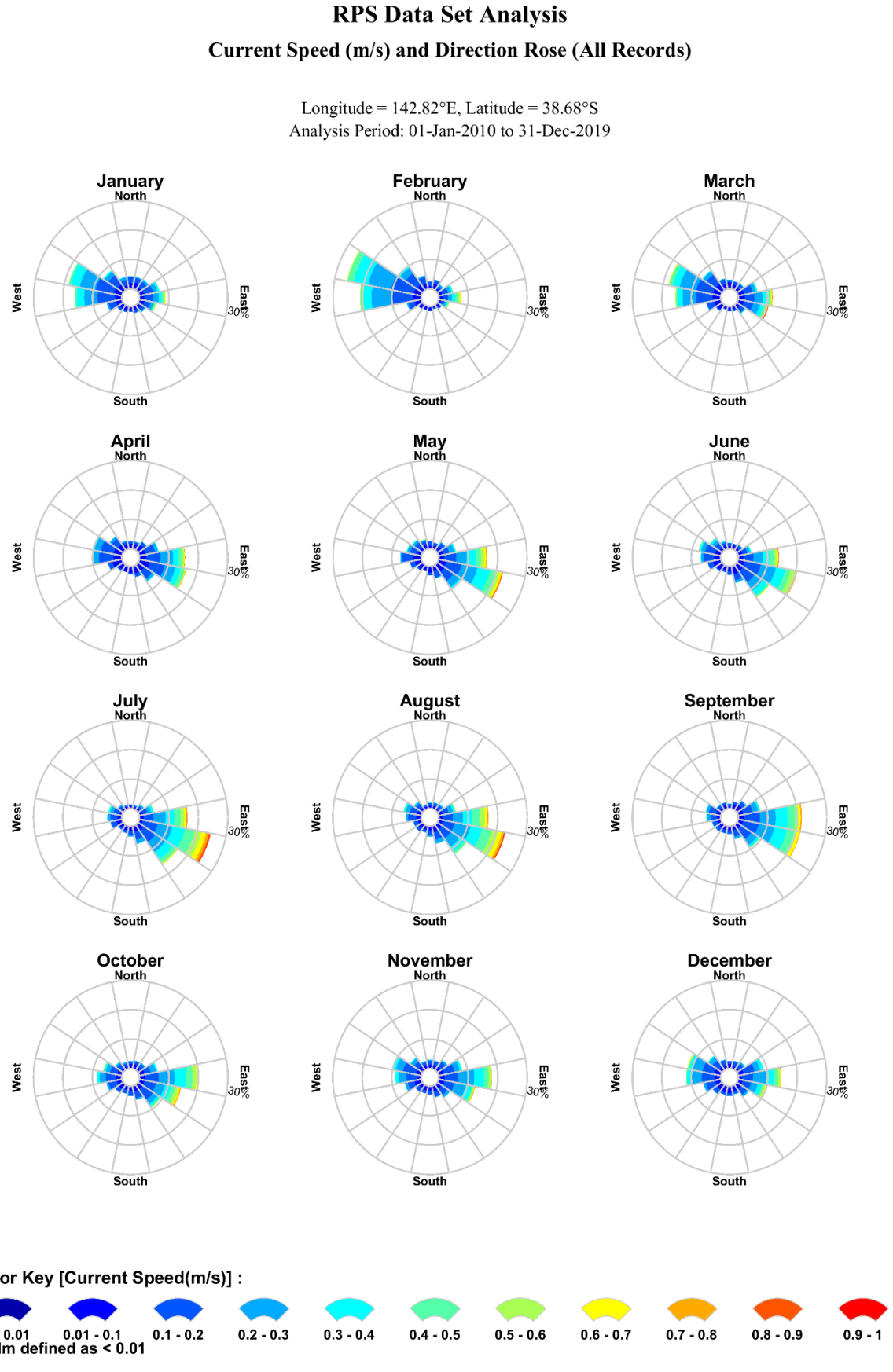

Figure 3.11 Monthly surface current rose plots nearby the Annie-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

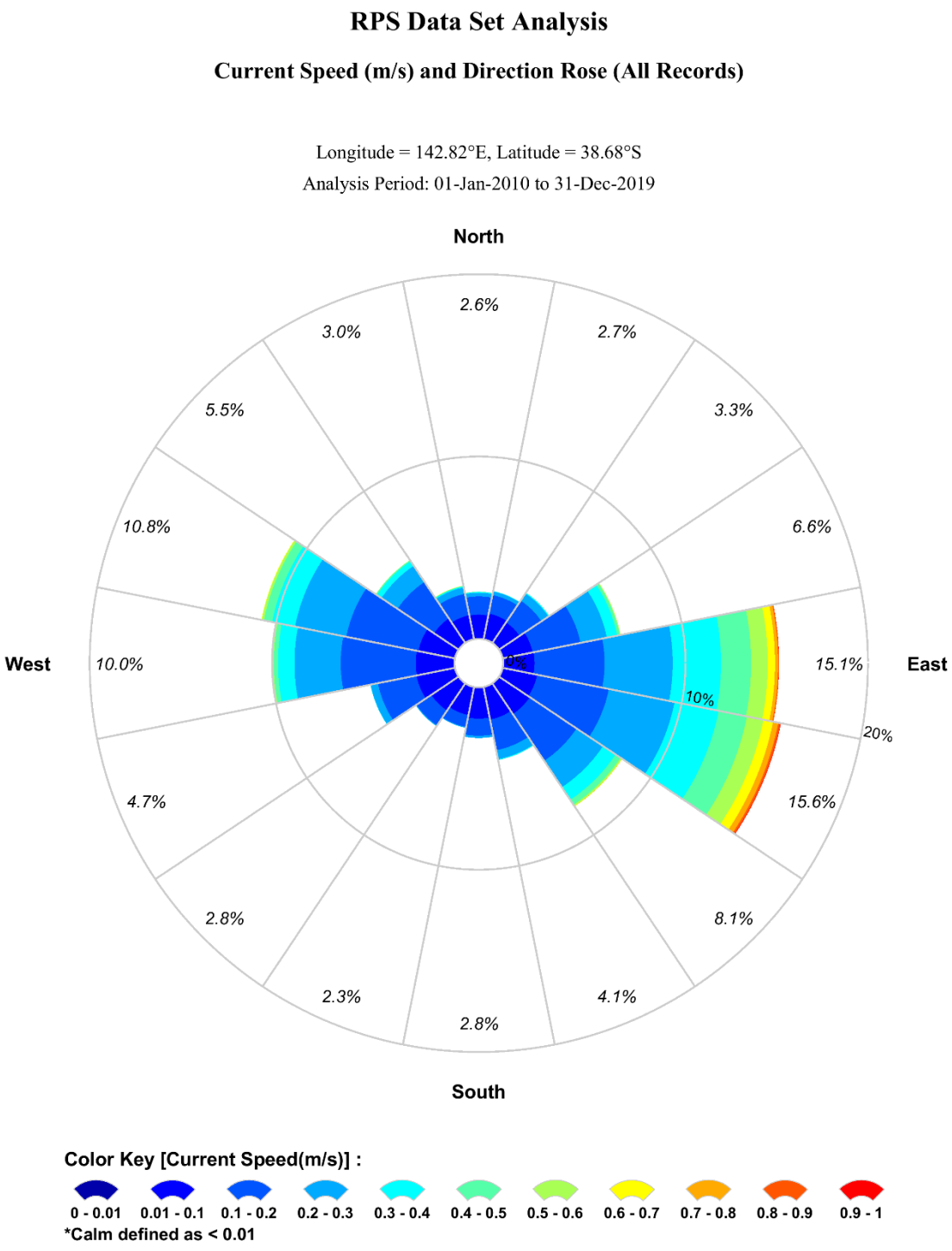

Figure 3.12 Total surface current rose plot nearby the Annie-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

3.4 Currents at 50 m below Surface

Table 3.5 to Table 3.7 present the average and maximum current speeds (at 50m below surface) nearby the Elanora-1 ST1, Pecten East-2 and Annie-2 wells by combining the ocean and tidal currents.

Near the Elanora-1 ST1 well current speeds varied throughout the year with maximum current speeds ranging between approximately 0.36 m/s (January) and 0.59 m/s (July).

Nearby Pecten-East 2, maximum current speeds ranged between 0.21 m/s (February) and 0.36 m/s (July).

Close to Annie-2, maximum current speeds varied between 0.28 m/s (November) and 0.39 m/s (July). Similar to Pecten-East 2.

Figure 3.13 to Figure 3.18 show the monthly and total current rose distributions for the selected locations.

Table 3.5 Predicted monthly average and maximum current speeds (at 50m below surface) for Elanora-1 ST1 well. The data was derived by combining the HYCOM ocean data and HYDROMAP tidal data from 2010–2019 (inclusive).

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction(s) (Towards)
January	0.10	0.36	West
February	0.09	0.39	West
March	0.10	0.41	East-southeast
April	0.09	0.52	East-southeast
May	0.10	0.52	East-southeast
June	0.11	0.47	East-southeast
July	0.12	0.59	East-southeast
August	0.11	0.53	East-southeast
September	0.10	0.50	East-southeast
October	0.10	0.46	East-southeast
November	0.09	0.40	East-southeast
December	0.10	0.40	East-southeast
Minimum	**0.09**	**0.36**	-
Maximum	**0.12**	**0.59**	

Table 3.6 Predicted monthly average and maximum surface current speeds (at 50m below surface) for Pecten East-2 well. The data was derived by combining the HYCOM ocean data and HYDROMAP tidal data from 2010–2019 (inclusive).

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction(s) (Towards)
January	0.06	0.27	East and west
February	0.06	0.21	East and west
March	0.06	0.31	East and west
April	0.06	0.27	East and west
May	0.06	0.31	East and west
June	0.06	0.29	East and west
July	0.07	0.36	East and west
August	0.07	0.31	East and west
September	0.06	0.33	East and west
October	0.06	0.26	East and west
November	0.06	0.24	East and west
December	0.06	0.27	East and west
Minimum	**0.06**	**0.21**	-
Maximum	**0.07**	**0.36**	

Table 3.7 Predicted monthly average and maximum surface current speeds (at 50m below surface) for Annie-2 well. The data was derived by combining the HYCOM ocean data and HYDROMAP tidal data from 2010–2019 (inclusive).

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction(s) (Towards)
January	0.09	0.35	West-northwest and east-southeast
February	0.09	0.29	
March	0.09	0.37	
April	0.09	0.30	
May	0.09	0.39	
June	0.09	0.35	
July	0.09	0.39	
August	0.09	0.36	
September	0.09	0.34	
October	0.09	0.30	
November	0.09	0.28	
December	0.09	0.30	
Minimum	**0.09**	**0.28**	-
Maximum	**0.09**	**0.39**	

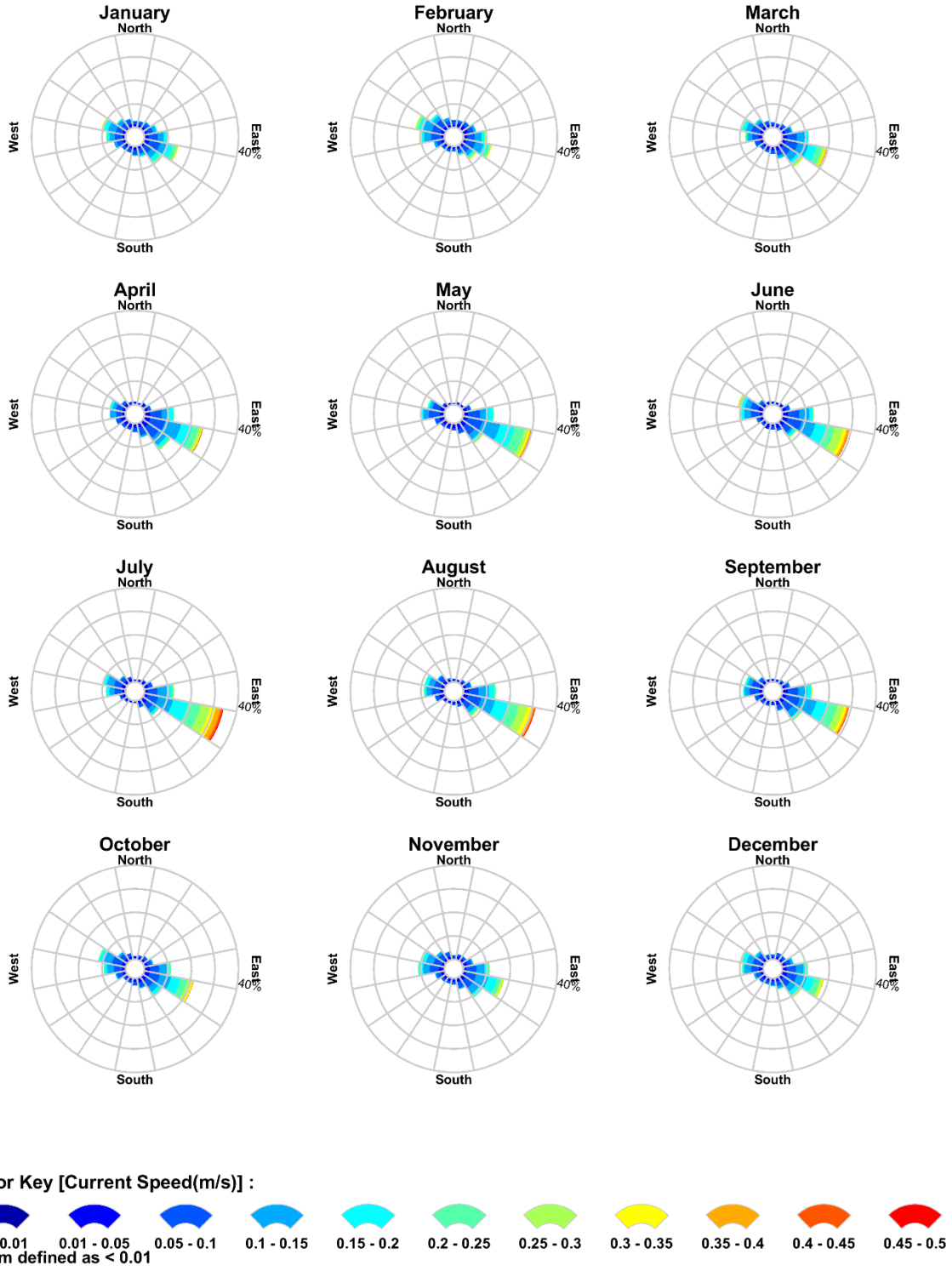

Figure 3.13 Monthly current rose plots (at 50m below surface) nearby the Elanora-1 ST1 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

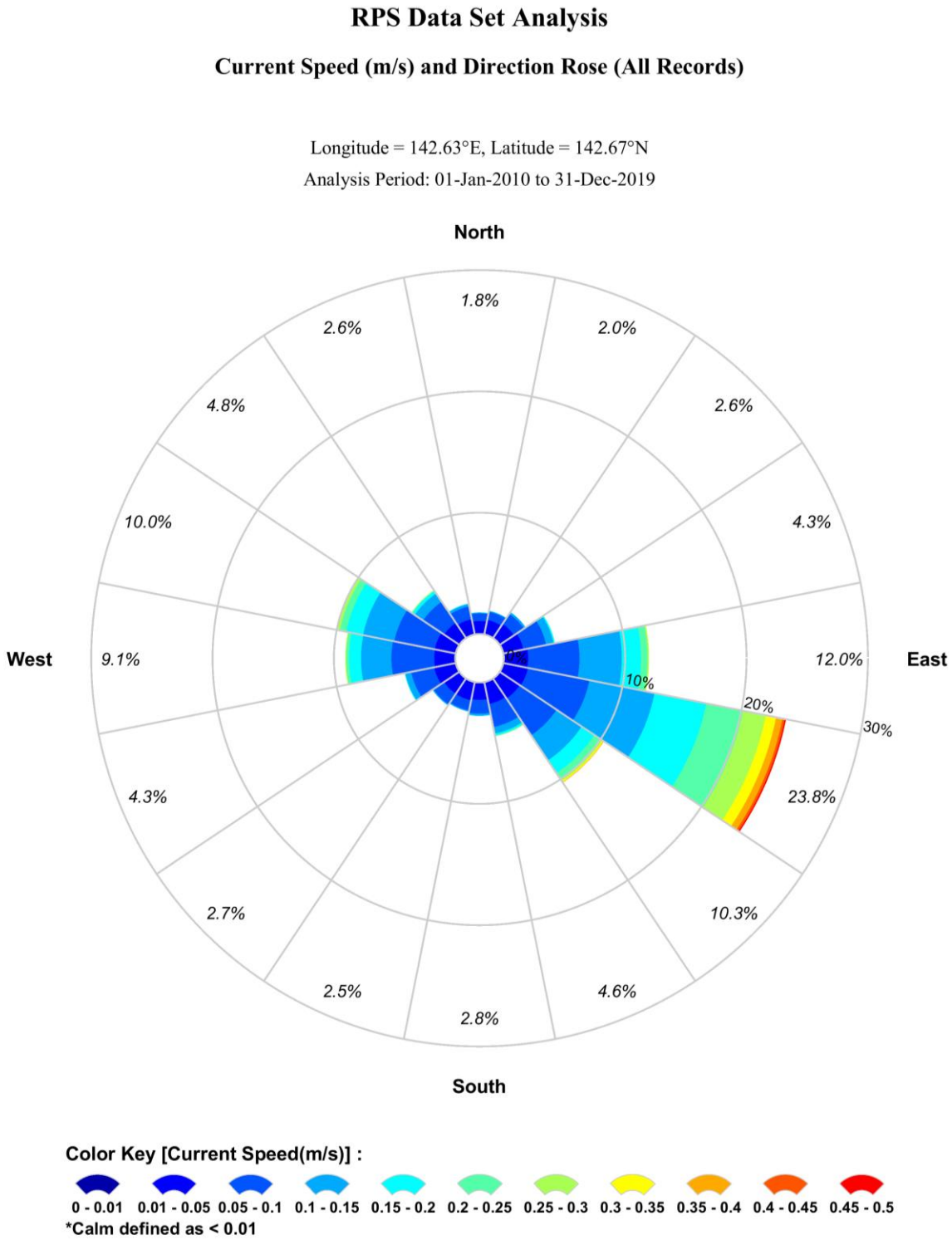

Figure 3.14 Total surface current rose plot (at 50m below surface) nearby the Elanora-1 ST1 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

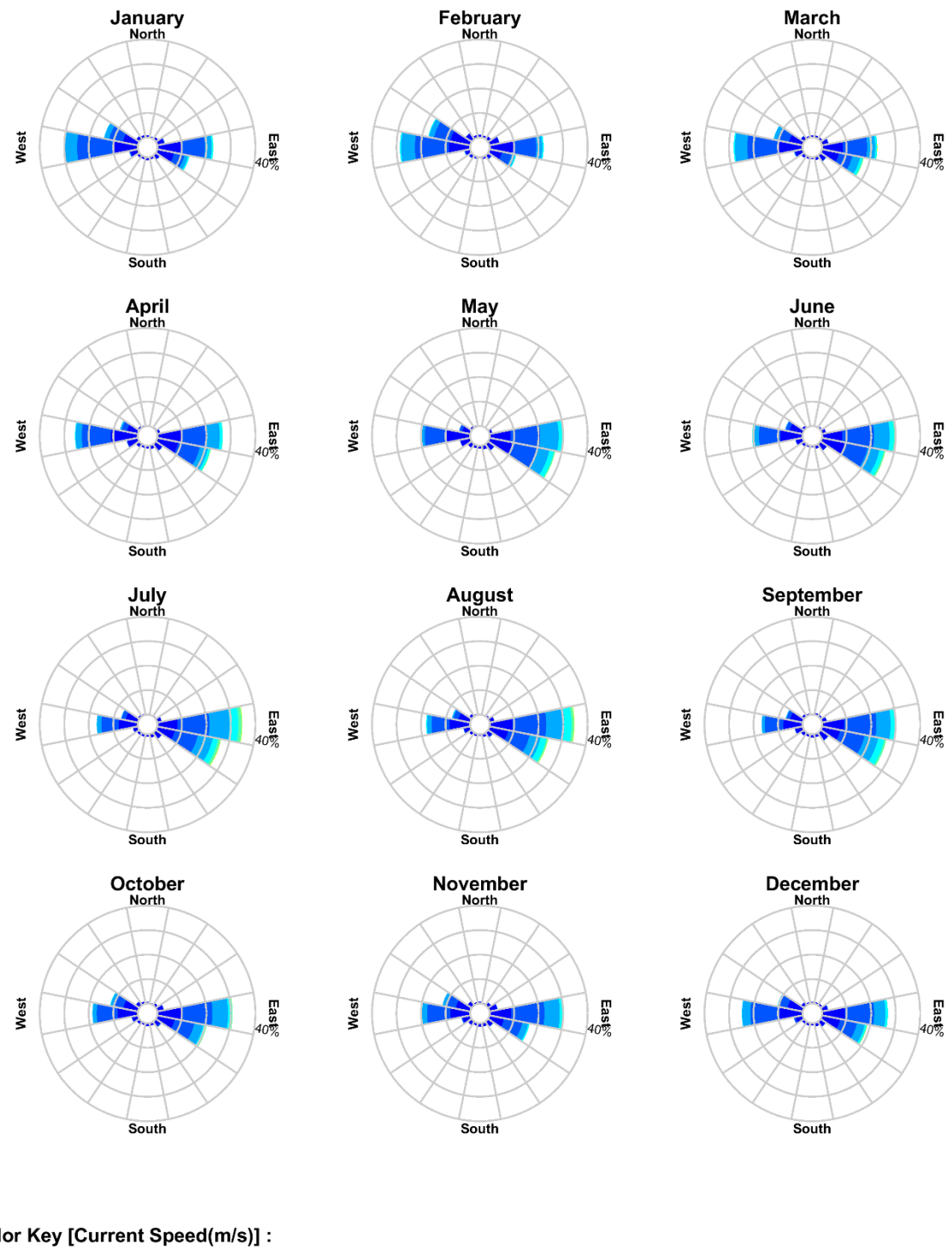

Figure 3.15 Monthly surface current rose plots (at 50m below surface) nearby the Pecten East-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

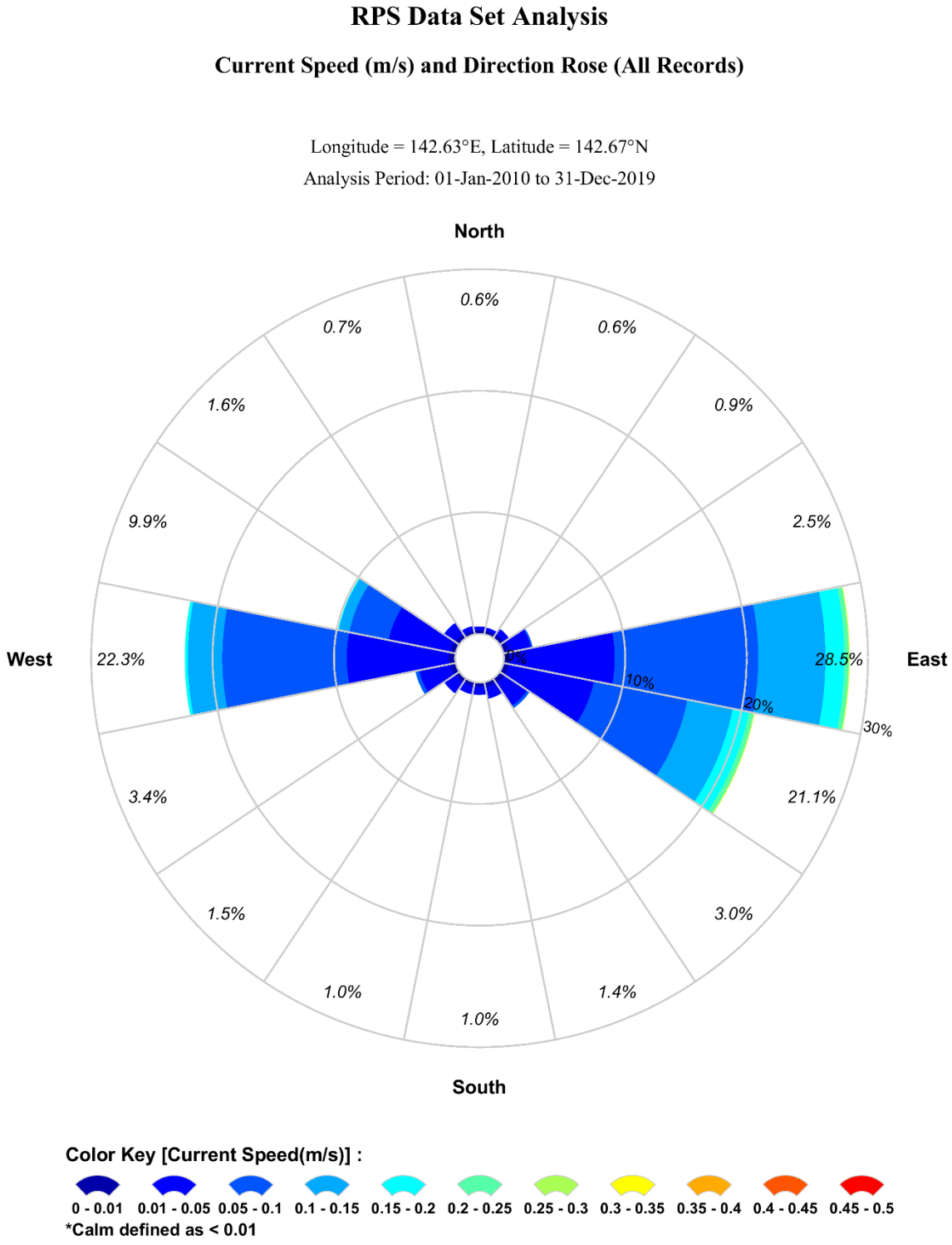

Figure 3.16 Total surface current rose plot (at 50m below surface) nearby the Pecten East-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

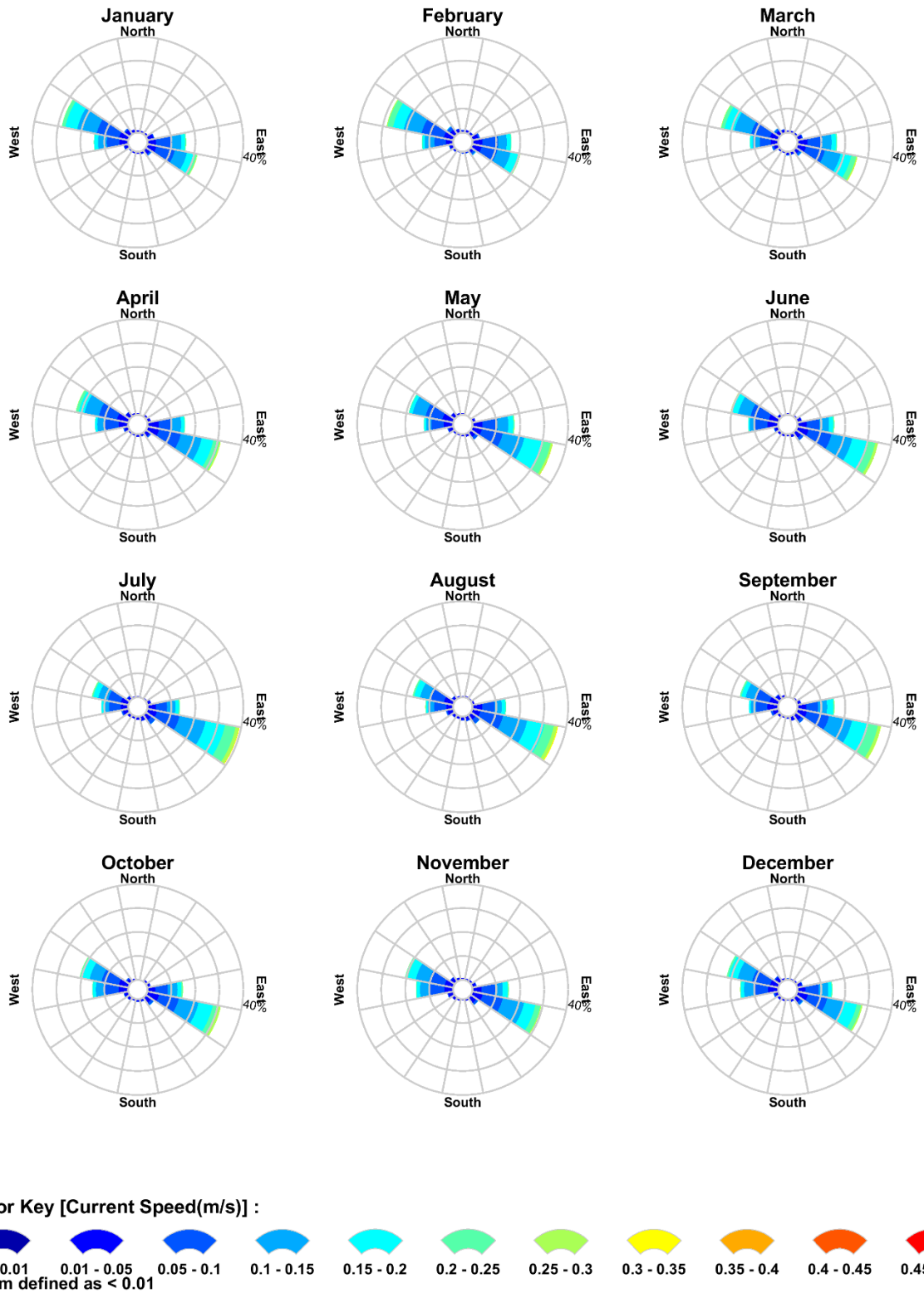

Figure 3.17 Monthly surface current rose plots (at 50m below surface) nearby the Annie-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

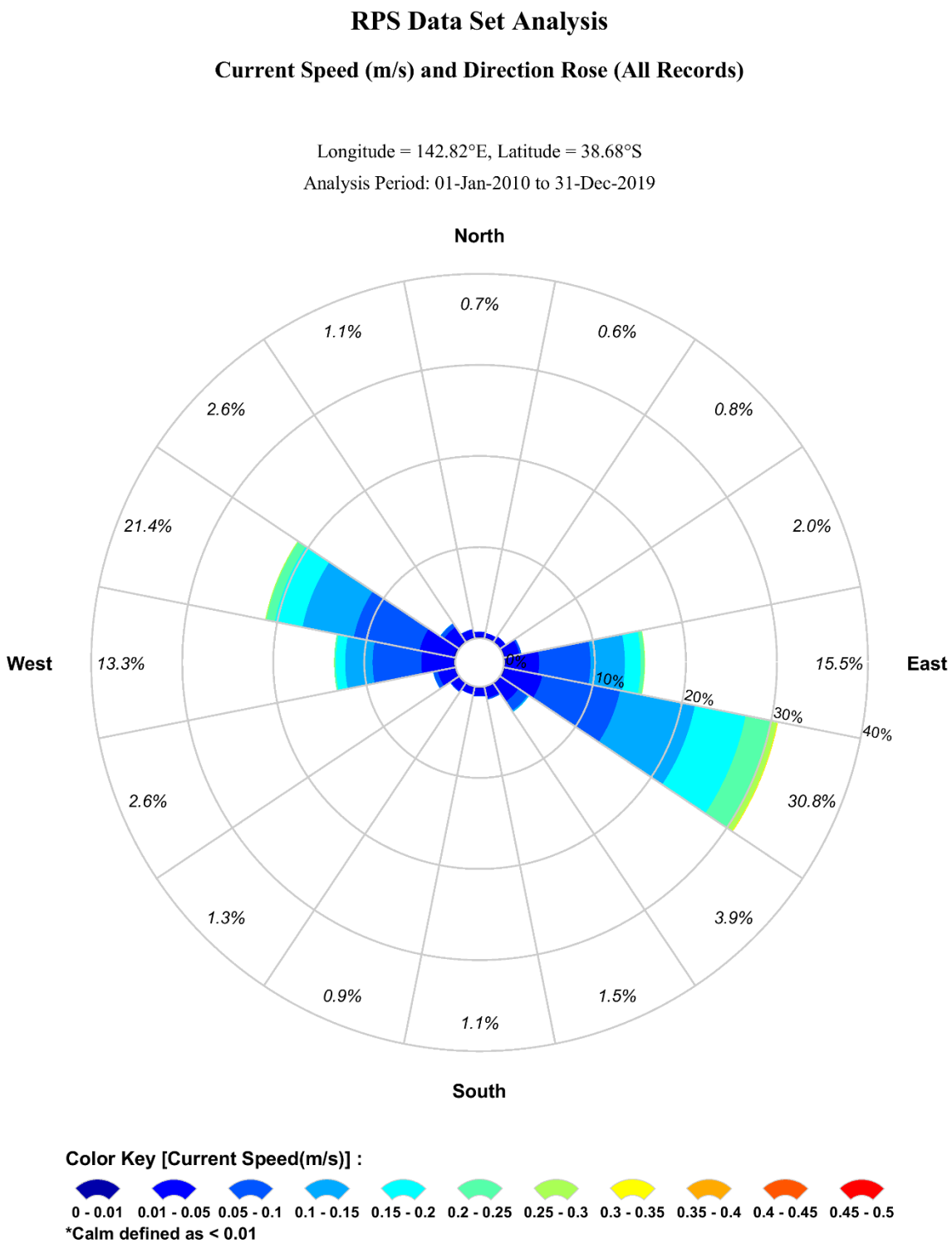

Figure 3.18 Total surface current rose plot (at 50m below surface) nearby the Annie-2 well derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

4 WIND DATA

High resolution wind data for the years 2010 to 2019 (inclusive) was sourced from the National Centre for Environmental Prediction (NCEP) Climate Forecast System Reanalysis dataset (CFSR; see Saha et al., 2010). The CFSR wind model is a fully coupled, data-assimilative hindcast model representing the interaction between the earth's oceans, land, and atmosphere. The gridded wind data output is available at ¼ of a degree resolution (~33 km) and 1-hourly time intervals. Figure 4.1 shows the spatial resolution of the wind field used as input into the oil spill model.

Table 4.1 to Table 4.3 present the monthly average and maximum winds derived from a CFSR wind node nearby the Elanora-1 ST1, Pecten East-2 and Annie-2 wells. The wind data demonstrated average monthly wind speeds ranging from 14 knots during summer months to 19 knots during winter months at Elanora-1 ST1 (Isabella), whilst near Pecten East-2 and Annie-2 seasonal wind speeds were 10 knots and 13 knots respectively (same wind node). Maximum monthly speeds ranged between 39 knots (January) and 53 knots (June) at Elanora-ST1 and 30 knots (January and November) and 42 knots (June) nearby Pecten East-2 and Annie-2. The dominant wind direction varied throughout the year, though westerly winds tended to dominate nearby all release locations during September to November.

Figure 4.2 to Figure 4.7 show the monthly and total wind rose distributions derived from the CFSR data for the selected node nearby the release locations.

Note that the atmospheric convention for defining wind direction, that is, the direction the wind blows from, is used to reference wind direction throughout this report. Each branch of the rose represents wind coming from that direction, with north to the top of the diagram. Sixteen directions are used. The branches are divided into segments of different colour, which represent wind speed ranges from that direction. Speed ranges of 5 knots are typically used in these wind roses. The length of each segment within a branch is proportional to the frequency of winds blowing within the corresponding range of speeds from that direction.

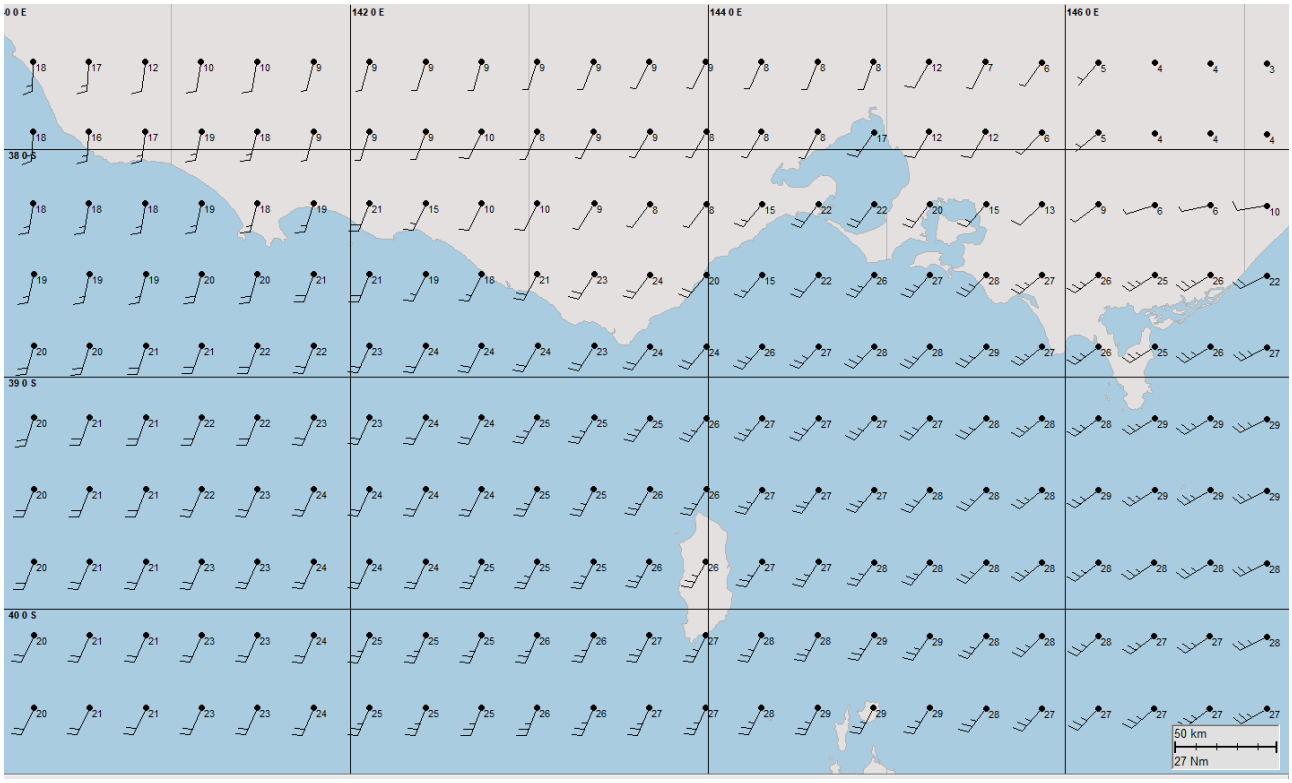

Figure 4.1 Spatial resolution of the CFSR modelled wind data used as input into the oil spill model.

Table 4.1 Predicted average and maximum winds representative for the selected node nearby the Elanora-1 ST1 well. Data derived from CFSR hindcast model from 2010–2019 (inclusive).

Month	Average wind speed (knots)	Maximum wind speed (knots)	General direction(s) (From)
January	14	39	South
February	14	42	Southeast
March	14	44	West
April	14	42	West
May	17	45	West
June	17	53	West-northwest
July	19	46	West-northwest
August	19	47	West
September	17	49	West
October	16	45	West
November	15	44	West
December	14	40	West-southwest
Minimum	**14**	**39**	-
Maximum	**19**	**53**	

Table 4.2 Predicted average and maximum winds representative for the selected node nearby the Pecten East-2 well. Data derived from CFSR hindcast model from 2010–2019 (inclusive).

Month	Average wind speed (knots)	Maximum wind speed (knots)	General direction(s) (From)
January	10	30	Southeast
February	10	31	Southeast
March	10	34	Southeast
April	10	33	West
May	11	32	Northwest
June	11	42	North-northwest
July	13	35	North-northwest
August	13	39	Northwest
September	12	41	West
October	11	31	West
November	10	30	West
December	10	31	West
Minimum	**10**	**30**	-
Maximum	**13**	**42**	

Table 4.3 Predicted average and maximum winds representative for the selected node nearby the Annie-2 well. Data derived from CFSR hindcast model from 2010–2019 (inclusive).

Month	Average wind speed (knots)	Maximum wind speed (knots)	General direction(s) (From)
January	10	30	Southeast
February	10	31	Southeast
March	10	34	Southeast
April	10	33	West
May	11	32	Northwest
June	11	42	North-northwest
July	13	35	North-northwest
August	13	39	Northwest
September	12	41	West
October	11	31	West
November	10	30	West
December	10	31	West
Minimum	**10**	**30**	-
Maximum	**13**	**42**	

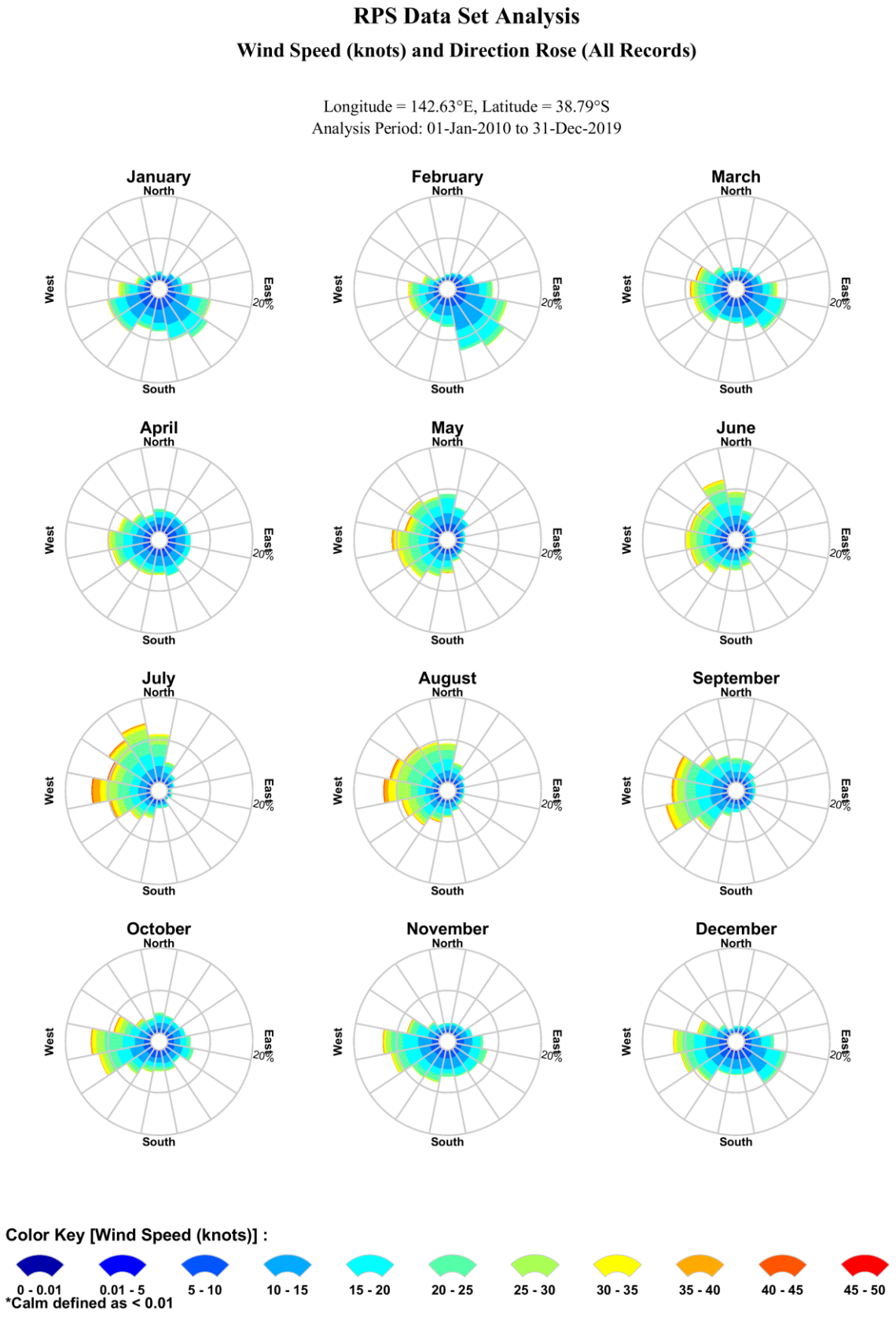

Figure 4.2 Modelled monthly wind rose distributions from 2010–2019 (inclusive) for the node nearby the Elanora-1 ST1 well.

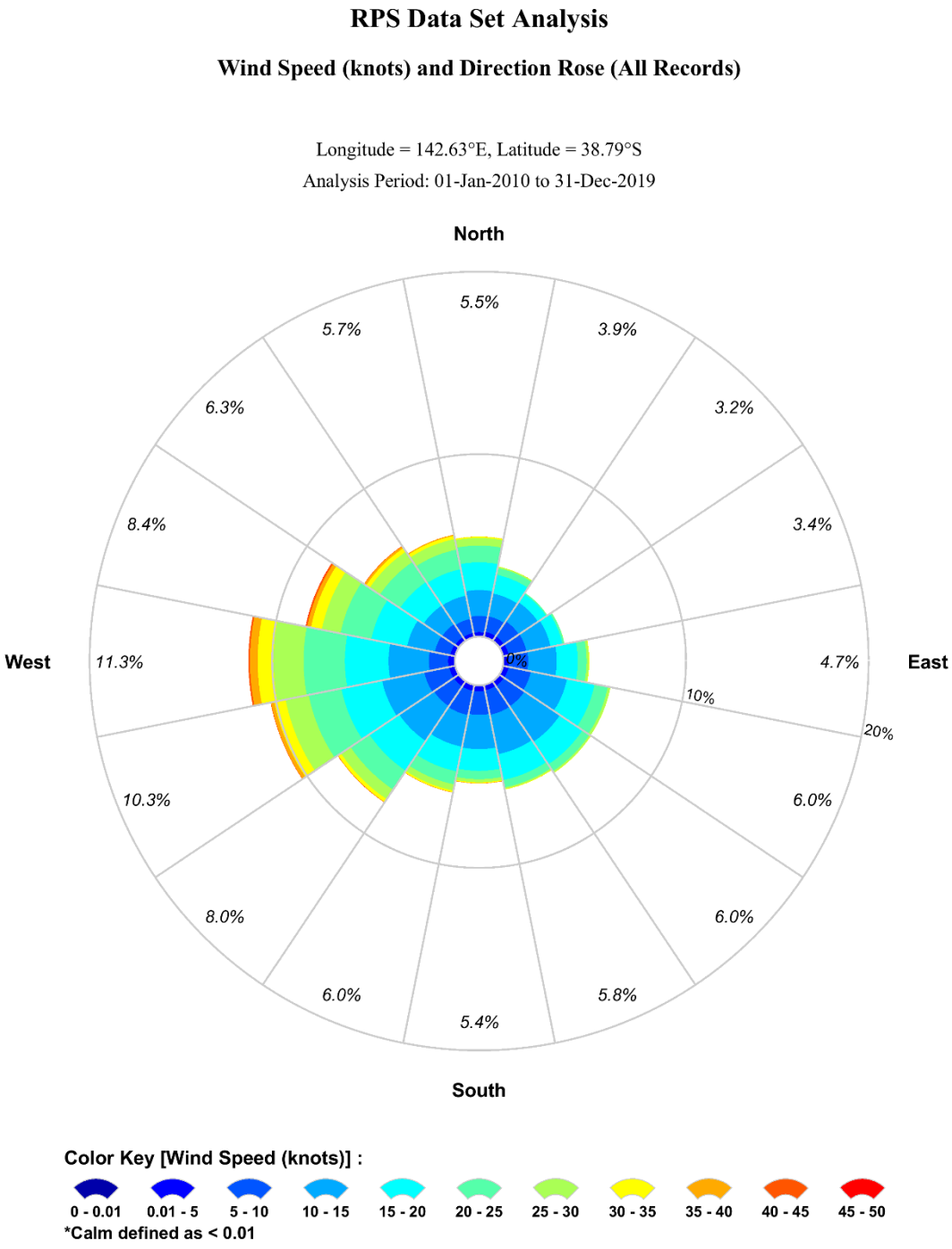

Figure 4.3 Modelled total wind rose distributions from 2010–2019 (inclusive) for the node nearby the Elanora-1 ST1 well.

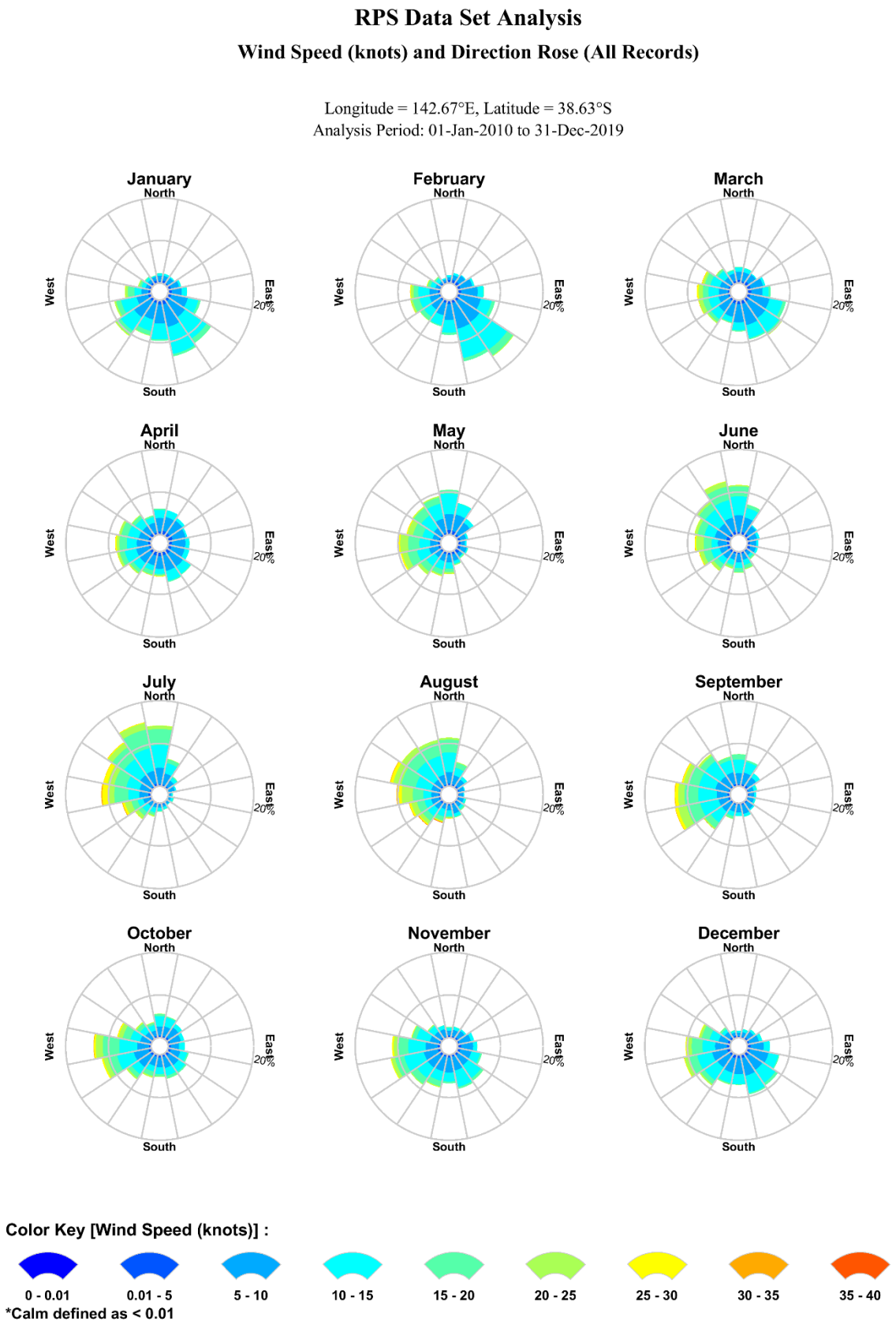

Figure 4.4 Modelled monthly wind rose distributions from 2010–2019 (inclusive) for the node nearby the Pecten East-2 well.

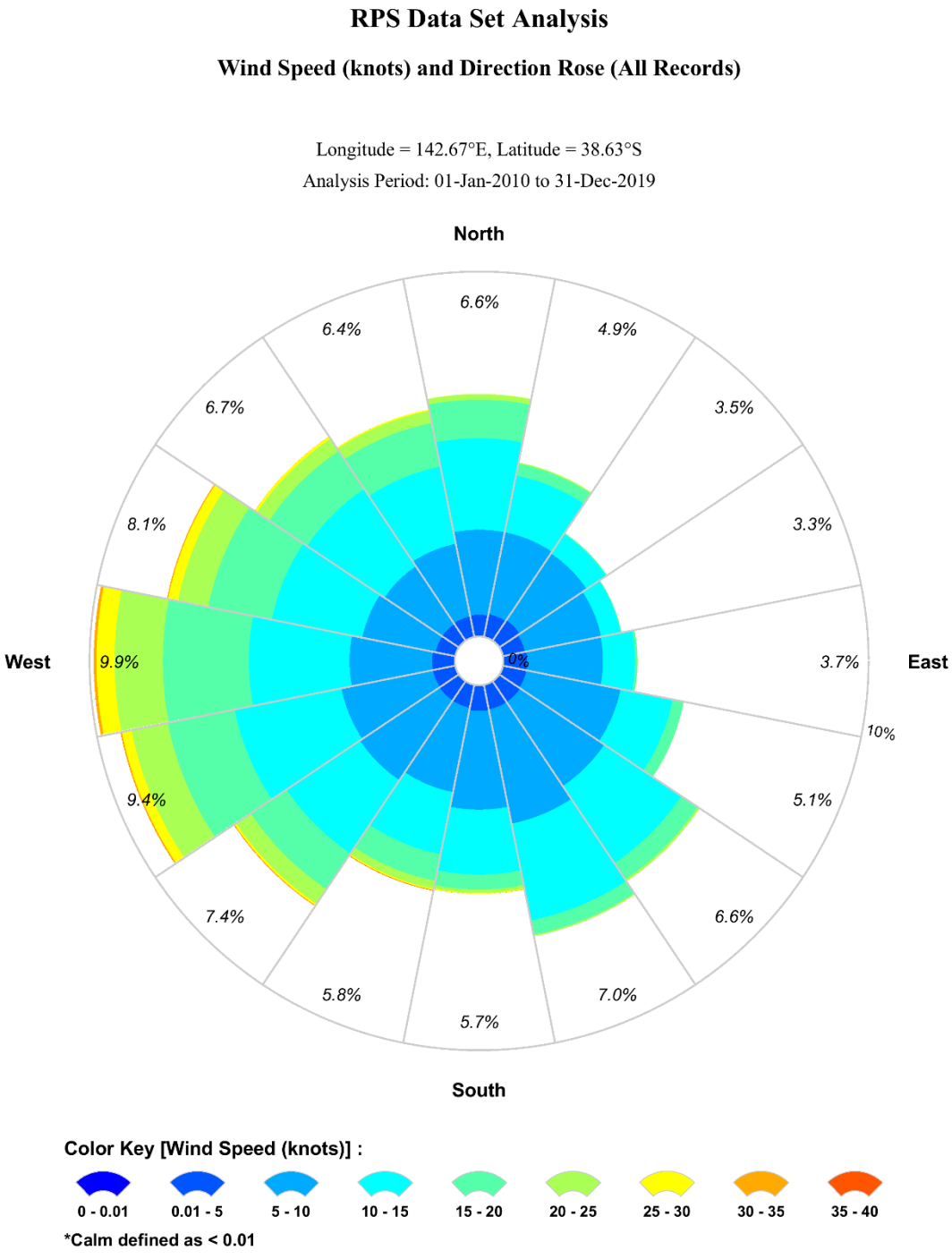

Figure 4.5 Modelled total wind rose distributions from 2010–2019 (inclusive) for the node nearby the Pecten East-2 well.

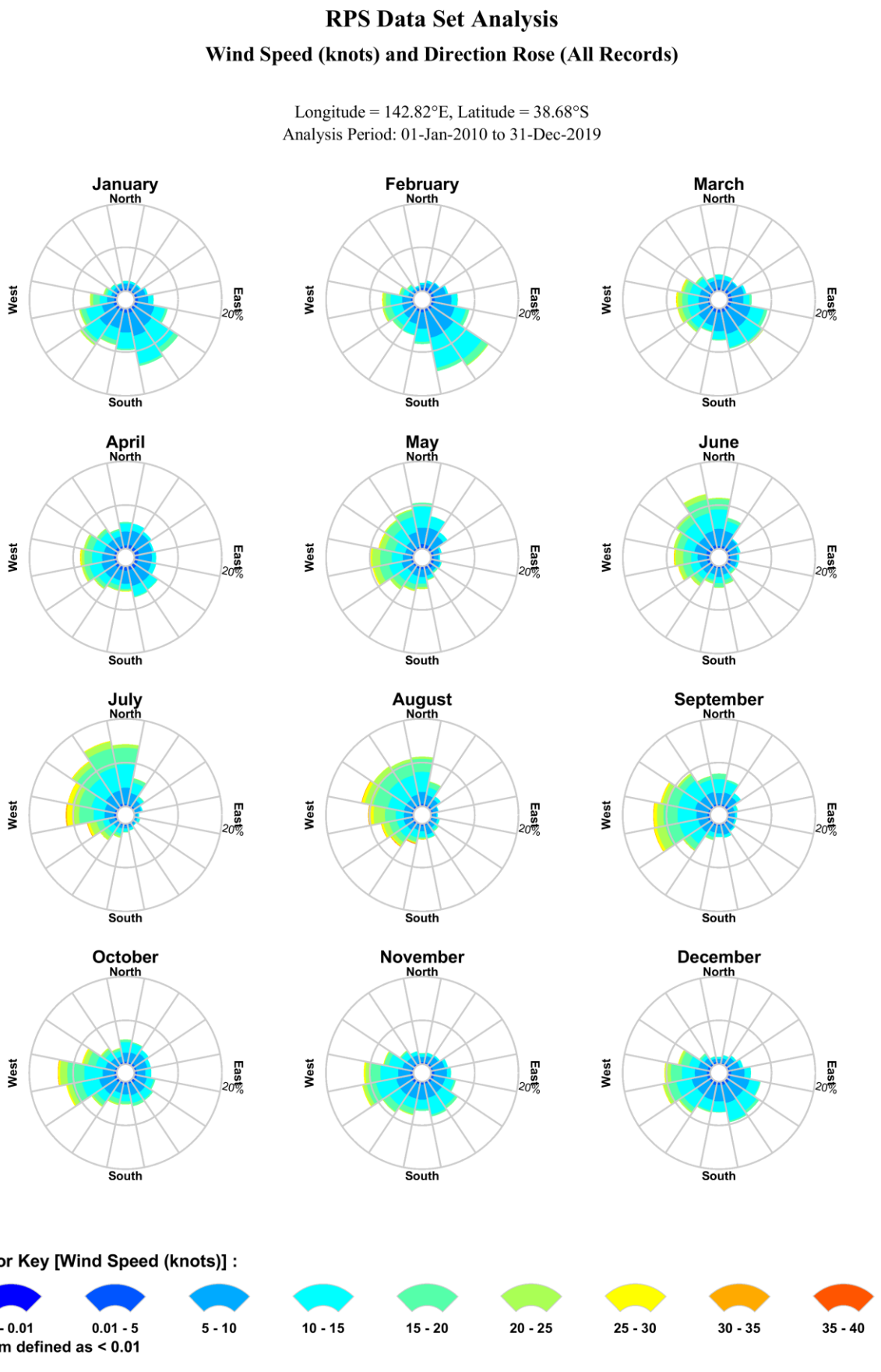

Figure 4.6 Modelled monthly wind rose distributions from 2010–2019 (inclusive) for the node nearby the Annie-2 well.

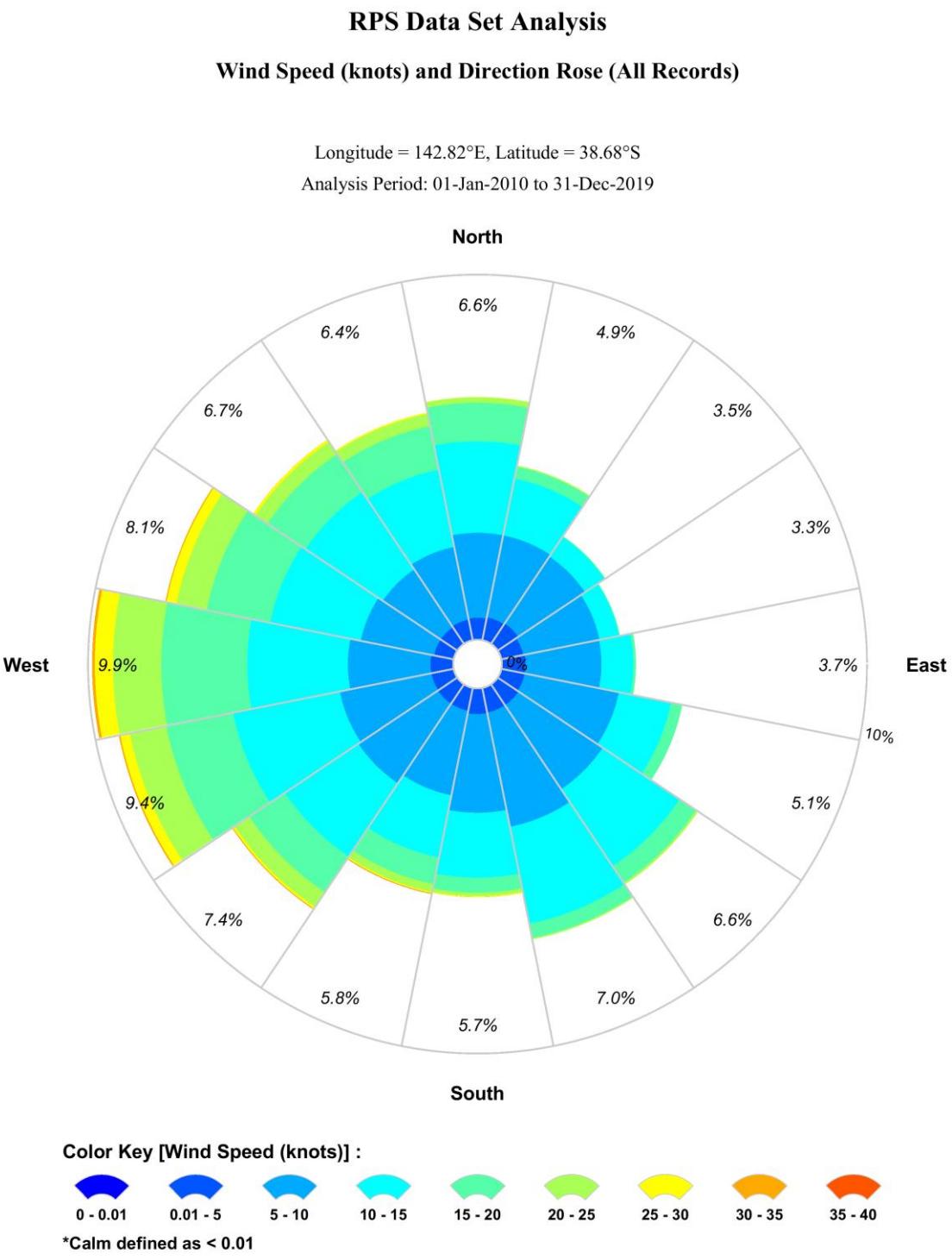

Figure 4.7 Modelled total wind rose distributions from 2010–2019 (inclusive) for the node nearby the Annie-2 well.

5 WATER TEMPERATURE AND SALINITY

The monthly sea temperature and salinity profiles of the water column within the study was obtained from the World Ocean Atlas 2018 database produced by the National Oceanographic Data Centre (National Oceanic and Atmospheric Administration) and its co-located World Data Center for Oceanography (see Levitus et al., 2013). These parameters were used as factors to inform the weathering, movement, and evaporative loss of hydrocarbon spills in the surface and sub-surface layers.

Figure 5.1 to Figure 5.3 illustrate the vertical profile of sea temperature and salinity nearby the release locations.

Table 5.1 to Table 5.3 present the sea temperature and salinity of the surface layer nearby the Elanora-1 ST1, Pecten East-2 and Annie-2 wells, respectively. The monthly average sea surface temperatures ranged between 13.5°C (September) and 18.9°C (February) nearby Elanora-1 ST1, and 13.3°C (September) and 18.3°C (January) nearby Pecten East-2 and 13.3°C (September) and 18.5°C (March) nearby Annie-2. The monthly average surface salinity values remain relatively consistent ranging between 35.3 psu and 35.5 psu across all three release locations.

Table 5.1 Monthly average sea surface temperature and salinity in the Elanora-1 ST1 well area.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (ºC)	18.3	18.9	18.8	17.1	15.8	15.1	14.8	14.1	13.5	13.9	14.7	16.0
Salinity (psu)	35.4	35.4	35.4	35.3	35.4	35.4	35.5	35.5	35.4	35.4	35.4	35.3

Table 5.2 Monthly average sea surface temperature and salinity in the Pecten East-2 well area.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (ºC)	18.3	18.1	18.0	17.1	15.7	14.8	14.4	13.8	13.3	14.0	15.0	16.1
Salinity (psu)	35.4	35.4	35.3	35.3	35.4	35.4	35.5	35.4	35.4	35.4	35.3	35.4

Table 5.3 Monthly average sea surface temperature and salinity in the Annie-2 well area.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (ºC)	18.3	18.4	18.5	17.1	15.7	14.7	14.2	13.7	13.3	14.0	14.9	16.1
Salinity (psu)	35.4	35.4	35.4	35.3	35.3	35.4	35.5	35.5	35.4	35.5	35.4	35.3

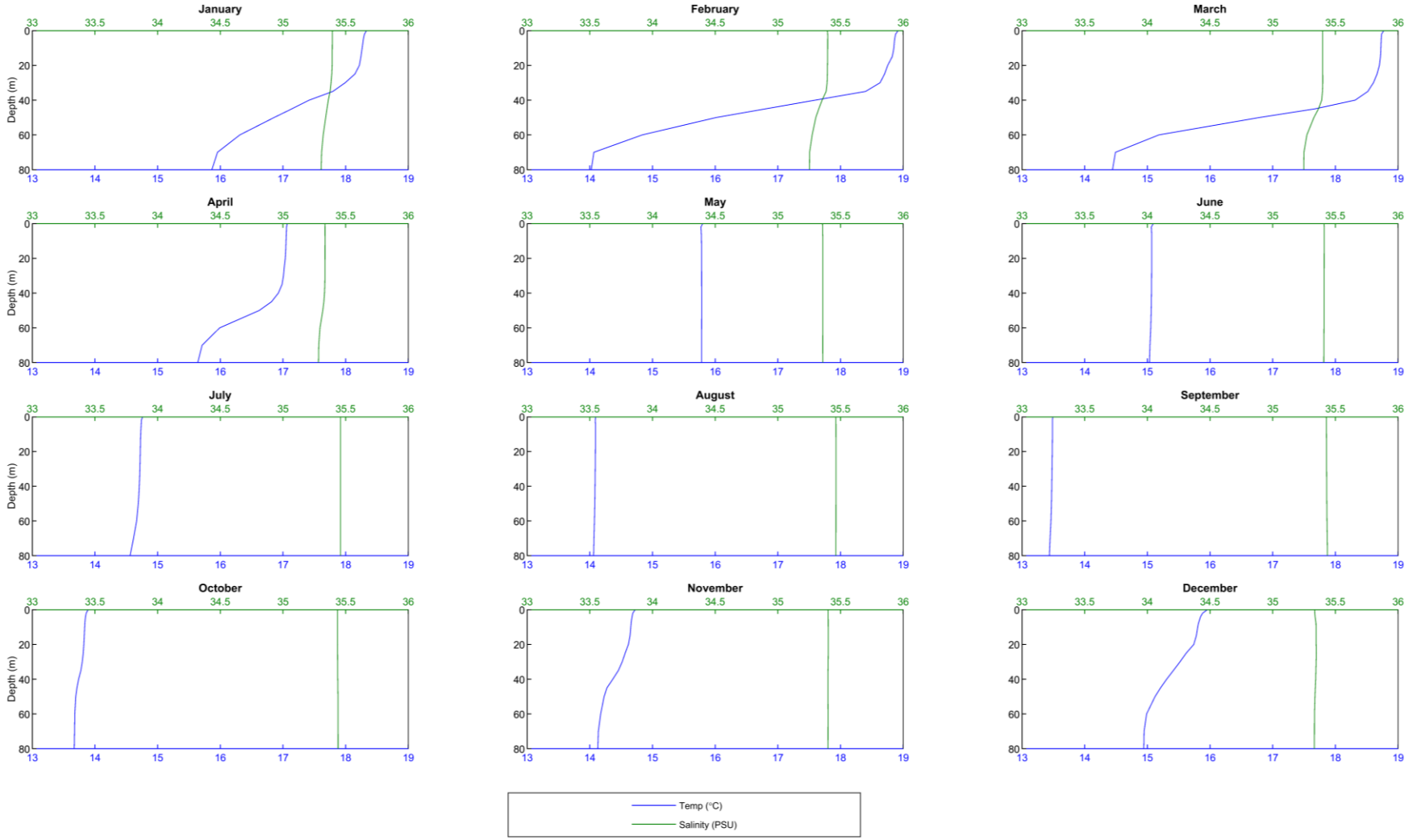

Figure 5.1 Temperature and salinity profiles nearby the Elanora-1 ST1 well.

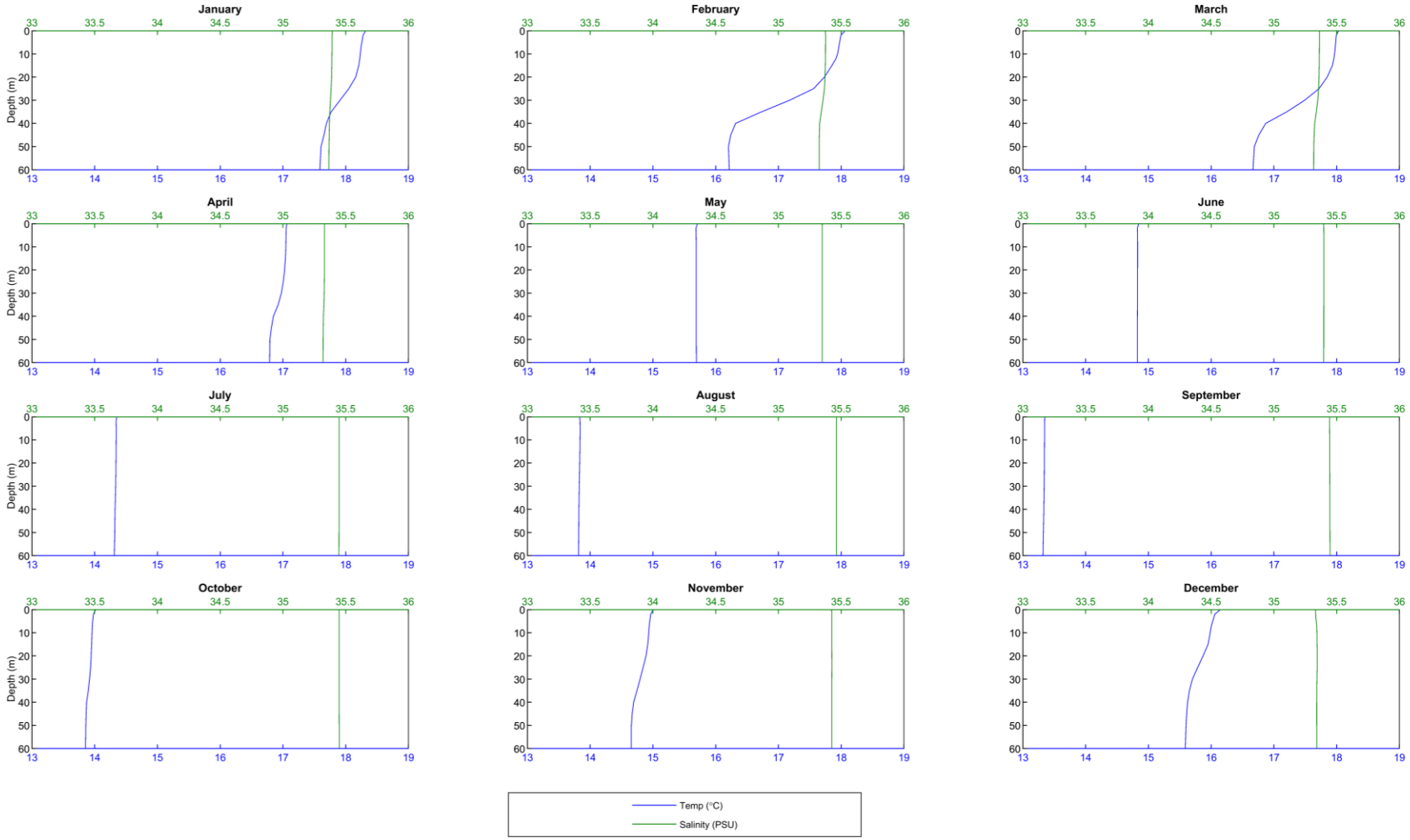

Figure 5.2 Temperature and salinity profiles nearby the Pecten East-2 well.

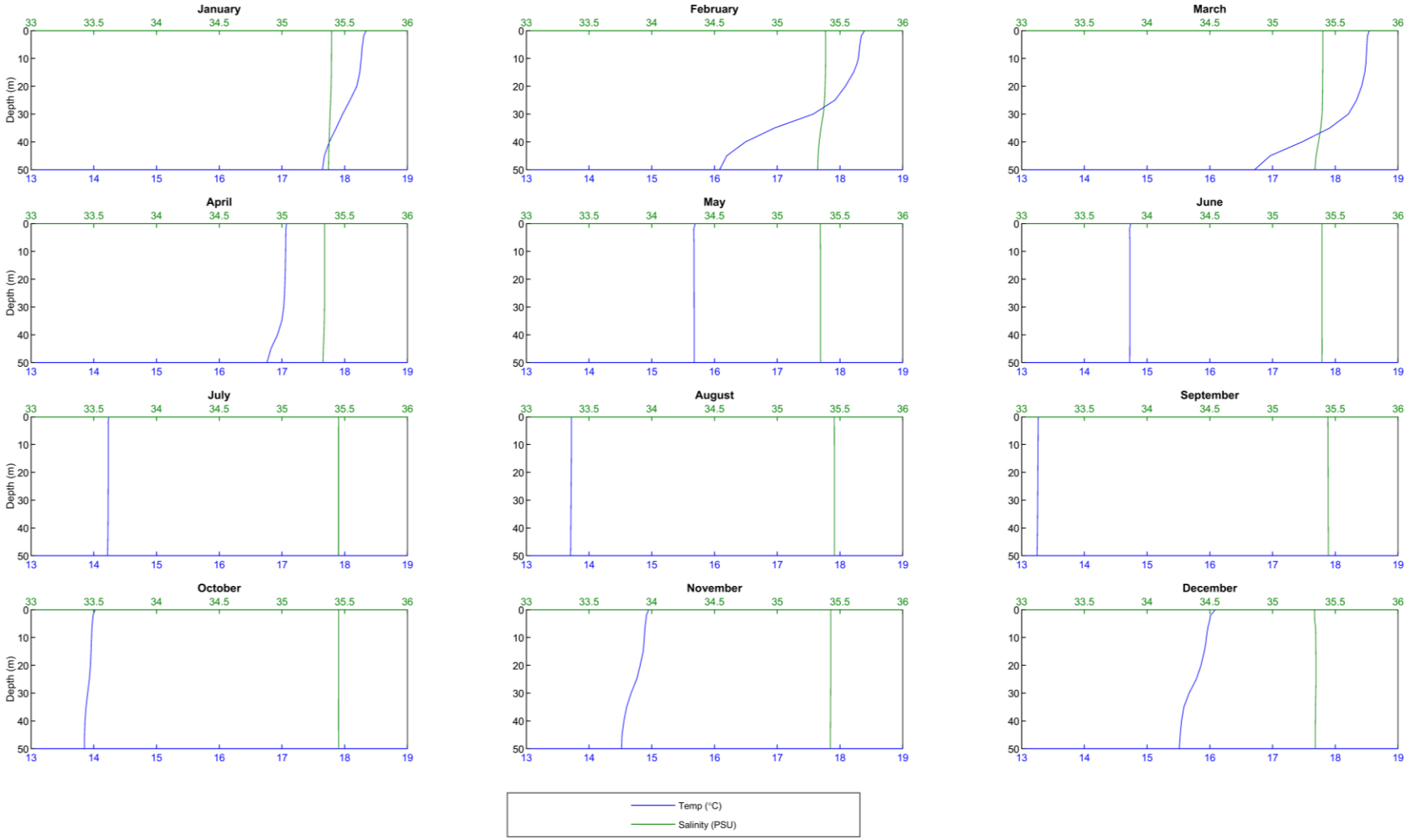

Figure 5.3 Temperature and salinity profiles nearby the Annie-2 well.

6 SUBSEA PLUME MODEL – OILMAP DEEP

In the event of an uncontrolled subsea LOWC, the gas and condensate will initially behave like a jet, which dissipates in the water column over a short distance (<10 m). The escaping condensate shears into small droplets due to turbulence generated by passing through the exit hole and subsequent turbulence generated in the plume jet. The size-distribution of the droplets varies with the exit velocity and viscosity of the condensate. Following this phase, the density and buoyancy difference of the gas and condensate mixture relative to the surrounding waters, forces the plume upward. As the plume rises, the volume of gas will increase due to reduction of water pressure, with gas bubbles dividing into an increasing number of bubbles due to the shearing effect exerted by the water column.

In shallow water (<150 m) the rising plume of gas and condensate will tend to reach the sea surface before deflecting away from the centre of the plume (Spaulding et al., 2000). Figure 6.1 conceptually illustrates the various stages of a subsea release of oil and gas.

OILMAP Deep model (Spaulding et al., 2015) was used to simulate the near-field behaviour of the gas-condensate subsea release in two phases – the initial jet phase and the buoyant plume phase. The initial jet phase is predominately driven by the exit velocity. During this phase, the condensate droplet-size-distributions are calculated for a range of classes or bins. Next, the plume model predicts the rise dynamics of the condensate and gas plumes to calculate at which point gas lift will be lost (i.e. the trapping height).

Outputs which include the plume trapping height, plume diameter and droplet size distribution are used as input to the SIMAP model to simulate the rise and dispersion of the condensate droplets from this point onwards.

More details on the OILMAP-DEEP model, can be found in Spaulding et al. (2015). The model has been validated against observations from Deepwater Horizon as well as small and large-scale laboratory studies on subsurface oil releases (Brandvik et al., 2013, 2014; Belore, 2014; Spaulding et al., 2015; Li et al., 2017).

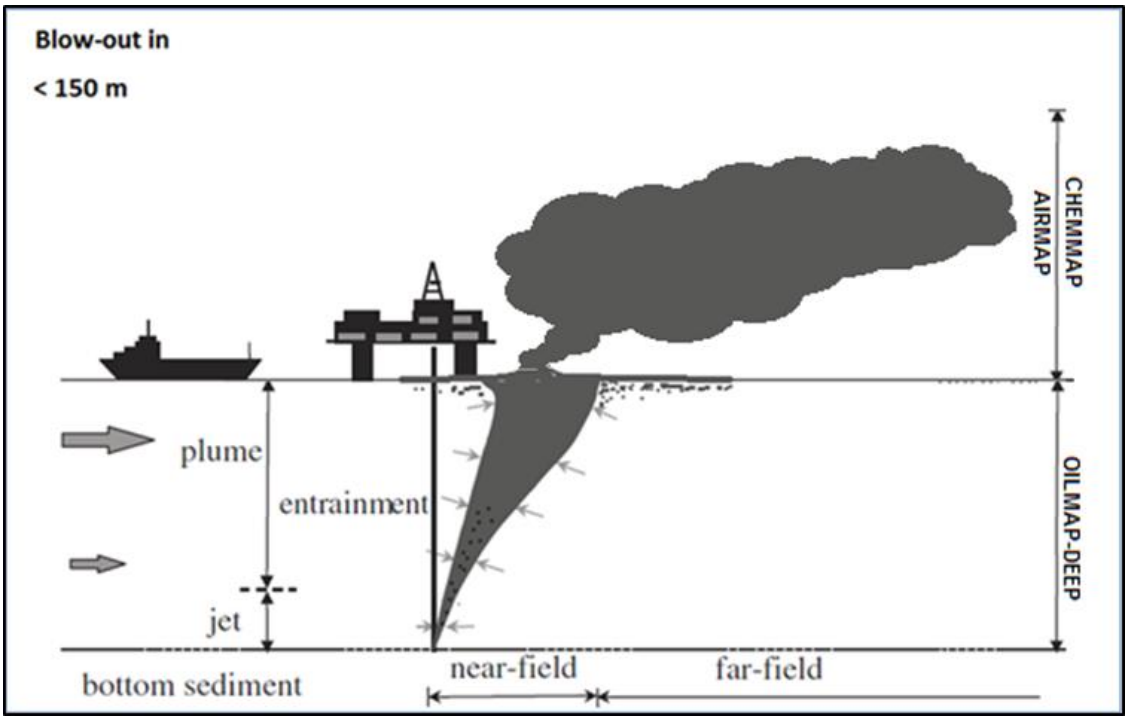

Figure 6.1 Example of a subsea plume and the various stages of the plume in the water column (Source: ASA, 2011).

Table 6.1 presents the input parameters and key results for the subsea plume modelling. Note a depleting release rate was assessed. The subsea modelling showed that in the event of a LOWC, the amalgamated gas and condensate would propel rapidly upward from the seabed and rupture the sea surface at all three locations assessed.

Table 6.1 Input data and key results for the subsea plume modelling.

Input Variable	Value		
Scenario	LOWC at Elanora-1 ST1 (Isabella)	LOWC at Pecten East-2	LOWC at Annie-2
Water depth (m)	56 (from top of the BOP stack)	34 (from top of the BOP stack)	36 (from top of the BOP stack)
Top of release diameter (inch)	18.75	18.75	18.75
Condensate discharge rate (stb/day)	1326 (day 1) depleting to 798 (day 102)	1250 (day 1) depleting to 505 (day 102)	878 (day 1) depleting to 453 (day 104)
Gas rate (MMscf/day)	663 (day 1) depleting to 399 (day 102)	625 (day 1) depleting to 253 (day 102)	438.9 (day 1) depleting to 226.4 (day 104)
Formation water flow rate (stb/day)	356 (day 1) depleting to 293 (day 102)	496 (day 1) depleting to 353 (day 102)	444.9 (day 1) depleting to 298.0 (day 104)
Key results			
Plume execution depth (m BMSL^)	0 (Breach the sea surface)	0 (Breach the sea surface)	0 (Breach the sea surface)
Droplet sizes (µm)	1,399 to 6,044 (day 1) to 1,761 to 7,607 (day 104)	1,268 to 5,479 (day 1) to 1,884 to 8,137 (day 104)	1,584 to 6,843 (day 1) to 2,056 to 8,882 (day 104)

^Below mean sea level

7 OIL SPILL MODEL – SIMAP

Modelling of the fate of oil was performed using the Spill Impact Mapping Analysis Program (SIMAP). SIMAP is designed to simulate the fate and effects of spilled hydrocarbons for both the surface and subsurface releases (Spaulding et al., 1994; French et al., 1999; French-McCay, 2003, 2004; French-McCay et al., 2004).

SIMAP has been used to predict the weathering and fate of oil spills during and after major incidents including: Montara (Australia) well blowout August 2009 in the Timor Sea (Asia-Pacific ASA, 2010); Macondo (USA) well blowout April 2010 in the Gulf of Mexico; Bohai Bay (China) oil spill August 2011; and the pipeline oil spill July 2013 in the Gulf of Thailand.

The SIMAP model calculates the transport, spreading, entrainment, evaporation and decay of surface hydrocarbon slicks as well as the entrained and dissolved oil components in the water column, either from surface slicks or from oil discharged subsea. The movement and weathering of the spilled oil is calculated for specific oil types. Input specifications for oil mixtures include the density, viscosity, pour point, distillation curve (volume lost versus temperature) and the aromatic/aliphatic component ratios within given boiling point (BP) ranges.

SIMAP is a three-dimensional model that allows for various response actions to be modelled including oil removal from skimming, burning, or collection booms, and surface and subsurface dispersant application.

The SIMAP oil spill model includes advanced weathering algorithms, specifically focussed on unique oils that tend to form emulsions and/or tar balls. The weathering algorithms are based on 5 years of extensive research conducted in response to the Deepwater Horizon oil spill in the Gulf of Mexico (French-McCay et al., 2015).

Biodegradation is included in the oil spill model. In the model, SIMAP, degradation is calculated for the surface slick, deposited oil on the shore, the entrained oil and dissolved constituents in the water column, and oil in the sediments. For surface oil, water column oil and sedimented oil a first order degradation rate is specified. Biodegradation rates are relatively high for hydrocarbons in dissolved state or in dispersed small droplets.

7.1 Stochastic Modelling

For the stochastic modelling presented herein, 100 oil spills (per season) were modelled for each scenario using the same spill information (release location, spill volume, duration and oil type) but with varied start dates. During each simulation, the model records whether any grid cells are exposed to any oil concentrations, the concentrations involved and the elapsed time before exposure. The results of all 100 oil spill simulations (per season) were analysed to determine the following statistics for every grid cell:

- Exposure load (concentrations and volumes);
- Minimum time before exposure;
- Probability of contact above defined concentrations;
- Volume of oil that may accumulate on shorelines from any single simulation;
- Concentration that might occur on sections of individual shorelines;
- Exposure to dissolved hydrocarbons in the water column; and
- Exposure to entrained hydrocarbons in the water column.

7.2 Floating, Shoreline and In-Water Thresholds

The thresholds and their relationship to exposure for the sea surface, shoreline and water column (entrained and dissolved hydrocarbons) are presented in Sections 7.2.1 to 7.2.3. Supporting justifications of the adopted thresholds applied during the study and additional context relating to the area of potential exposure are also provided. It is important to note that the thresholds herein are based on NOPSEMA (2019).

7.2.1 Floating Oil Exposure Thresholds

The modelling results can be presented to any levels; therefore, thresholds have been specified (based on scientific literature) to record floating oil exposure to the sea-surface at meaningful levels only, described in the following paragraphs.

The low threshold to assess the potential for floating oil exposure, was 1 g/m^2, which equates approximately to an average thickness of 1 µm, referred to as visible oil. Oil of this thickness is described as rainbow sheen in appearance, according to the Bonn Agreement Oil Appearance Code (Bonn Agreement, 2009; AMSA, 2014) (see Table 7.1). Figure 7.1 shows photographs highlighting the difference in appearance between a silvery sheen, rainbow sheen and metallic sheen. This threshold is considered below levels which would cause environmental harm and it is more indicative of the areas perceived to be affected due to its visibility on the sea surface and potential to trigger temporary closures of areas (i.e. fishing grounds) as a precautionary measure. Table 7.1 provides a description of the appearance in relation to exposure zone thresholds used to classify the zones of floating oil exposure.

Ecological impact has been estimated to occur at 10 g/m^2 (a film thickness of approximately 10 µm or 0.01 mm) according to French et al. (1996) and French-McCay (2009) as this level of fresh oiling has been observed to mortally impact some birds through adhesion of oil to their feathers, exposing them to secondary effects such as hypothermia. The appearance of oil at this average thickness has been described as a metallic sheen (Bonn Agreement, 2009).

Scholten et al. (1996) and Koops et al. (2004) indicated that at oil concentrations on the sea surface of 25 g/m^2 (or greater), would be harmful for all birds that have landed in an oil film due to potential contamination of their feathers, with secondary effects such as loss of temperature regulation and ingestion of oil through preening. The appearance of oil at this thickness is also described as metallic sheen (Bonn Agreement, 2009). For this study the high exposure threshold was set to 50 g/m^2 and above based on NOPSEMA (2019). This threshold can also be used to inform response planning.

Table 7.2 defines the thresholds used to classify the zones of floating oil exposure reported herein.

Table 7.1 The Bonn Agreement Oil Appearance Code.

Code	Description Appearance	Layer Thickness Interval (g/m^2 or µm)	Litres per km^2
1	Sheen (silvery/grey)	0.04 – 0.30	40 – 300
2	Rainbow	0.30 – 5.0	300 – 5,000
3	Metallic	5.0 – 50	5,000 – 50,000
4	Discontinuous True Oil Colour	50 – 200	50,000 – 200,000
5	Continuous True Oil Colour	≥ 200	≥ 200,000

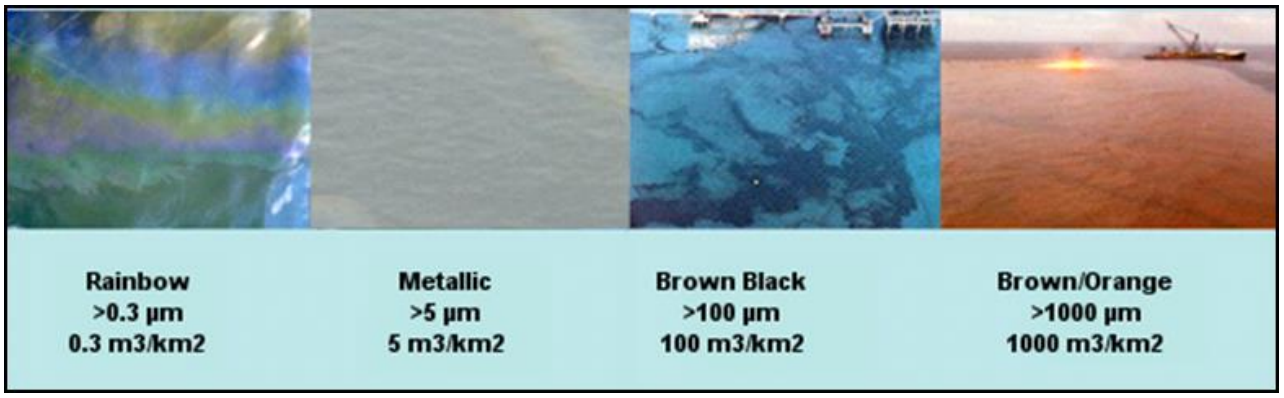

Figure 7.1 Photographs showing the difference between oil colour and thickness on the sea surface (source: adapted from Oil Spill Solutions, 2015).

Table 7.2 Floating oil exposure thresholds used in this report (in alignment with NOPSEMA (2019)).

Threshold level	Floating oil (g/m^2)	Description
Low	1	Approximates range of socioeconomic effects and establishes planning area for scientific monitoring
Moderate	10	Approximates lower limit for harmful exposures to birds and marine mammals
High	50	Approximates surface oil slick and informs response planning

7.2.2 Shoreline Accumulation Thresholds

There are many different types of shorelines, ranging from cliffs, rocky beaches, sandy beaches, mud flats and mangroves, and each of these influences the volume of oil that can remain stranded ashore and its thickness before the shoreline saturation point occurs. For instance, a sandy beach may allow oil to percolate through the sand, thus increasing its ability to hold more oil ashore over tidal cycles and various wave actions than an equivalent area of water; hence oil can increase in thickness onshore over time. A sandy beach shoreline was assumed as the default shoreline type for the modelling herein, as it allows for the highest carrying capacity of oil (of the available open/exposed shoreline types). Hence the results contained herein would be indicative of a worst-case scenario, where the highest volume of oil may be stranded on the shoreline (when compared to other shoreline types, such as exposed rocky shores).

In previous risk assessment studies, French-McCay et al. (2005a; 2005b) used a threshold of 10 g/m^2 to assess the potential for shoreline accumulation. This is a conservative threshold used to define regions of socio-economic impact, such as triggering temporary closures of adjoining fisheries or the need for shore clean-up on beaches or man-made features/amenities (breakwaters, jetties, marinas, etc.). It would equate to approximately 2 teaspoons of hydrocarbon per square meter of shoreline accumulation. The appearance is described as a stain/film. On that basis, the 10 g/m^2 shoreline accumulation threshold has been selected to define the zone of potential “low shoreline accumulation”.

French et al. (1996) and French-McCay (2009) define a shoreline oil accumulation threshold of 100 g/m^2, or above, would potentially harm shorebirds and wildlife (furbearing aquatic mammals and marine reptiles on or along the shore) based on studies for sub-lethal and lethal impacts. This threshold has been used in previous environmental risk assessment studies (see French-McCay, 2003; French-McCay et al., 2004, French-McCay et al., 2011; 2012; NOAA, 2013). Additionally, a shoreline concentration of 100 g/m^2, or above, is the minimum limit that the oil can be effectively cleaned according to the AMSA (2015) guideline. This threshold equates to approximately ½ a cup of oil per square meter of shoreline accumulation. The appearance is described as a thin oil coat. Therefore, 100 g/m^2 has been selected to define the zone of potential “moderate shoreline accumulation”.

Observations by Lin & Mendelssohn (1996), demonstrated that loadings of more than 1,000 g/m^2 of hydrocarbon during the growing season would be required to impact marsh plants significantly. Similar thresholds have been found in studies assessing hydrocarbon impacts on mangroves (Grant et al., 1993; Suprayogi & Murray, 1999). Hence, 1,000 g/m^2 has been selected to define the zone of potential “high shoreline accumulation”. It equates to approximately 1 litre of hydrocarbon per square meter of shoreline accumulation. The appearance is described as a hydrocarbon cover.

It is worth noting that the shoreline accumulation thresholds derived from extensive literature review (outlined in Table 7.3) agree with the commonly used threshold values for oil spill modelling specified in NOPSEMA (2019).

Table 7.3 Thresholds used to assess shoreline accumulation.

Threshold level	Shoreline loading (g/m^2)	Description
Low (socioeconomic/sublethal)	10	Predicts potential for some socio-economic impact
Moderate	100	Loading predicts area likely to require clean-up effort
High	> 1,000	Loading predicts area likely to require intensive clean-up effort

7.2.3 In-water Exposure Thresholds

Oil is a mixture of thousands of hydrocarbons of varying physical, chemical, and toxicological characteristics, and therefore, demonstrate varying fates and impacts on organisms. As such, for in-water exposure, the SIMAP model provides separate outputs for dissolved and entrained hydrocarbons from oil droplets. The consequences of exposure to dissolved and entrained components will differ because they have different modes and magnitudes of effect.

Entrained hydrocarbon concentrations were calculated based on oil droplets that are suspended in the water column, though not dissolved. The composition of this oil would vary with the state of weathering (oil age) and may contain soluble hydrocarbons when the oil is fresh. Calculations for dissolved hydrocarbons specifically calculates oil components which are dissolved in water, which are known to be the primary source of toxicity exerted by oil.

7.2.3.1 Dissolved Hydrocarbons

Laboratory studies have shown that dissolved hydrocarbons exert most of the toxic effects of oil on aquatic biota (Carls et al., 2008; Nordtug et al., 2011; Redman, 2015). The mode of action is a narcotic effect, which is positively related to the concentration of soluble hydrocarbons in the body tissues of organisms (French-McCay, 2002). Dissolved hydrocarbons are taken up by organisms directly from the water column by absorption through external surfaces and gills, as well as through the digestive tract. Thus, soluble hydrocarbons are termed “bioavailable”.

Hydrocarbon compounds vary in water-solubility and the toxicity exerted by individual compounds is inversely related to solubility, however bioavailability will be modified by the volatility of individual compounds (Nirmalakhandan & Speece, 1988; Blum & Speece, 1990; McCarty, 1986; McCarty et al., 1992a, 1992b; Mackay et al., 1992; McCarty & Mackay, 1993; Verhaar et al., 1992, 1999; Swartz et al., 1995; French-McCay, 2002; McGrath and Di Toro, 2009). Of the soluble compounds, the greatest contributor to toxicity for water-column and benthic organisms are the lower-molecular-weight aromatic compounds, which are both volatile and soluble in water. Although they are not the most water-soluble hydrocarbons within most oil types, the polynuclear aromatic hydrocarbons (PAHs) containing 2-3 aromatic ring structures typically exert the largest narcotic effects because they are semi-soluble and not highly volatile, so they persist in the environment long enough for significant accumulation to occur (Anderson et al., 1974, 1987; Neff & Anderson, 1981; Malins & Hodgins, 1981; McAuliffe, 1987; NRC, 2003). The monoaromatic hydrocarbons (MAHs), including the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), and the soluble alkanes (straight chain hydrocarbons) also contribute to toxicity, but these compounds are highly volatile, so that their contribution will be low when oil is exposed to evaporation and higher when oil is discharged at depth where volatilisation does not occur (French-McCay, 2002).

French-McCay (2002) reviewed available toxicity data, where marine biota was exposed to dissolved hydrocarbons prepared from oil mixtures, finding that 95% of species and life stages exhibited 50% population mortality (LC_{50}) between 6 and 400 ppb total PAH concentration after 96 hrs exposure, with an average of 50 ppb. Hence, concentrations lower than 6 ppb total PAH value should be protective of 97.5% of species and life stages even with exposure periods of days (at least 96 hours). Early life-history stages of fish appear to be more sensitive than older fish stages and invertebrates.

Exceedances of 10, 50 or 400 ppb over a 1 hour timestep (see Table 7.4) was applied to indicate increasing potential for sub-lethal to lethal toxic effects (or low to high), based on NOPSEMA (2019).

7.2.3.2 Entrained Hydrocarbons

Entrained hydrocarbons consist of oil droplets that are suspended in the water column and insoluble. As such, insoluble compounds in oil cannot be absorbed from the water column by aquatic organisms, hence are not bioavailable through absorption of compounds from the water. Exposure to these compounds would require routes of uptake other than absorption of soluble compounds. The route of exposure of organisms to whole oil alone include direct contact with tissues of organisms and uptake of oil by direct consumption, with potential for biomagnification through the food chain (NRC, 2005).

The 10 ppb threshold represents the very lowest concentration and corresponds generally with the lowest trigger levels for chronic exposure for entrained hydrocarbons in the ANZECC & ARMCANZ (2000) water quality guidelines. Due to the requirement for relatively long exposure times (>24 hours) for these concentrations to be significant, they are likely to be more meaningful for juvenile fish, larvae and planktonic

organisms that might be entrained (or otherwise moving) within the entrained plumes, or when entrained hydrocarbons adhere to organisms or trapped against a shoreline for periods of several days or more.

This exposure zone is not considered to be of significant biological impact and is therefore outside the adverse exposure zone. This exposure zone represents the area contacted by the spill. This area does not define the area of influence as it is considered that the environment will not be affected by the entrained hydrocarbon at this level.

Thresholds of 10 ppb and 100 ppb were applied over a 1-hour time exposure (Table 7.4), to cover the range of thresholds outlined in ANZECC & ARMCANZ (2000) water quality guidelines, the incremental change for greater potential effect and is per NOPSEMA (2019).

A complicating factor that should be considered when assessing the consequence of dissolved and entrained oil distributions is that there will be some areas where both physically entrained oil droplets and dissolved hydrocarbons co-exist. Higher concentrations of each will tend to occur close to the source where sea conditions can force mixing of relatively unweathered oil into the water column, resulting in more rapid dissolution of soluble compounds.

Table 7.4 Dissolved and entrained hydrocarbon exposure values assessed over a 1-hour time step, as per NOPSEMA (2019).

	Exposure level	In-water threshold (ppb)	Description
Dissolved hydrocarbons	Low	10	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers
	Moderate	50	Approximates potential toxic effects, particularly sublethal effects to sensitive species
	High	400	Approximates toxic effects including lethal effects to sensitive species
Entrained hydrocarbons	Low	10	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers
	High	100	As appropriate given oil characteristics for informing risk evaluation

8 HYDROCARBON PROPERTIES

8.1 Physical Properties

An exploration well has been drilled within the Annie field with hydrocarbon properties being known for that location. Annie condensate has a higher residuals profile when compared with other offset fields representing a more conservative analogue and therefore Annie condensate was selected for all scenarios modelled in this assessment. While a comprehensive oil assay for Annie-1 condensate was provided by the client (Core Lab RFL 201903231), it should be noted that essential data pertaining to the pour point, dynamic viscosity, and aromatic content for distinct boiling point ranges were absent from the dataset. Consequently, a pragmatic approach was adopted to supplement these missing values by sourcing relevant information from the Minerva condensate assay data. Minerva condensate is found in a nearby reservoir.

Table 8.1 and Table 8.2 present the physical properties and boiling point ranges of the condensate used in this study.

The Annie-1 condensate has an API of 41.0, density of 820.0 kg/m^3 (at 16 ºC), with low viscosity (1.063 cP at 20 ºC) classifying it as a Group II (light-persistent) oil according to the International Tankers Owners Pollution Federation (ITOPF, 2020) and US EPA/USCG classifications. The condensate comprises a significant portion of volatiles and semi- to low-volatiles (82.5% total) with 17.5% residual components. This means the condensate will evaporate readily when on the water surface, with the persistent components to remain on the water surface over time.

The boiling points (BP) are dictated by the length of the carbon chains, with the longer and more complex compounds having a higher boiling point, and therefore lower volatility and evaporation rate. Typical evaporation times once the hydrocarbons reach the surface and are exposed to the atmosphere are:

- Up to 12 hours for the C_4 to C_{10} compounds (BP <180°C).
- Up to 24 hours for the C_{11} to C_{15} compounds (BP 180-265°C).
- Several days for the C_{16} to C_{20} compounds (BP 265-380°C).
- Not applicable for the residual compounds (BP >380°C), which will resist evaporation, persist in the marine environment for longer periods, and be subject to relatively slow degradation.

Table 8.1 Physical properties.

Characteristic	Annie-1 Condensate
Density (kg/m^3)	820.0 (@ 16 °C)
API	41.0
Dynamic viscosity (cP)	1.063 (@ 20°C)*
Pour point (°C)	-30*
Wax Content (%)	10.0
Hydrocarbon property category	Group II
Hydrocarbon property classification	Light-Persistent

Table 8.2 Boiling point ranges.

Oil Type	Component	Volatile (%)	Semi-volatile (%)	Low-volatility (%)	Residual (%)
	Boiling point (°C)	<180 C_4 to C_{10}	180-265 C_{11} to C_{15}	265-380 C_{16} to C_{20}	>380 >C_{20}
Annie-1 condensate	% of total	8.0	46.5	28.0	17.5

** data extracted from Minerva condensate assay*

8.2 Weathering Properties

8.2.1 Annie-1 Condensate

A series of model weathering tests were conducted to illustrate the potential behaviour of the condensate when exposed to idealised and representative environmental conditions:

- A 50 m^3 surface release over 1-hour under calm wind conditions (constant 5 knots), assuming low seasonal water temperature (15 °C) and ambient tidal and drift currents; and
- A 50 m^3 surface release over 1-hour under variable wind conditions (1-23 knots, drawn from representative data files), assuming low seasonal water temperature (15°C) and ambient tidal and drift currents.

Note, a surface release is used in the weathering test to solely focus on the weathering and fates of the hydrocarbons when exposed to atmospheric conditions.

The first case is indicative conditions that would not generate entrainment, while the second case represents conditions that would likely cause entrainment. Both scenarios provide examples of potential behaviour during a spill once the oil is on the sea surface.

The mass balance for the condensate under the constant 5 knot wind case (Figure 8.1) shows that 52.4% of the condensate is expected to evaporate within 24 hours. Under calm conditions, the majority of the remaining condensate on the water surface will weather at a slower rate due to being comprised of the less volatile, longer-chain compounds. Evaporation shall cease when only the residual compounds remain, and they will be subject to more gradual decay through biological and photochemical processes.

Under the variable-wind case (Figure 8.2), where the winds are of greater strength on average, entrainment of condensate into the water column is shown to increase. Approximately 24 hours after the spill, 70.1% of the mass is shown to have entrained and a further 23.8% has evaporated, leaving only a small proportion floating on the water surface (<1%).

The increased level of entrainment in the variable-wind case result in a higher percentage decaying at an approximate rate of ~2.5% per day with 17.8% after 7 days, compared to <0.7% per day and a total of 0.1% after 7 days for the constant-wind case. Given the proportion of entrained condensate and the tendency for it to remain mixed in the water column, the remaining hydrocarbons will decay over time scales of several weeks.

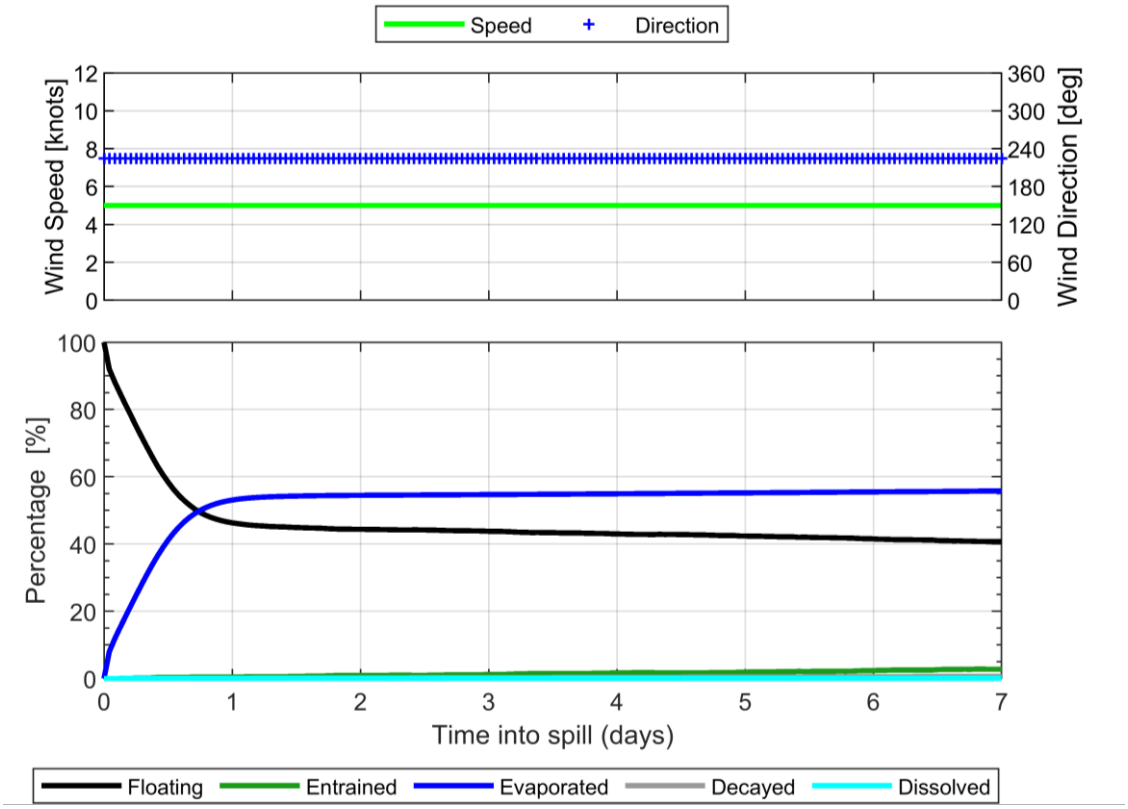

Figure 8.1 Proportional mass balance plot representing the weathering of Annie-1 condensate spilled onto the water surface over 1-hour and subject to a constant 5 knots wind speed at 15°C water temperature.

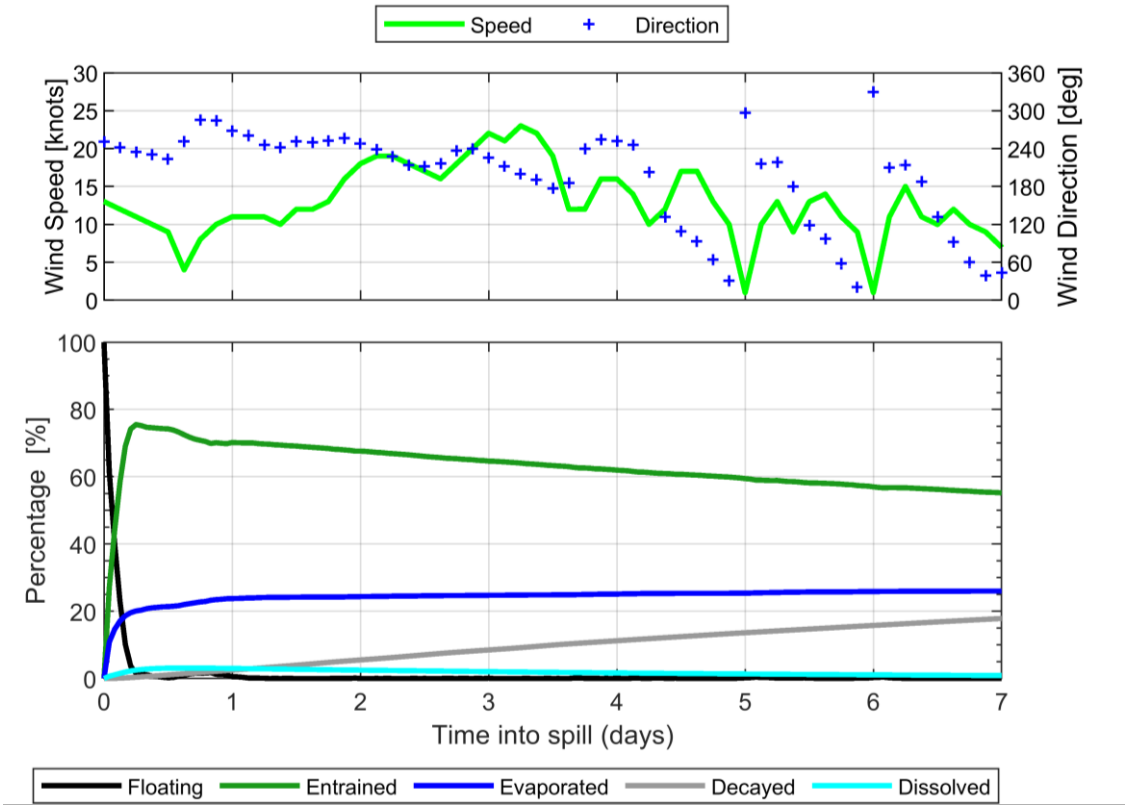

Figure 8.2 Proportional mass balance plot representing the weathering of Annie-1 condensate spilled onto the water over 1-hour and subject to variable wind speeds (1-23 knots) at 15°C water temperature.

9 MODEL SETTINGS

Table 9.1 provides a summary of the oil spill model settings.

Table 9.1 Summary of the oil spill model settings and thresholds used in this assessment.

Parameter	Scenario 1	Scenario 2	Scenario 3
Description	Loss of Well Control at Elanora-1 ST1 (Isabella)	Loss of Well Control at Pecten East-2	Loss of Well Control at Annie-2
Number of randomly selected spill start times	100 per season (200 per scenario)		
Model period	Summer (November to April) Winter (May to October)		
Hydrocarbon type for oil spill modelling only	Annie-1 condensate		
Spill volume	105,289 bbl (16,740 m^3)	83,273 bbl (13,239 m^3)	66,430 bbl (10,562 m^3)
Release type (subsurface, top of BOP stack (depth (m))	54	34	36
Release duration (days)*	102	102	104
Simulation length (days)	116		118
Surface oil concentration thresholds (g/m^2) ^	1 (low); 10 (moderate); 50 (high)		
Shoreline oil accumulation thresholds (g/m^2) ^	10 (low); 100 (moderate); 1,000 (high)		
Dissolved hydrocarbon concentrations (ppb) ^	10 (low); 50 (moderate); 400 (high)		
Entrained hydrocarbon concentrations (ppb) ^	10 (low); 100 (high)		

^Thresholds based on NOPSEMA (2019)

* Note, the 104-day model duration for Scenario 3 relates to slightly more conservative response time for the relief well to kill Annie-2. This duration was carried over from the specifications of the original Annie-2 modelling.

10 PRESENTATION AND INTERPRETATION OF MODEL RESULTS

The results from the modelling study are presented in a number of tables and figures, which aim to provide an understanding of potential sea-surface and water column exposure and shoreline accumulation.

10.1 Annual Analysis

The statistics are based on the following principles:

- The ***greatest distance travelled by a spill trajectory*** – is determined by a) recording the maximum and b) second greatest distance travelled (or 99th percentile) by a single trajectory, within a scenario, from the release location to the identified exposure thresholds;
- The ***probability of oil exposure to a receptor*** – is determined by recording the number of spill trajectories to reach a specified sea surface or subsea threshold within a receptor polygon, divided by the total number of spill trajectories within that scenario;
- The ***minimum time before oil exposure to a receptor*** – is determined by ranking the elapsed time before sea surface exposure, at a specified threshold, to grid cells within a receptor polygon and recording the minimum value;
- The ***maximum residence time for oil exposure within a receptor*** – is determined by recording the longest continuous length of time a grid cell is exposed to either floating, entrained or dissolved hydrocarbon above each threshold, within a receptor;
- The ***probability of oil accumulation at a receptor*** – is determined by recording the number of spill trajectories to reach a specified shoreline accumulation threshold within a receptor polygon, divided by the total number of spill trajectories within that scenario;
- The ***maximum (total) volume of oil ashore*** – is the total volume of oil stranded on the shorelines throughout the duration of the simulation;
- The ***maximum potential oil loading within a receptor*** – is determined by identifying the maximum loading to any grid cell within a receptor polygon, for a scenario; and
- The ***dissolved and entrained hydrocarbon exposure*** – is determined by recording the maximum instantaneous concentrations at each grid cell.

10.2 Deterministic Trajectories

The stochastic modelling results were assessed for each scenario, and the deterministic runs were identified and are presented in the result section based on the following criteria.

a. Largest swept area for surface oil above 10 g/m^2;

b. Largest (total) volume of oil ashore;

c. Longest length of shoreline with oil accumulation above 100 g/m^2;

d. Largest area of entrained hydrocarbon exposure above 100 ppb; and

e. Largest area of dissolved hydrocarbon exposure above 50 ppb.

10.3 Receptors Assessed

A range of environmental receptors and shorelines were assessed for floating oil exposure, shoreline accumulation and water column exposure as part of the study (see Figure 10.1 to Figure 10.11). Receptor categories (see Table 10.1) include sections of shorelines which are defined by local government areas (LGAs), sub-LGAs and offshore islands. All other sensitive receptors other than submerged reefs, shoals and banks (RSB) were sourced from Australian Government Department of Climate Change, Energy, the Environment and Water (https://www.dcceew.gov.au/).

Risks of exposure were separately calculated for each sensitive receptor area and have been tabulated.

Table 10.2 summarises the receptors that the release locations reside within.

RPS have utilised BIAs for the southern right whale that were delineated within the 2011-2021 Conservation Management Plan for the Southern Right Whale. The NCV Atlas now includes updated BIAs for SRW, though the recently drafted National Recovery Plan for the southern right whale has not been published. The updated BIAs have not been used in this report.

Table 10.1 Summary of receptors used to assess floating oil, shoreline and in-water exposure to hydrocarbons.

Receptor Category	Acronym	Hydrocarbon Exposure Assessment			Figure reference
		Water Column	Floating oil	Shoreline	
Australian Marine Park	AMP	✓	✓	×	Figure 10.1
Integrated Marine and Coastal Regionalisation Areas	IMCRA	✓	✓	×	Figure 10.2
Marine National Park	MNP	✓	✓	×	Figure 10.3
Marine Park	MP	✓	✓	×	Figure 10.4
Nature Reserve	NR	✓	✓	×	Figure 10.5
Ramsar	Ramsar	✓	✓	✓	Figure 10.6
Reefs, Shoals and Banks	RSB	✓	✓	×	Figure 10.7
Key Ecological Feature	KEF	✓	✓	×	Figure 10.8
State Waters	State Waters	✓	✓	×	n/a
Local and Sub-Local Government Area	LGA and Sub-LGA	✓ (Reported as: Nearshore Waters)	✓ (Reported as: Nearshore Waters)	✓ (Reported as: Shore)	Figure 10.9 to Figure 10.11

Table 10.2 Summary of the receptors that the release locations reside within for each scenario.

Acronym	Receptor Name	Scenario		
		Scenario 1	Scenario 2	Scenario 3
BIA	Antipodean Albatross - Foraging	✓	✓	✓
	Black-browed Albatross - Foraging	✓	✓	✓
	Bullers Albatross - Foraging	✓	✓	✓
	Campbell Albatross - Foraging	✓	✓	✓
	Common Diving-petrel - Foraging	✓	✓	✓
	Indian Yellow-nosed Albatross - Foraging	✓	✓	✓
	Pygmy Blue Whale - Distribution	✓	✓	✓
	Pygmy Blue Whale - Foraging	✓	✓	✓
	Pygmy Blue Whale - Foraging annual high use area	✓	✓	✓
	Shy Albatross - Foraging	✓	✓	✓
	Southern Right Whale - Aggregation	×	✓	×
	Southern Right Whale - Known Core Range	✓	✓	✓
	Wandering Albatross - Foraging	✓	✓	✓
	Wedge-tailed Shearwater - Foraging	✓	✓	✓
	White Shark - Distribution	✓	✓	✓
IMCRA	Otway	✓	✓	✓

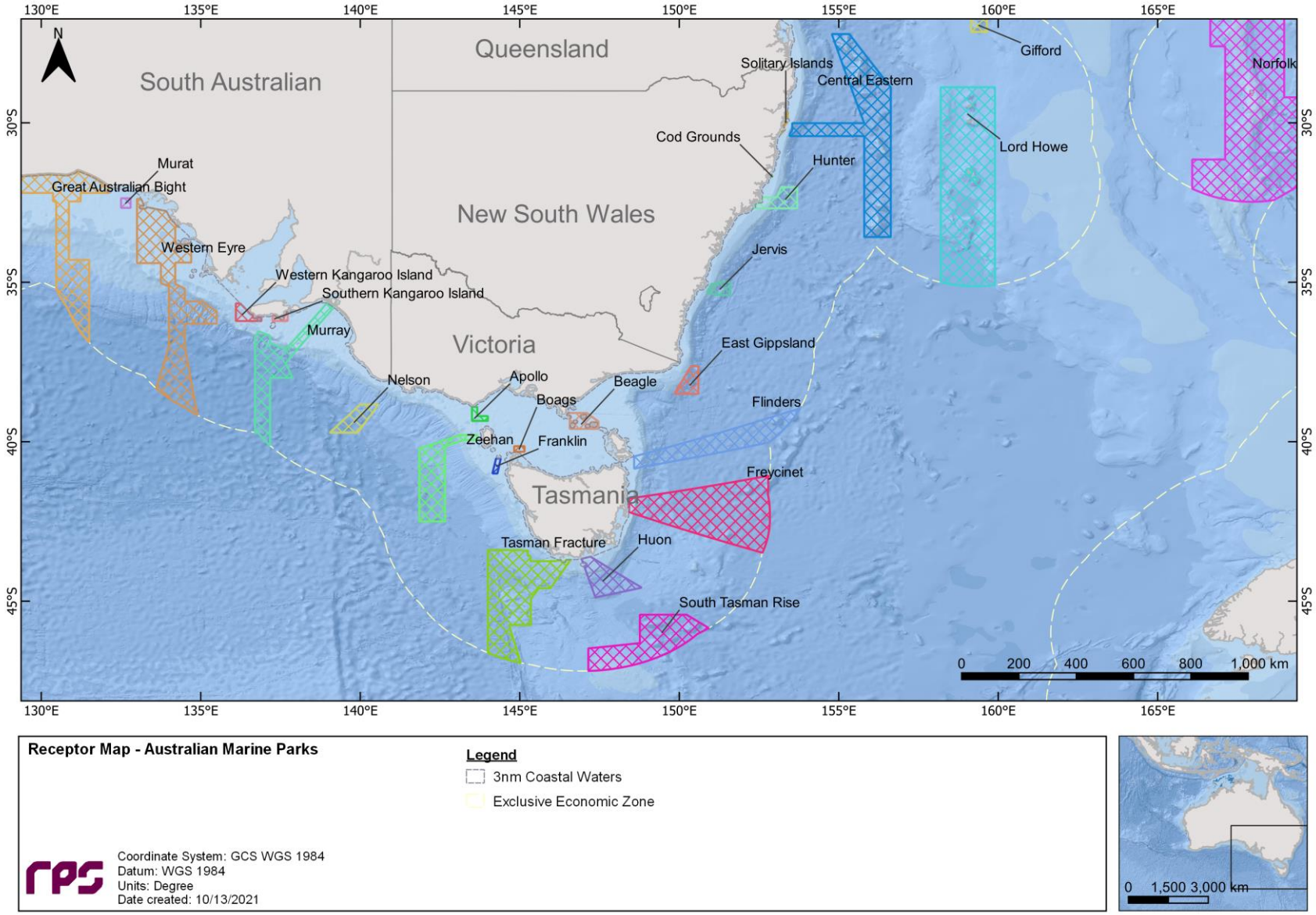

Figure 10.1 Receptor map for Australian Marine Parks (AMP).

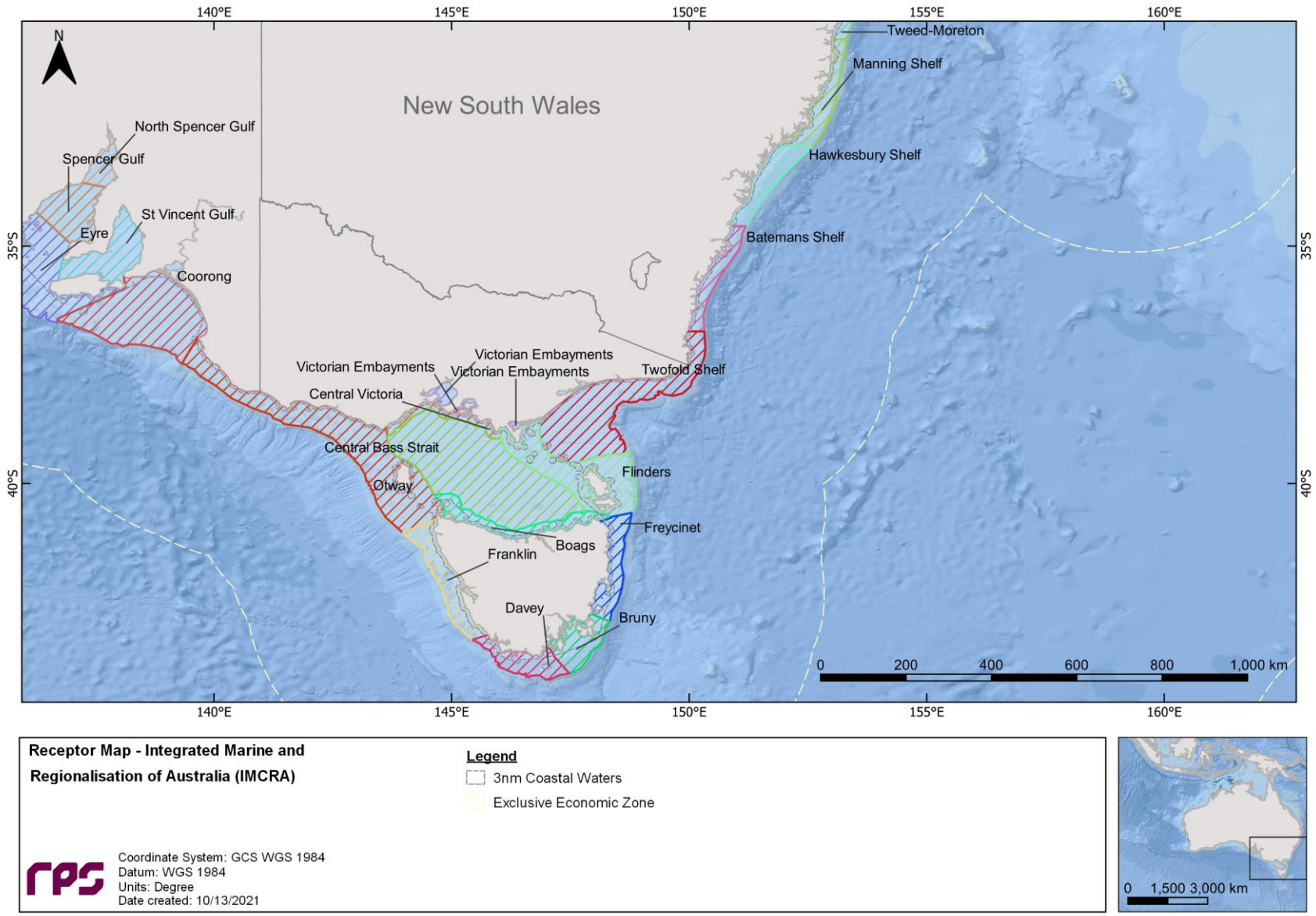

Figure 10.2 Receptor map for integrated marine and coastal regionalisation (IMCRA) areas.

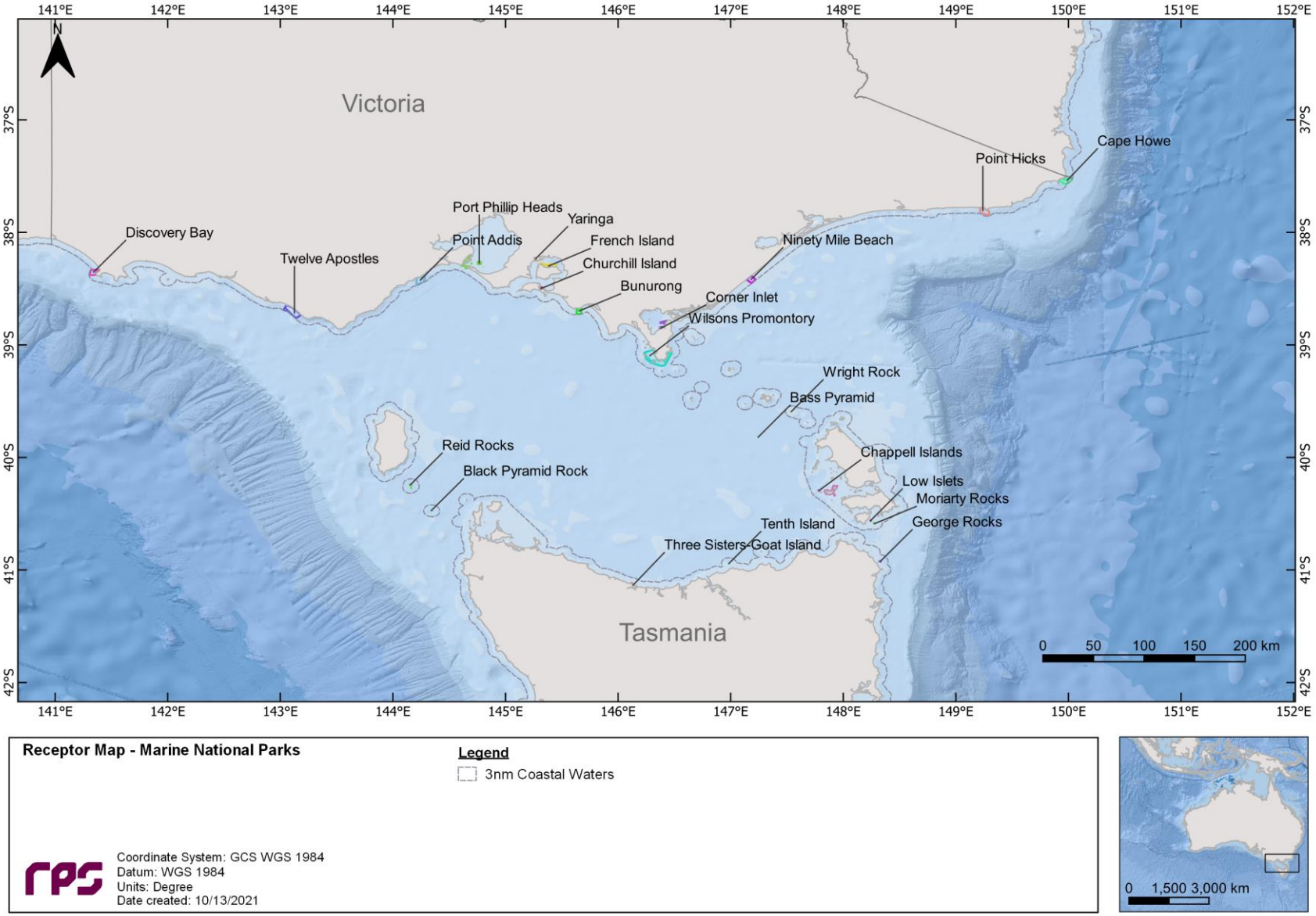

Figure 10.3 Receptor map for Marine National Parks (MNP).

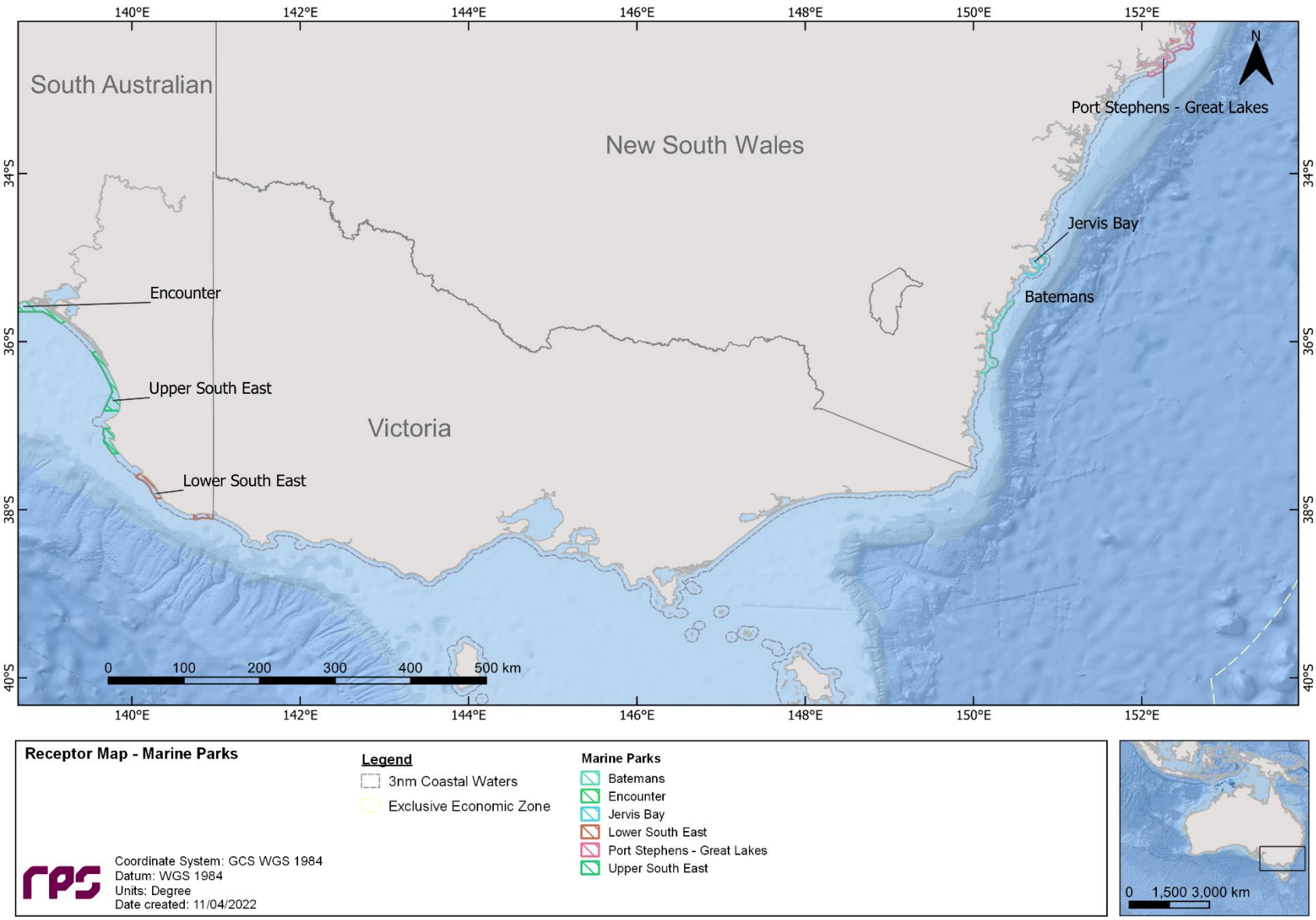

Figure 10.4 Receptor map for Marine Parks (MP).

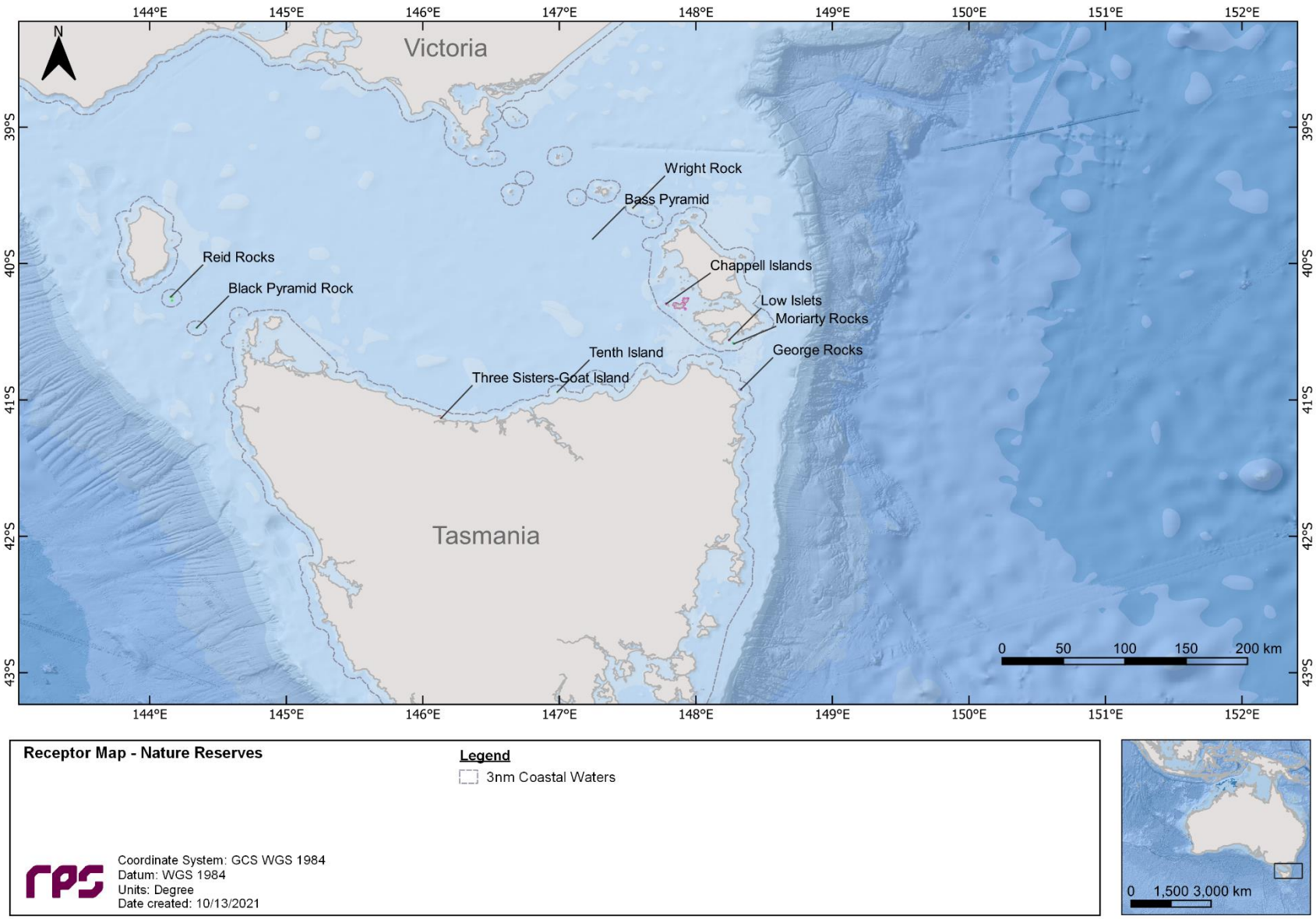

Figure 10.5 Receptor map for Nature Reserves (NR).

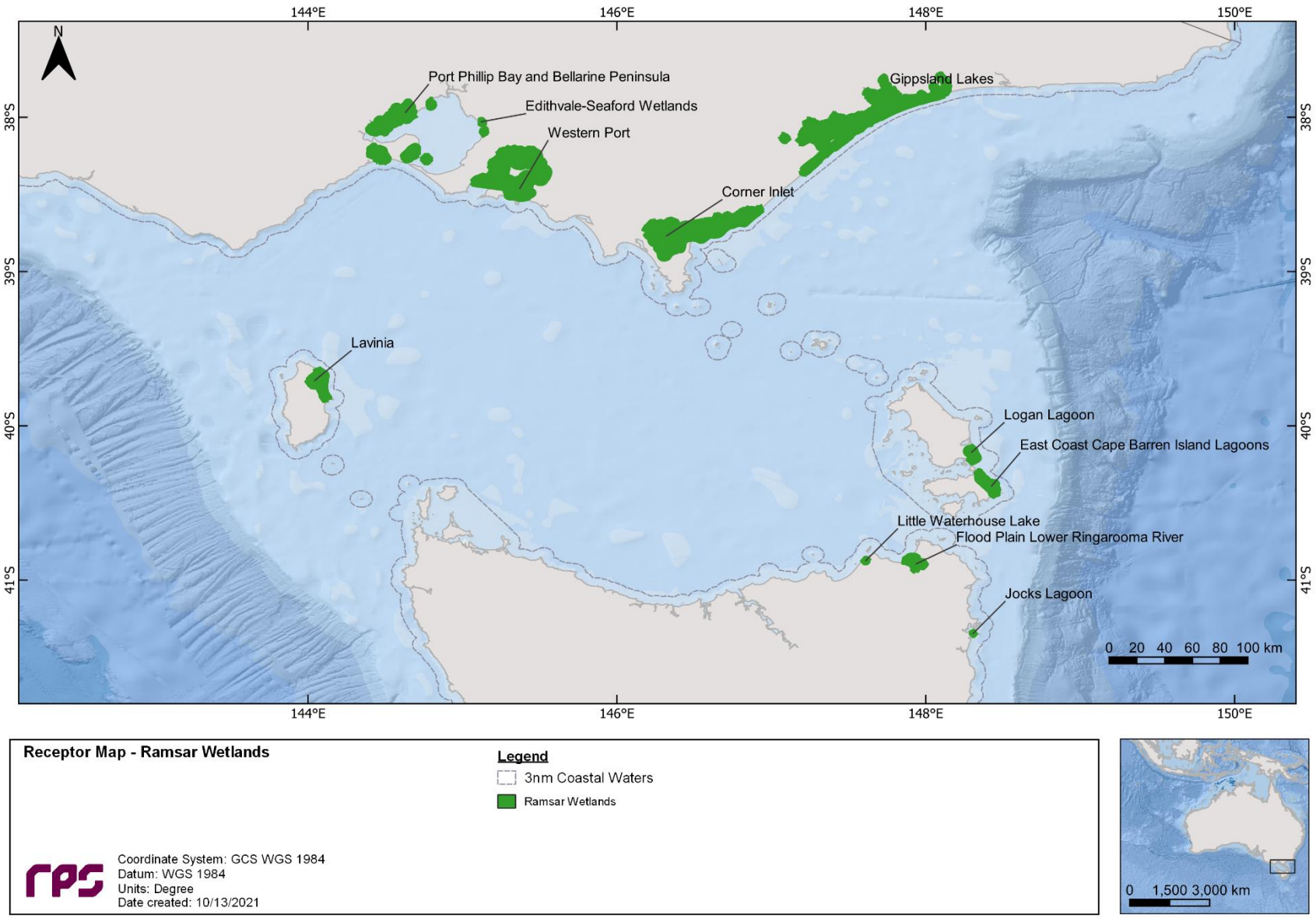

Figure 10.6 Receptor map for Ramsar Sites (Ramsar).

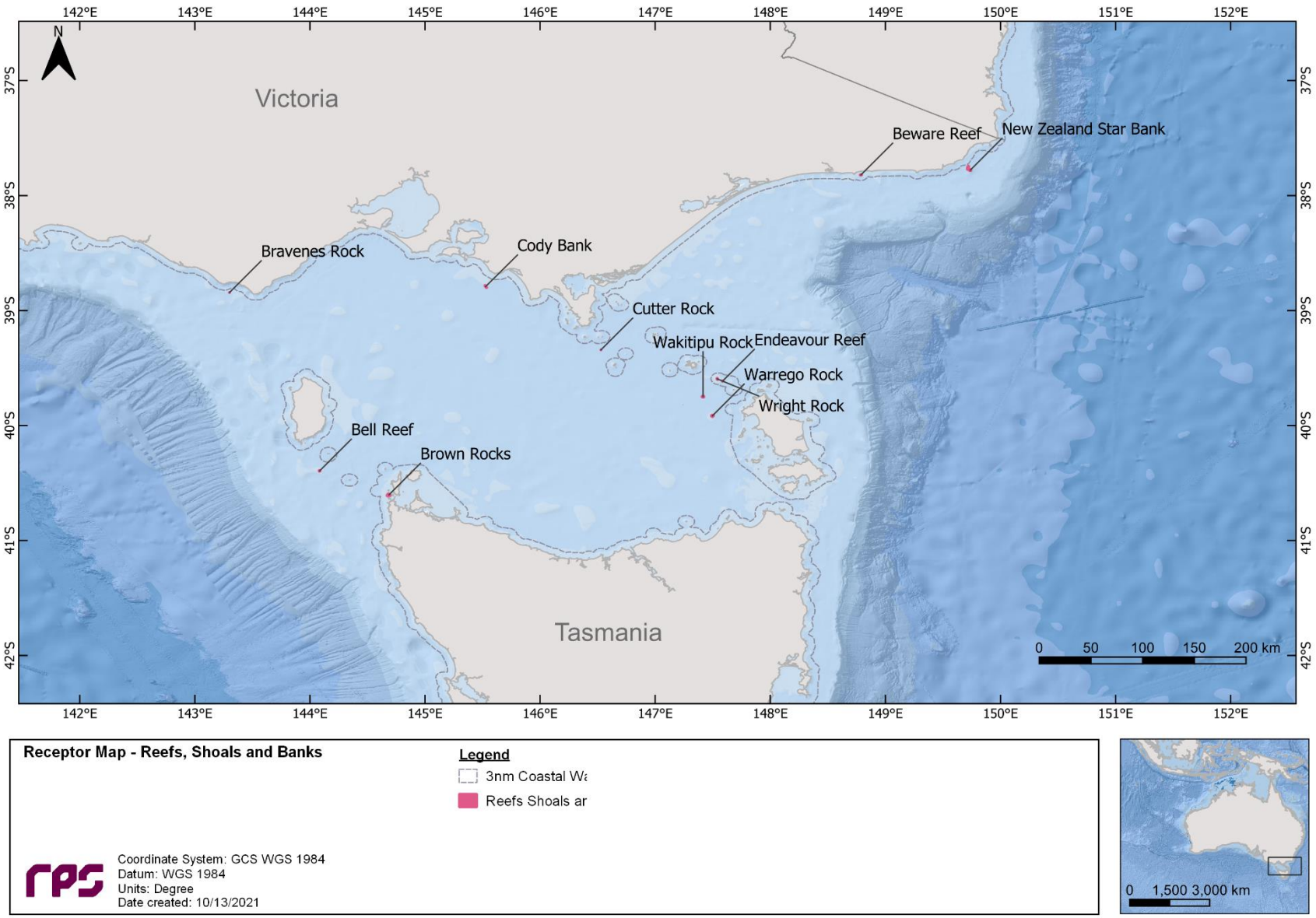

Figure 10.7 Receptor map for Reefs, Shoals and Banks (RSB).

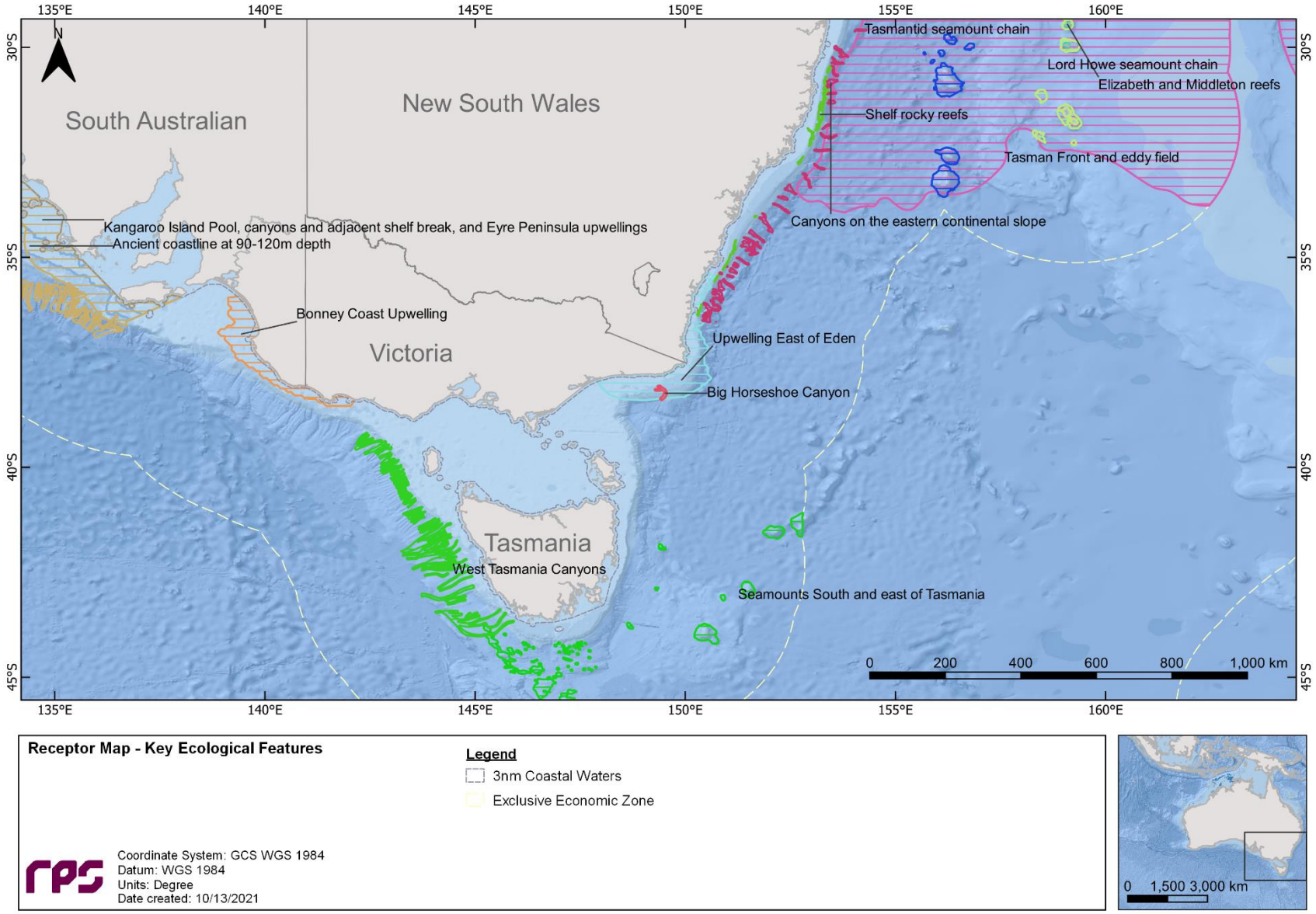

Figure 10.8 Receptor map for Key Ecological Features (KEF).

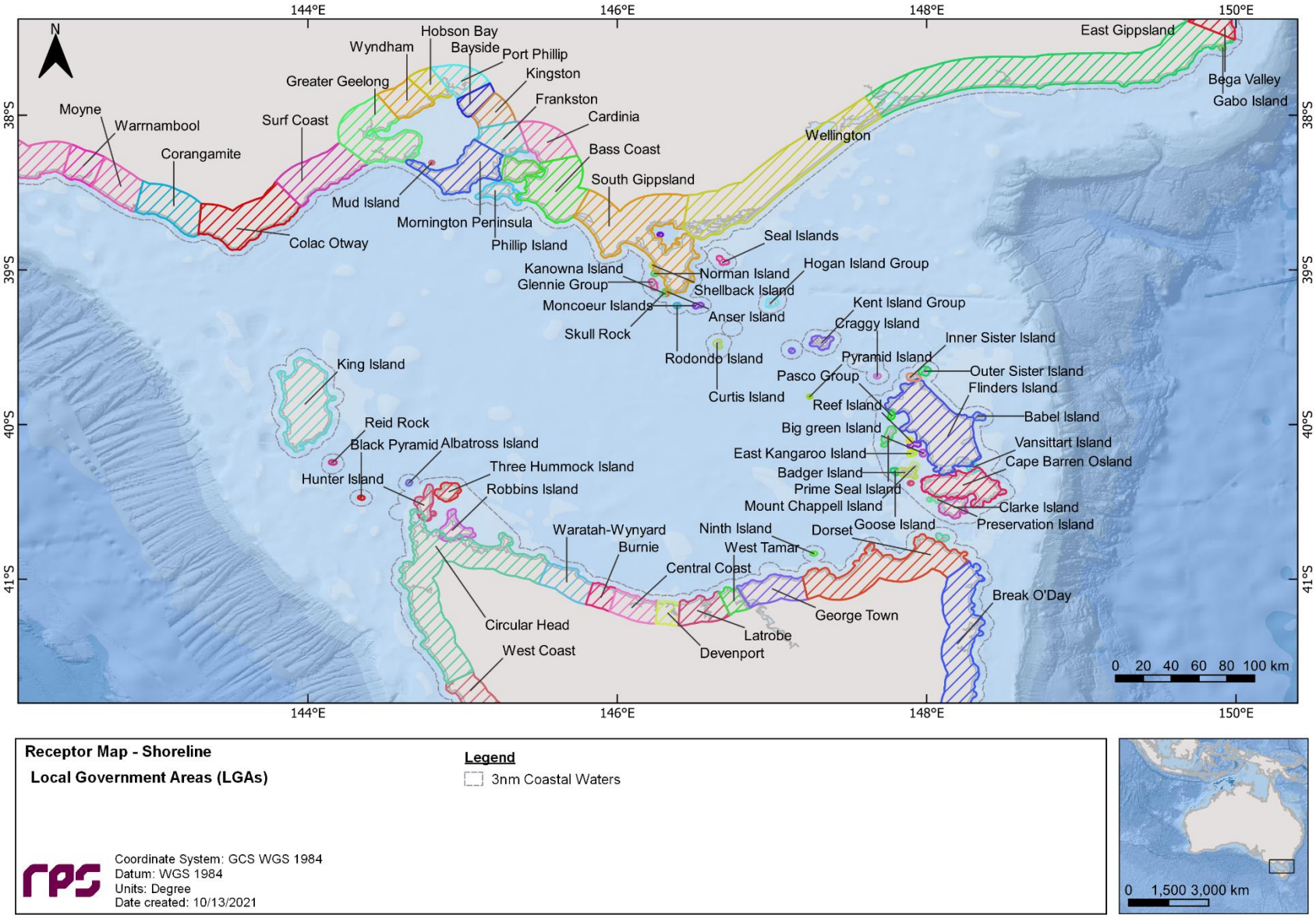

Figure 10.9 Receptor map for shorelines (1 of 3).

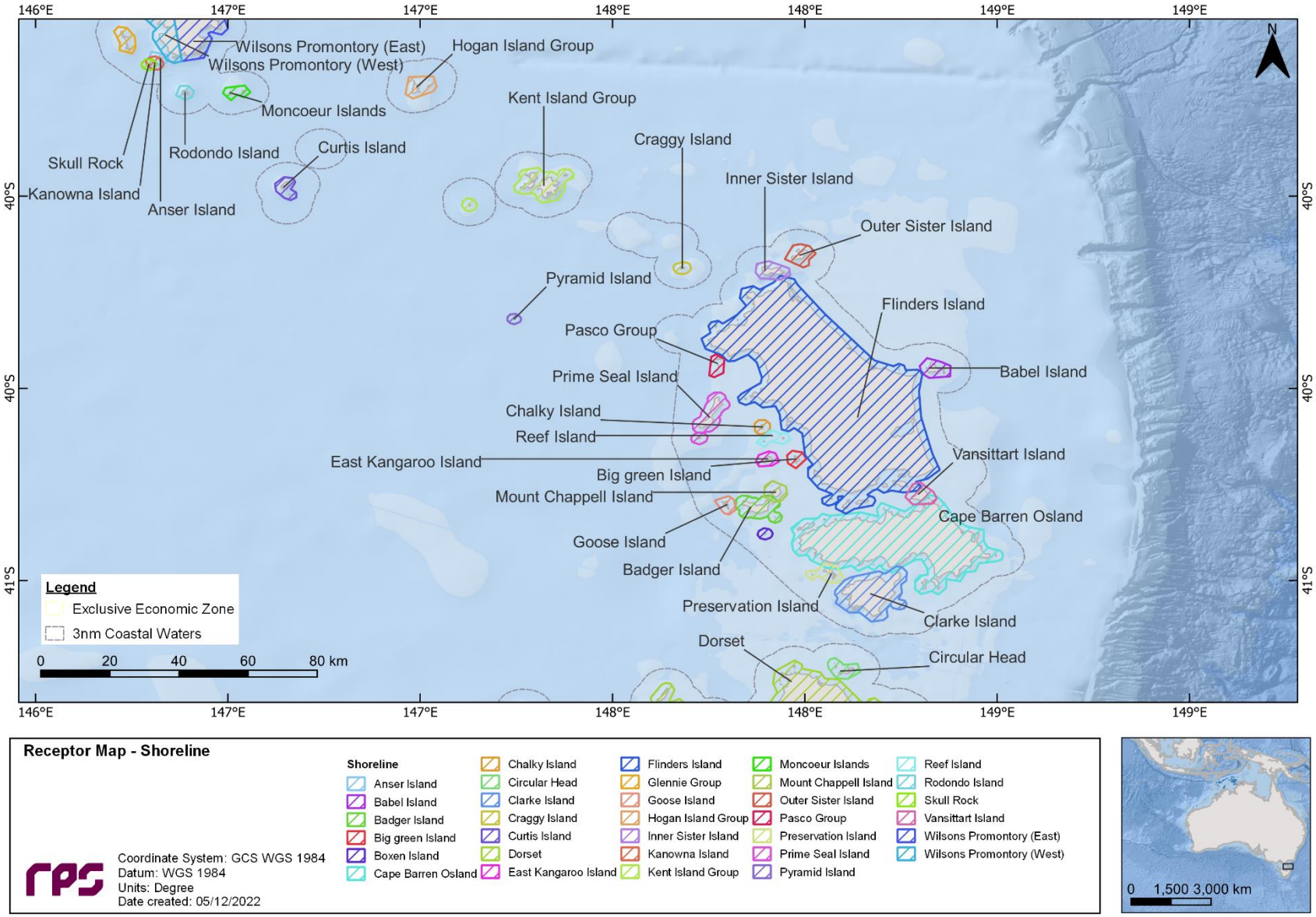

Figure 10.10 Receptor map for shorelines (2 of 3).

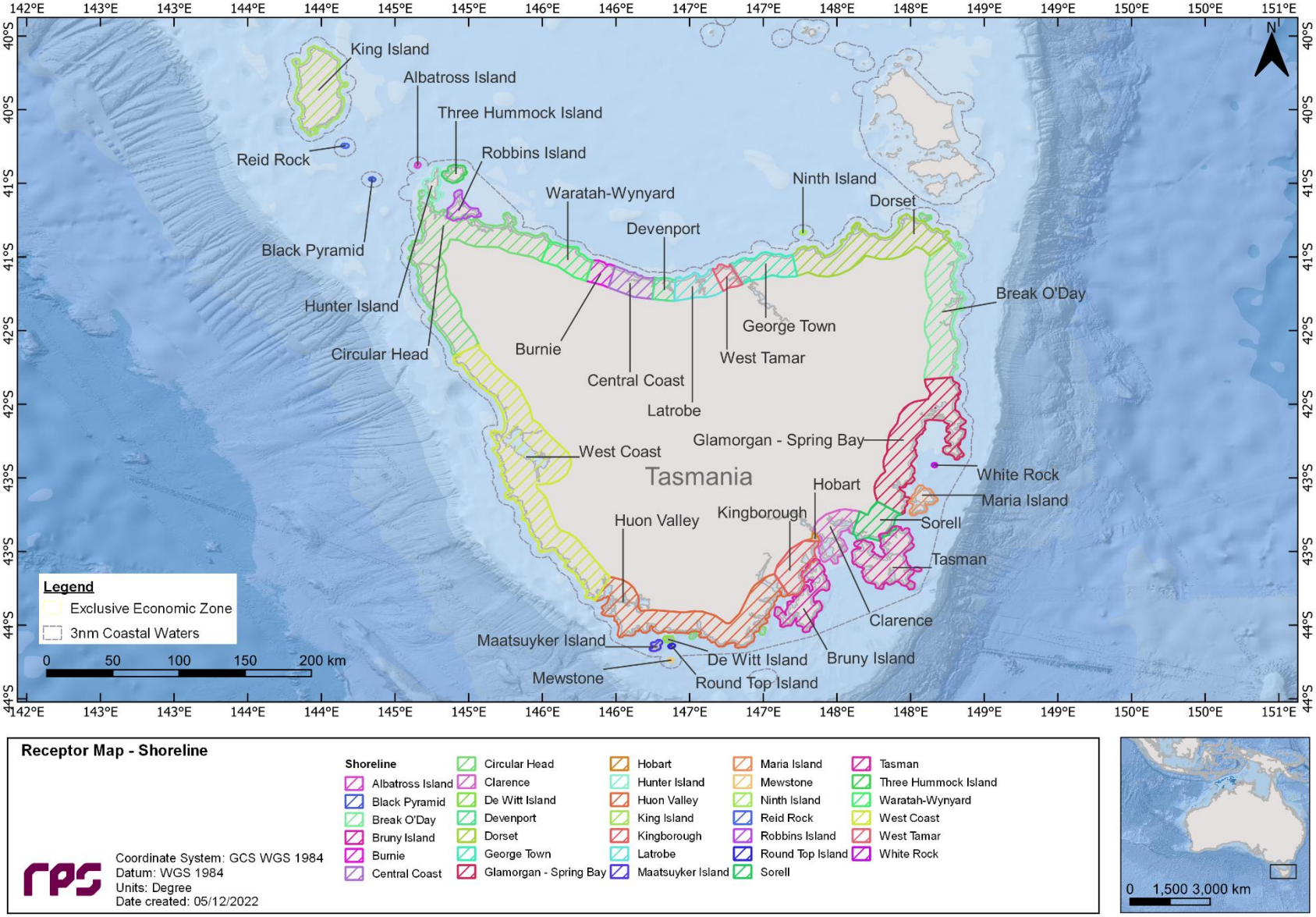

Figure 10.11 Receptor map for shorelines (3 of 3).

11 RESULTS – SCENARIO 1 – 105,289 BBL (16,740 M^3) SUBSURFACE RELEASE FROM A LOSS OF WELL CONTROL AT ELANORA-1 ST1

This scenario examined a 105,289 bbl (16,740 m^3) subsurface release of condensate over 102 days to represent a LOWC scenario at Elanora-1 ST1 well. A total of 100 spill simulations were run per season (summer and winter) and each simulation was tracked for 116 days. The results are presented on a seasonal basis.

Sections 11.1 and 11.2 present the seasonal stochastic analysis and deterministic analysis results, respectively.

11.1 Stochastic Analysis

11.1.1 Floating Oil Exposure

Table 11.1 summarises the maximum distance travelled by floating oil on the sea surface at each threshold. The maximum distance and corresponding direction from the release location to the low (1–10 g/m^2) and moderate (10–50 g/m^2) exposure zones was 75.7 km (east, winter) and 11.7 km (east-southeast, summer), respectively. No high (>50 g/m^2) exposure zones were predicted during either summer or winter conditions.

Table 11.2 summarises the potential floating oil exposure to individual receptors.

During summer, a total of 16 Biologically Important Areas (BIAs) were predicted to be exposed to floating oil at, or above, the low threshold. Excluding the BIAs that the release location resides within (see Section 10.3), the highest probability (40%) of low exposure was predicted at the Southern Right Whale – Aggregation BIA. The minimum time before low exposure to the Southern Right Whale – Aggregation BIA was 3.21 days.

Contrastingly, during winter, excluding the BIAs that the release location resides within (see Section 10.3), the highest probability (54%) of low exposure for any BIA was revealed at the Short-tailed Shearwater - Foraging BIA. Additionally, the minimum time before low exposure to the Southern Right Whale – Aggregation was 1.38 days.

Table 11.3 presents the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor.

Figure 11.1 and Figure 11.2 present the zones of potential floating oil exposure per season whilst Figure 11.3 to Figure 11.6 present the maximum residence time of floating oil exposure for the NOPSEMA thresholds.

Table 11.1 Maximum distance and direction from the release location to the edge of floating oil exposure. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Distance and direction travelled	Zones of potential floating oil exposure					
	Summer			Winter		
	Low	Moderate	High	Low	Moderate	High
Maximum distance (km) from release location	74.0	11.7	-	75.7	9.8	-
Maximum distance (km) from release location (99th percentile)	48.0	11.3	-	68.4	9.3	-
Direction	E	ESE	-	E	NW	-

Table 11.2 Summary of the potential floating oil exposure to individual receptors. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer						Winter					
		Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)			Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)		
		Low	Mod.	High	Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
BIA	Antipodean Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Black-browed Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Bullers Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Campbell Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Common Diving-petrel - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Indian Yellow-nosed Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Pygmy Blue Whale - Distribution*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Pygmy Blue Whale - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Pygmy Blue Whale - Foraging annual high use area*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Short-tailed Shearwater - Foraging	21	-	-	4.54	-	-	54	-	-	6.71	-	-
	Shy Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Southern Right Whale – Aggregation	40	-	-	3.21	-	-	47	-	-	1.38	-	-
	Southern Right Whale - Known Core Range*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Wandering Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Wedge-tailed Shearwater - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	White Shark - Distribution*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
IBRA	Otway Plain	21	-	-	4.54	-	-	53	-	-	6.71	-	-
	Otway Ranges	1	-	-	25.21	-	-	8	-	-	12.25	-	-
	Warrnambool Plain	12	-	-	7.75	-	-	16	-	-	6.92	-	-
IMCRA	Otway*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
MNP	Twelve Apostles	8	-	-	32.92	-	-	8	-	-	6.92	-	-

Receptor		Summer						Winter					
		Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)			Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)		
		Low	Mod.	High	Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
Nearshore Waters	Colac Otway	21	-	-	4.54	-	-	54	-	-	6.71	-	-
	Corangamite	12	-	-	7.75	-	-	16	-	-	6.92	-	-
	Moyne	-	-	-	-	-	-	3	-	-	11.13	-	-
	Warrnambool	-	-	-	-	-	-	1	-	-	12.25	-	-
State Waters	Victoria State Waters*	30	-	-	4.54	-	-	56	-	-	6.71	-	-
Nearshore Waters (Sub-LGA)	Bay of Islands	-	-	-	-	-	-	3	-	-	11.13	-	-
	Cape Otway West	21	-	-	4.54	-	-	54	-	-	6.71	-	-
	Childers Cove	-	-	-	-	-	-	1	-	-	12.25	-	-
	Moonlight Head	8	-	-	27.92	-	-	11	-	-	6.92	-	-
	Port Campbell	4	-	-	7.75	-	-	7	-	-	11.17	-	-

*The release location resides within the receptor boundaries.

Table 11.3 Summary of the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer			Winter		
		Maximum residence time of floating oil exposure (days)			Maximum residence time of floating oil exposure (days)		
		Low	Moderate	High	Low	Moderate	High
BIA	Antipodean Albatross - Foraging*	16.21	1.21	-	17.29	1.21	-
	Black-browed Albatross - Foraging*	16.21	1.21	-	17.29	1.21	-
	Bullers Albatross - Foraging*	16.21	1.21	-	17.29	1.21	-
	Campbell Albatross - Foraging*	16.21	1.21	-	17.29	1.21	-
	Common Diving-petrel - Foraging*	16.21	1.21	-	17.29	1.21	-
	Indian Yellow-nosed Albatross - Foraging*	16.21	1.21	-	17.29	1.21	-
	Pygmy Blue Whale - Distribution*	16.21	1.21	-	17.29	1.21	-
	Pygmy Blue Whale - Foraging*	16.21	1.21	-	17.29	1.21	-
	Pygmy Blue Whale - Foraging annual high use area*	16.21	1.21	-	17.29	1.21	-
	Short-tailed Shearwater - Foraging	0.58	-	-	0.83	-	-
	Shy Albatross - Foraging*	16.21	1.21	-	17.29	1.21	-
	Southern Right Whale – Aggregation	0.54	-	-	0.71	-	-
	Southern Right Whale - Known Core Range*	16.21	1.21	-	17.29	1.21	-
	Wandering Albatross - Foraging*	16.21	1.21	-	17.29	1.21	-
	Wedge-tailed Shearwater - Foraging*	16.21	1.21	-	17.29	1.21	-
	White Shark - Distribution*	16.21	1.21	-	17.29	1.21	-
IBRA	Otway Plain	0.58	-	-	0.83	-	-
	Otway Ranges	0.13	-	-	0.21	-	-
	Warrnambool Plain	0.46	-	-	0.63	-	-
IMCRA	Otway*	16.21	1.21	-	17.29	1.21	-
MNP	Twelve Apostles	0.25	-	-	0.5	-	-
Nearshore Waters	Colac Otway	0.58	-	-	0.83	-	-
	Corangamite	0.46	-	-	0.63	-	-
	Moyne	-	-	-	0.46	-	-

Receptor		Summer			Winter		
		Maximum residence time of floating oil exposure (days)			Maximum residence time of floating oil exposure (days)		
		Low	Moderate	High	Low	Moderate	High
	Warrnambool	-	-	-	0.04	-	-
State Waters	Victoria State Waters*	0.58	-	-	0.83	-	-
Nearshore Waters (Sub-LGA)	Bay of Islands	-	-	-	0.46	-	-
	Cape Otway West	0.58	-	-	0.83	-	-
	Childers Cove	-	-	-	0.04	-	-
	Moonlight Head	0.21	-	-	0.5	-	-
	Port Campbell	0.46	-	-	0.63	-	-

*The release location resides within the receptor boundaries.

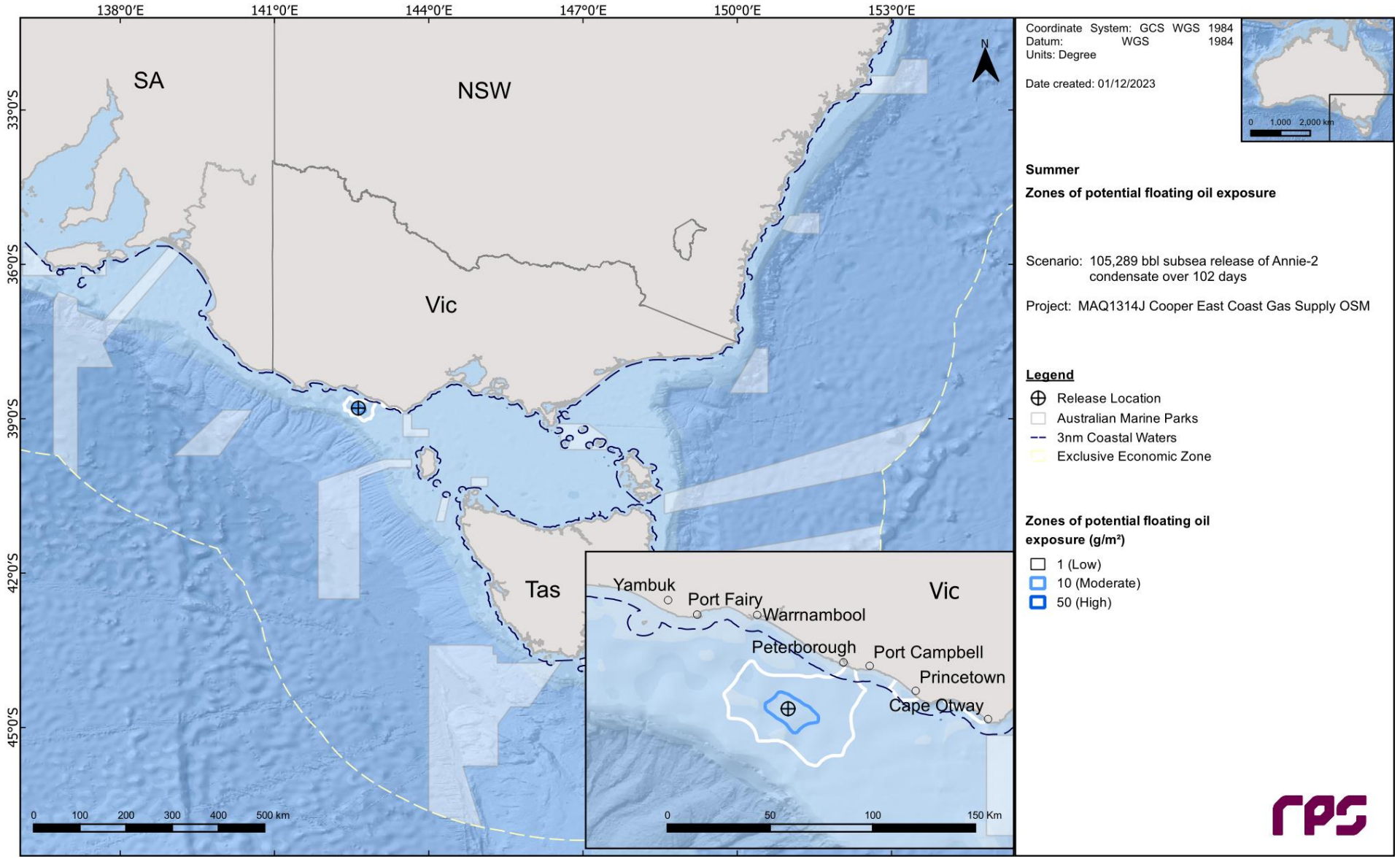

Figure 11.1 Zones of potential floating oil exposure in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

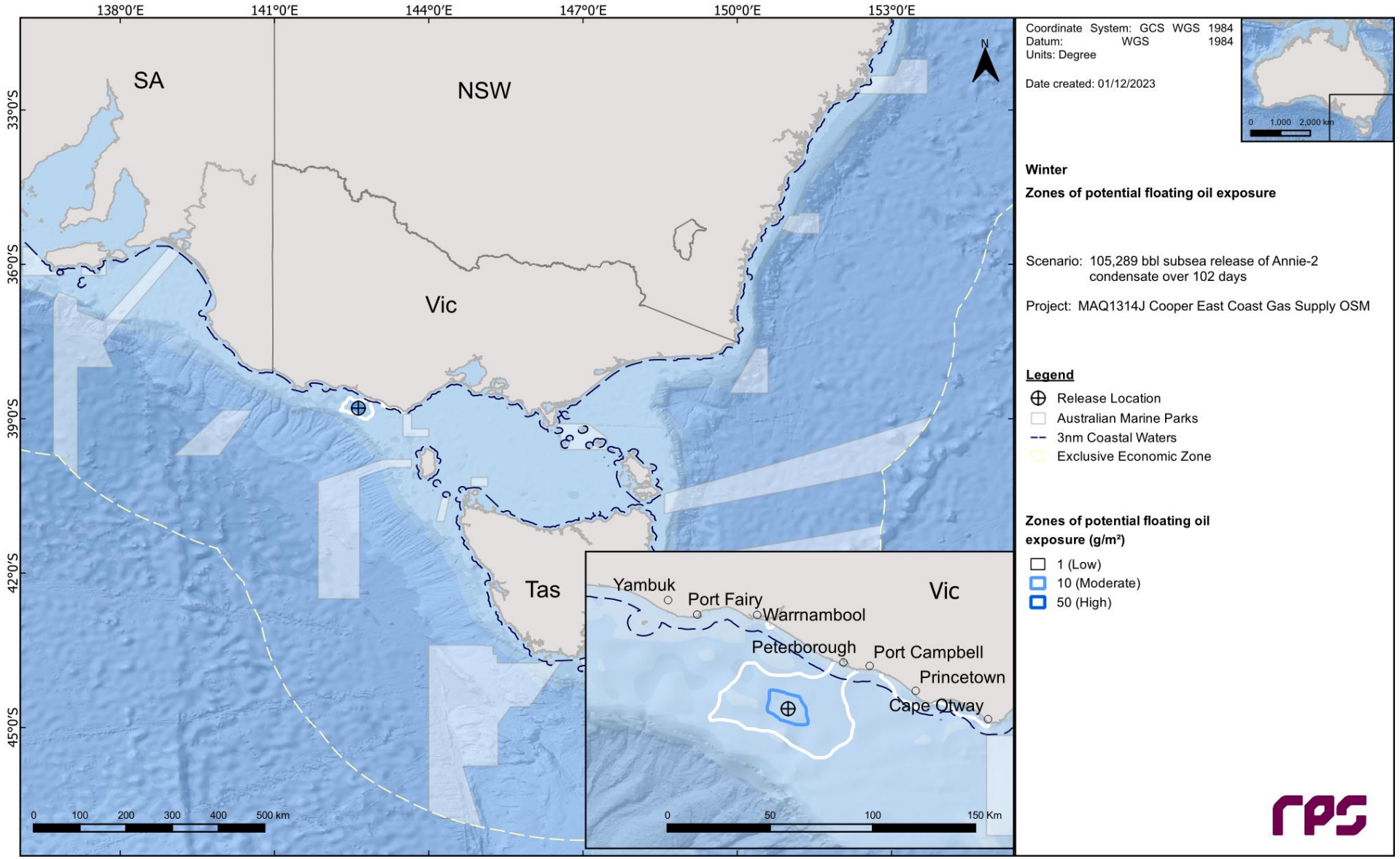

Figure 11.2 Zones of potential floating oil exposure in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

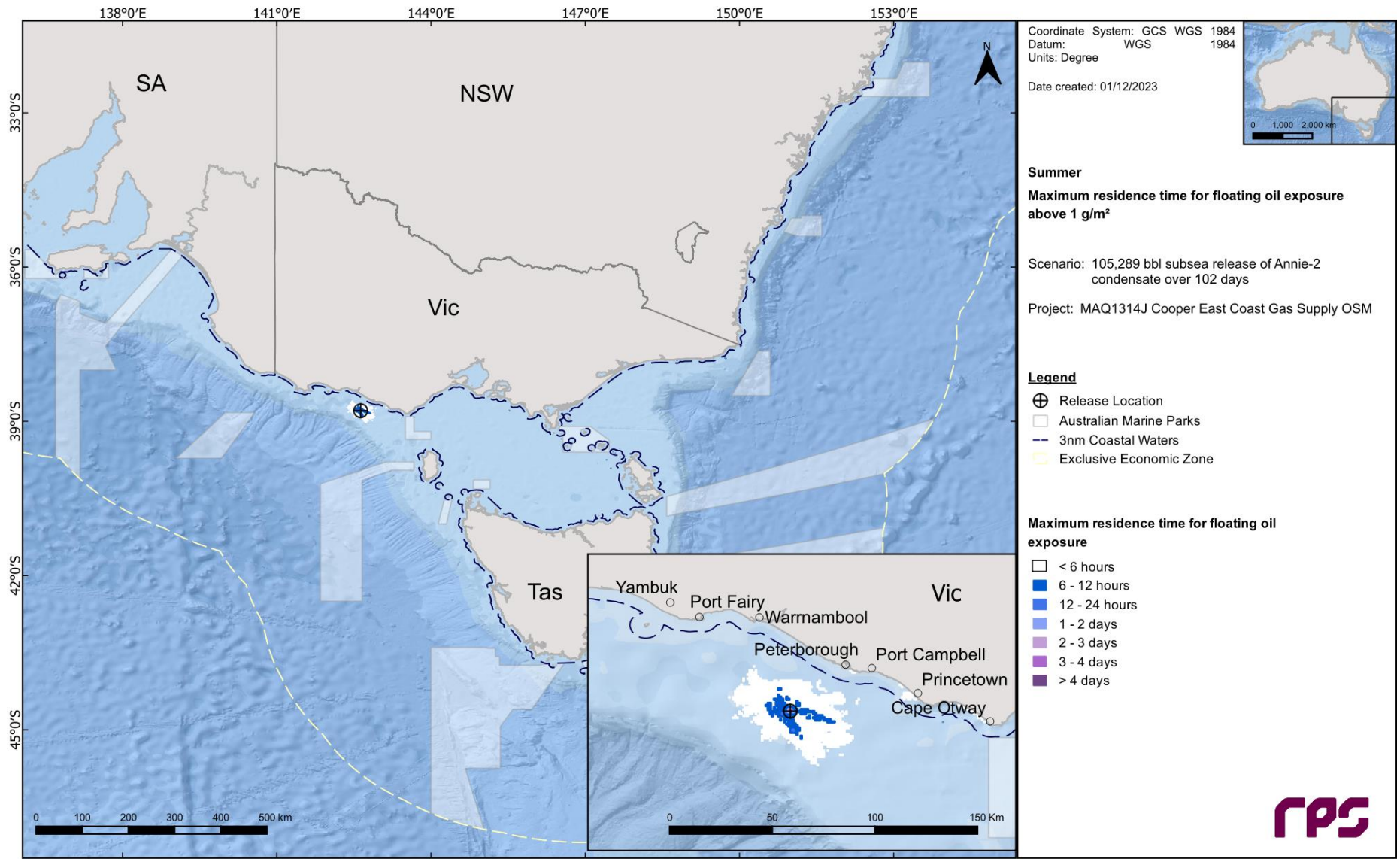

Figure 11.3 Maximum residence time of floating oil exposure above 1 g/m^2, in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

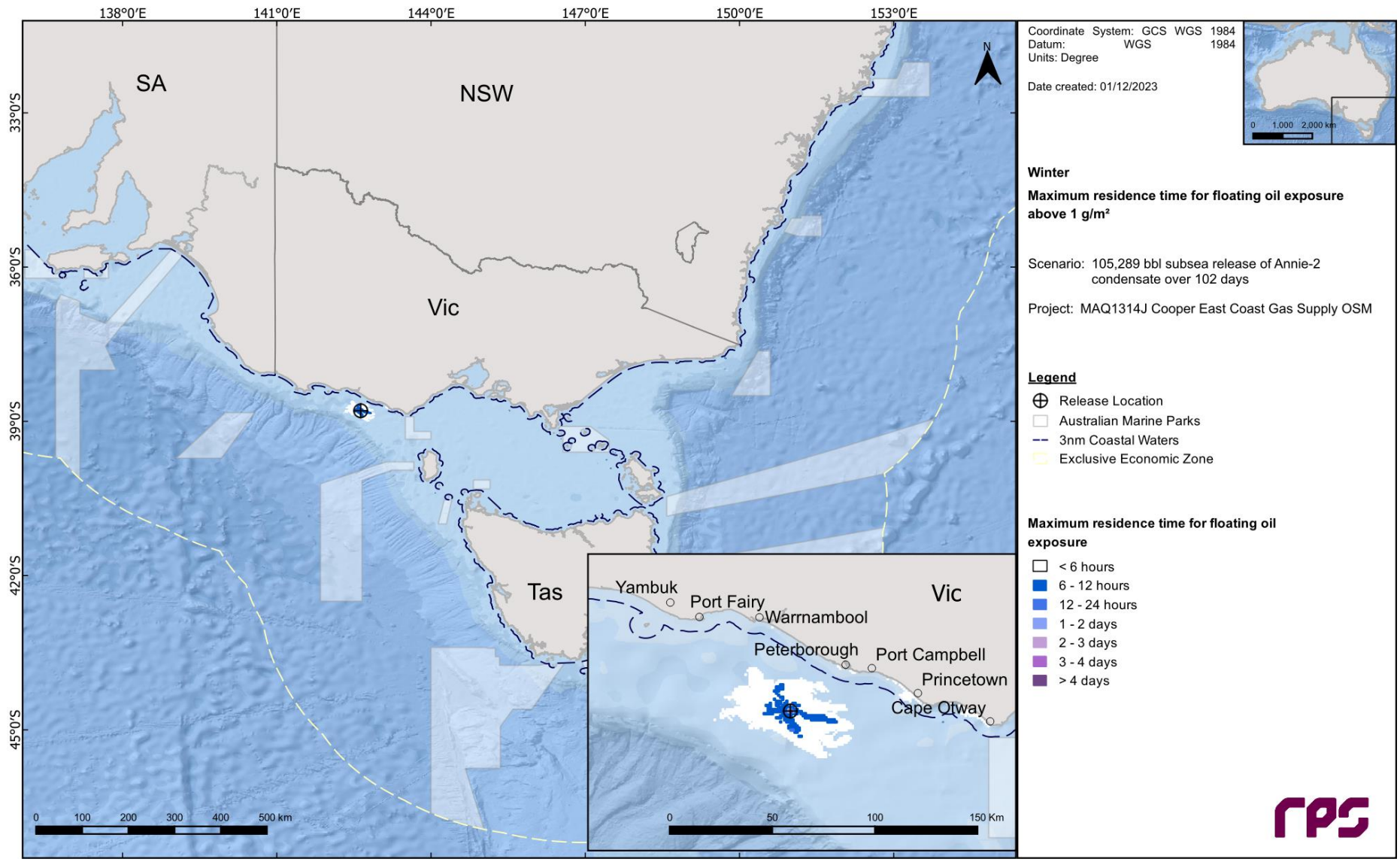

Figure 11.4 Maximum residence time of floating oil exposure above 1 g/m^2, in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

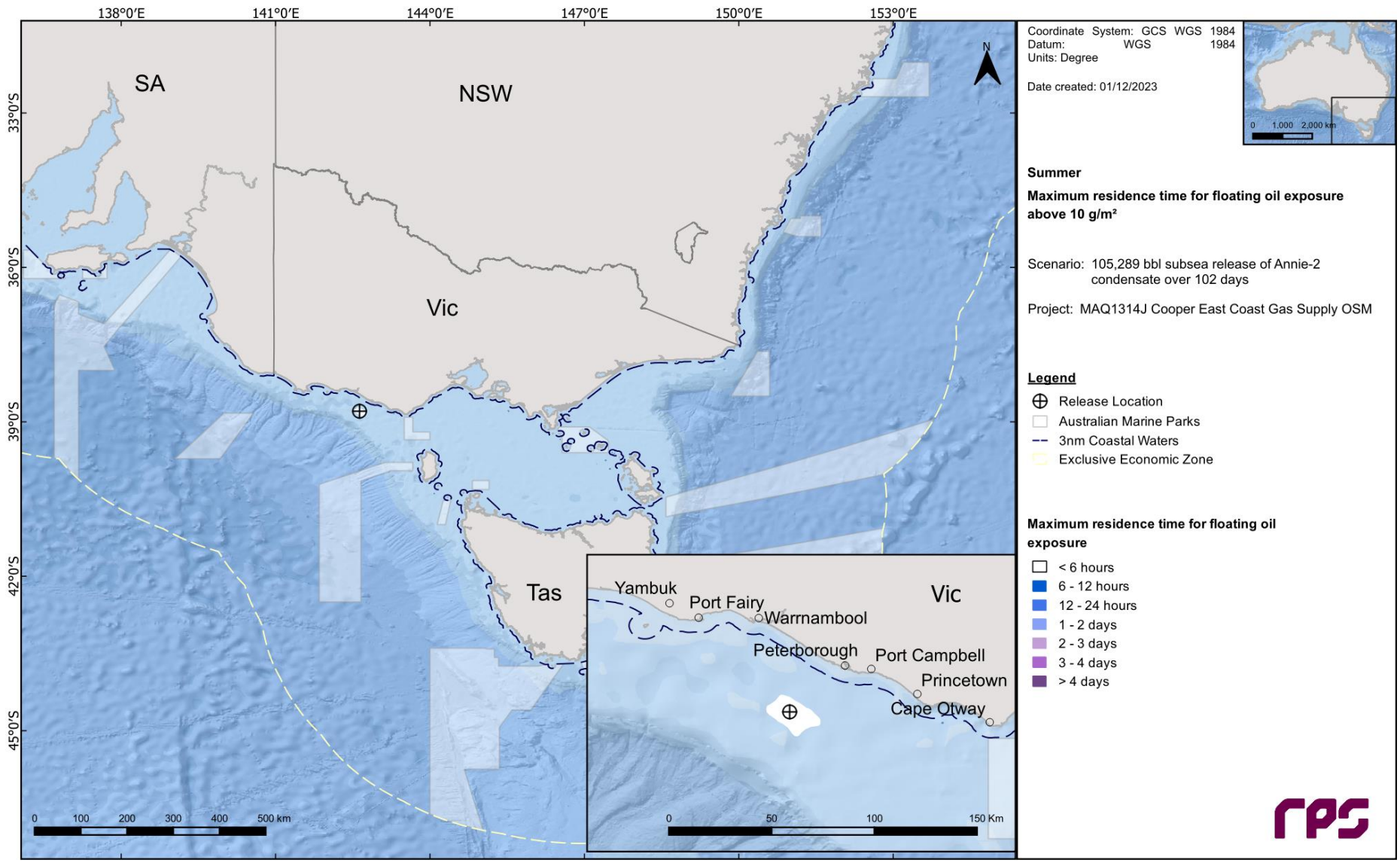

Figure 11.5 Maximum residence time of floating oil exposure above 10 g/m^2, in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

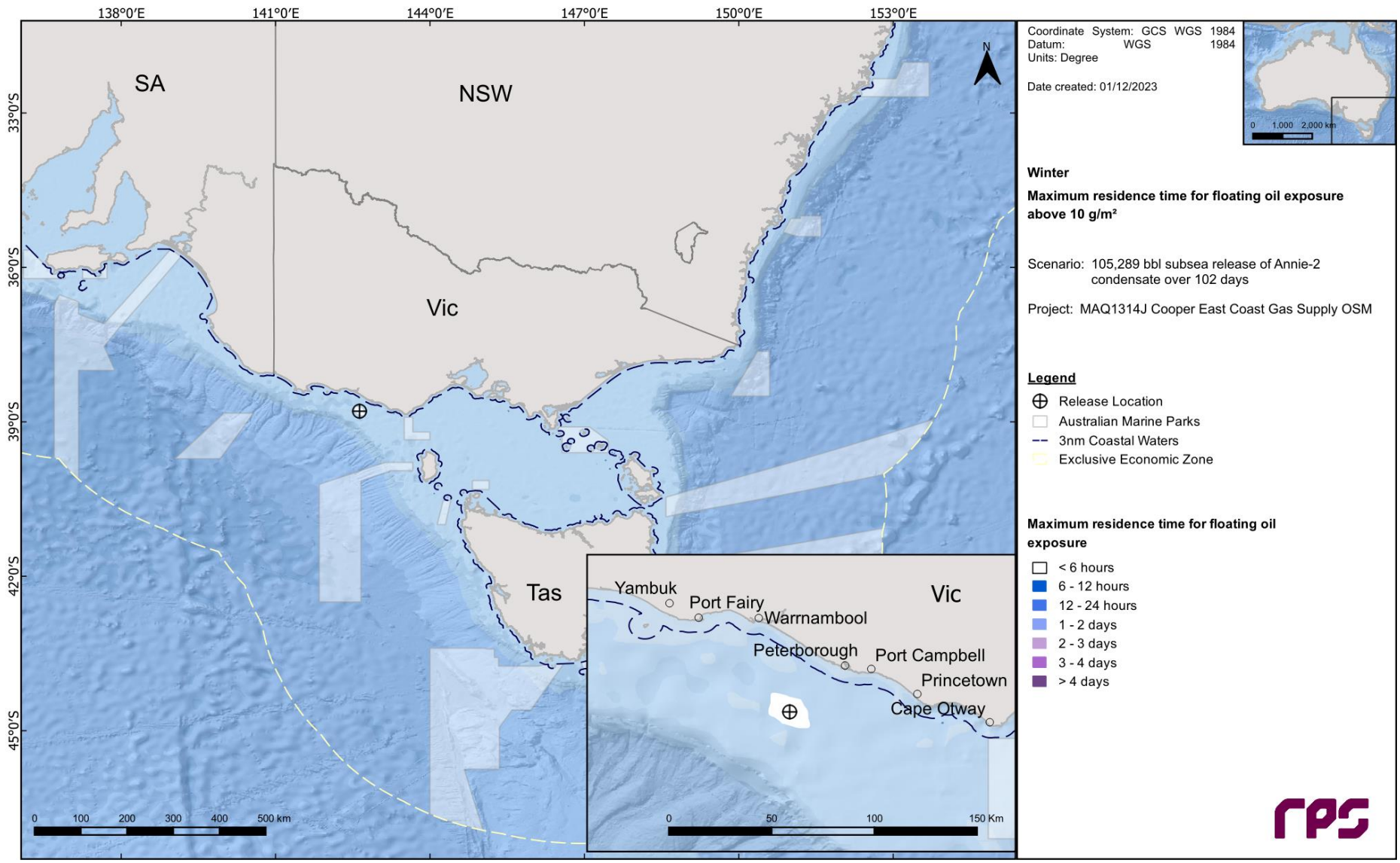

Figure 11.6 Maximum residence time of floating oil exposure above 10 g/m^2, in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

11.1.2 Shoreline Accumulation

Table 11.4 presents a summary of the potential shoreline accumulation. The probability of accumulation to any shoreline at, or above, the low (10 g/m^2) threshold was 100% throughout the year. The minimum time before oil accumulation at, or above, the low threshold was 1.83 days (winter). The maximum total volume ashore for a single spill trajectory was 251.0 m^3, and the maximum length of shoreline with accumulation above the low, moderate and high thresholds were 295.0 km, 48.0 km and 1.0 km, respectively, all occurring during winter.

Table 11.5 and Table 11.6 summarises the shoreline accumulation on individual receptors during summer and winter, respectively.

During summer, the shoreline segment of Colac Otway LGA as well as the Cape Otway West sub-LGA had the highest probability of accumulation above the low (99%) and moderate (69%) thresholds. Bay of Islands and Moyne also revealed a 1% probability of accumulation above the high threshold. The minimum time for low threshold shoreline accumulation was 3.38 days for the Corangamite shoreline segment.

Through winter, the shoreline segment of Colac Otway as well as the Cape Otway West sub-LGA had the highest probability of accumulation above the low and moderate thresholds (100% and 85%, respectively). Again, only few receptors revealed a 1% probability of accumulation above the high threshold. The minimum time for low threshold shoreline accumulation was 1.83 days for the Bay of Islands and Moyne shoreline segments.

The maximum potential shoreline loadings above each shoreline thresholds are presented in Figure 11.7 and Figure 11.8 for summer and winter, respectively.

Table 11.4 Summary of oil accumulation across all shorelines. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Shoreline Statistics	Summer	Winter
Probability of accumulation on any shoreline (%)	100	100
Absolute minimum time for visible oil to shore (days)	3.38	1.83
Maximum total volume of hydrocarbons ashore (m^3)	189.6	251.0
Average total volume of hydrocarbons ashore (m^3)	68.0	98.8
Maximum length of the shoreline at **10 g/m^2** (km)	264.0	295.0
Average shoreline length (km) at **10 g/m^2** (km)	109.8	142.2
Maximum length of the shoreline at **100 g/m^2** (km)	37.0	48.0
Average shoreline length (km) at **100 g/m^2** (km)	12.4	18.3
Maximum length of the shoreline at **1,000 g/m^2** (km)	1.0	1.0
Average shoreline length (km) at **1,000 g/m^2** (km)	1.0	1.0

Table 11.5 Summary of oil accumulation on individual shoreline receptors. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

Shoreline Receptor		Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
		Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
LGA Shoreline	Anglesea	22	1	-	16.88	67.13	-	5	100	1.4	12.3	5.9	0.9	-	19.1	0.9	-
	Anser Island	20	-	-	18.75	-	-	6	68	0.5	1.8	2.6	-	-	3.6	-	-
	Apollo Bay	90	11	-	5.13	52.54	-	13	167	4.6	18.5	10.7	2.3	-	23.6	4.5	-
	Bass Coast	3	-	-	92.71	-	-	2	22	0.3	1.1	1.2	-	-	1.8	-	-
	Bay of Islands	81	30	1	5.54	17.88	106.67	19	1,068	6.7	69.5	12.9	3	0.9	28.2	10.9	0.9
	Bega Valley	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Colac Otway	99	69	-	3.58	6.58	-	24	686	26.8	78.6	35.5	7.1	-	72.7	20	-
	Corangamite	95	55	-	3.38	6.79	-	23	415	16.6	54.5	24.5	5.6	-	49.1	15.4	-
	Curtis Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	East Gippsland	23	-	-	16.29	-	-	3	55	1.3	3.9	3.9	-	-	7.3	-	-
	French Island	10	-	-	19.08	-	-	2	36	0.2	0.8	1.2	-	-	1.8	-	-
	Gabo Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Glenelg	41	-	-	8.08	-	-	5	83	3.9	12.8	10.7	-	-	27.3	-	-
	Glennie Group	25	-	-	16.96	-	-	5	55	0.7	3.4	3.4	-	-	9.1	-	-
	Grant	7	-	-	27.83	-	-	2	18	0.6	1.3	1.2	-	-	1.8	-	-
	Greater Geelong	16	-	-	19.5	-	-	3	80	0.9	4.8	5.6	-	-	15.4	-	-
	Hogan Island Group	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Kanowna Island	13	-	-	18.75	-	-	4	37	0.3	1.7	2.9	-	-	4.5	-	-
	Kent Island Group	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	King Island	29	-	-	17.79	-	-	2	64	1.4	6.9	4.4	-	-	17.3	-	-
	Lady Julia Percy Island	45	1	-	13.13	14.96	-	12	136	1	5.2	3	1.8	-	5.5	1.8	-
	Laurence Rocks	23	-	-	17.67	-	-	8	38	0.3	0.8	1.9	-	-	2.7	-	-
	Moncoeur Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Montague Island	2	-	-	114.75	-	-	3	14	0.1	0.3	0.9	-	-	0.9	-	-
	Mornington Peninsula	25	-	-	16.17	-	-	4	77	2.4	12.8	12.1	-	-	29.1	-	-
	Moyne	85	30	1	5.54	17.88	106.67	12	1,068	9.3	73	18	3.3	0.9	52.7	10.9	0.9
	Norman Island	14	-	-	20.38	-	-	4	31	0.2	0.7	1.4	-	-	1.8	-	-
	Phillip Island	25	-	-	16.25	-	-	3	67	1	5.6	4.1	-	-	10.9	-	-
	Rodondo Island	14	-	-	62.33	-	-	5	48	0.2	1	1.4	-	-	1.8	-	-
	Seal Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shellback Island	4	-	-	59.17	-	-	4	16	< 0.1	0.3	0.9	-	-	0.9	-	-
	Skull Rock	10	-	-	19.29	-	-	4	37	0.2	0.9	1.3	-	-	1.8	-	-
	South Gippsland	31	6	-	16.63	71.25	-	4	121	2.9	15.5	11.4	1.1	-	28.2	1.8	-
	Surf Coast	30	5	-	9.96	60.79	-	5	136	3.2	30.9	11.1	2.2	-	40.9	4.5	-
	Warrnambool	47	8	-	8.83	41.54	-	9	160	2.7	14.8	8.1	1.7	-	23.6	2.7	-
	Wellington	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-LGA Shoreline	Bega Valley	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cape Conran	6	-	-	53.75	-	-	3	15	0.2	0.4	0.9	-	-	0.9	-	-
	Cape Howe / Mallacoota	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cape Liptrap (NW)	22	-	-	16.63	-	-	3	72	0.6	3.8	2.8	-	-	6.4	-	-
	Cape Nelson	41	-	-	8.08	-	-	6	83	3.3	10	10	-	-	24.5	-	-
	Cape Otway West	99	69	-	3.58	6.58	-	42	686	20.4	51.8	21.9	6.7	-	35.4	15.4	-
	Cape Patton	51	-	-	8.33	-	-	6	91	1.7	10.1	6.6	-	-	20.9	-	-

Shoreline Receptor	Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
	Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
Childers Cove	61	9	-	8.83	41.54	-	10	160	3.1	16.4	7.8	1.9	-	20	3.6	-
Clonmel Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Croajingolong (West)	14	-	-	16.29	-	-	3	55	0.4	1.5	1.9	-	-	3.6	-	-
Discovery Bay (East)	5	-	-	36.42	-	-	2	15	0.3	1	0.9	-	-	0.9	-	-
Discovery Bay (West)	2	-	-	63.04	-	-	2	11	0.3	0.9	0.9	-	-	0.9	-	-
French Island / Crib Point	11	-	-	17.63	-	-	3	43	0.2	0.7	1.2	-	-	1.8	-	-
Kilcunda	2	-	-	92.71	-	-	2	17	0.2	0.7	0.9	-	-	0.9	-	-
Lake Tyers Beach	2	-	-	103.79	-	-	2	25	0.3	1	1.4	-	-	1.8	-	-
Lorne	25	-	-	9.96	-	-	4	58	1.1	5.1	6	-	-	12.7	-	-
Marlo	1	-	-	105.54	-	-	2	23	0.1	0.6	0.9	-	-	0.9	-	-
Moonlight Head	92	53	-	3.38	6.79	-	27	341	10.8	39	13.5	4.8	-	24.5	12.7	-
Mornington Peninsula (S)	16	-	-	16.46	-	-	4	77	0.8	3.8	4.4	-	-	8.2	-	-
Mornington Peninsula (SW)	25	-	-	16.17	-	-	5	59	1.4	7	7.5	-	-	14.5	-	-
New South Wales	2	-	-	114.75	-	-	2	14	0.3	1.3	0.9	-	-	0.9	-	-
Point Hicks	21	-	-	50.79	-	-	4	44	0.6	1.7	2.6	-	-	3.6	-	-
Port Campbell	81	24	-	4.21	8.04	-	18	415	5.9	27.6	13.2	2.2	-	26.4	6.4	-
Port Fairy	42	3	-	7.13	25.25	-	5	124	1.4	6	4.2	0.9	-	13.6	0.9	-
Port Phillip (Queenscliff)	16	-	-	19.5	-	-	3	30	0.5	2.5	2.6	-	-	9.1	-	-
Port Phillip (Sorrento Shore)	8	-	-	16.58	-	-	3	15	0.3	0.7	1.4	-	-	2.7	-	-
Port Welshpool	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portland Bay (East)	2	-	-	24.54	-	-	2	22	0.2	2.4	5	-	-	9.1	-	-
Portland Bay (West)	6	-	-	15	-	-	2	19	0.3	1.6	2	-	-	3.6	-	-
Snake Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South Australia State Waters	7	-	-	27.83	-	-	2	18	0.6	1.6	1.2	-	-	1.8	-	-
Tasmania State Waters	29	-	-	17.79	-	-	2	64	1.8	8.2	4.4	-	-	17.3	-	-
Torquay	15	5	-	16.33	60.79	-	6	136	2	19.8	9.8	2	-	24.5	3.6	-
Venus Bay	2	-	-	104.5	-	-	2	22	0.2	0.9	0.9	-	-	0.9	-	-
Victoria State Waters	100	82	1	3.38	6.58	106.67	14	1,068	66.1	186.8	98.4	11.3	0.9	239.9	33.6	0.9
Waratah Bay	4	-	-	16.88	-	-	2	19	0.1	0.5	0.9	-	-	0.9	-	-
Warrnambool	39	1	-	15	49.54	-	6	117	1.5	7.4	5.3	0.9	-	15.4	0.9	-
Westernport	8	-	-	17.38	-	-	2	24	0.3	1.3	2.5	-	-	3.6	-	-
Wilsons Promontory (East)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsons Promontory (West)	30	6	-	16.88	71.25	-	6	121	2.3	12.7	9.6	1.1	-	23.6	1.8	-

Table 11.6 Summary of oil accumulation on individual shoreline receptors. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

Shoreline Receptor		Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
		Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
LGA Shoreline	Anglesea	31	-	-	13.79	-	-	4	68	0.9	6.7	4.3	-	-	13.6	-	-
	Anser Island	57	-	-	16.42	-	-	10	76	0.8	2.6	2.3	-	-	4.5	-	-
	Apollo Bay	100	20	-	4.17	15.42	-	14	265	5.3	18.3	11	1.4	-	21.8	3.6	-
	Bass Coast	17	-	-	13.42	-	-	2	33	0.6	2.6	2	-	-	5.5	-	-
	Bay of Islands	87	25	-	1.83	11.38	-	20	398	6.8	23.1	11.8	3.2	-	25.4	5.5	-
	Bega Valley	30	-	-	32.96	-	-	3	58	0.8	3.3	1.9	-	-	4.5	-	-
	Colac Otway	100	85	-	3.75	6.63	-	35	912	42	88	44.1	10.2	-	65.4	20	-
	Corangamite	98	69	1	1.88	9.46	82.29	33	1,008	25.3	130.1	30.4	6.4	0.9	57.2	22.7	0.9
	Curtis Island	1	-	-	52.08	-	-	2	12	0.1	0.5	1.8	-	-	1.8	-	-
	East Gippsland	60	5	-	32.04	56.96	-	4	125	2.6	8.5	4.2	1.1	-	10.9	1.8	-
	French Island	7	-	-	13.71	-	-	2	15	0.1	0.5	1.2	-	-	1.8	-	-
	Gabo Island	13	-	-	49.83	-	-	5	35	0.2	1	2.1	-	-	3.6	-	-
	Glenelg	24	3	-	11.92	29.25	-	5	181	4.3	24.5	13.1	1.5	-	45.4	1.8	-
	Glennie Group	59	-	-	13.63	-	-	9	87	1.4	5.2	4.5	-	-	10.9	-	-
	Grant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Greater Geelong	12	-	-	14.38	-	-	3	88	0.6	4.1	5.2	-	-	14.5	-	-
	Hogan Island Group	4	-	-	45.75	-	-	2	16	0.2	0.6	0.9	-	-	0.9	-	-
	Kanowna Island	43	-	-	19.46	-	-	6	50	0.5	1.6	2.3	-	-	4.5	-	-
	Kent Island Group	3	-	-	62.33	-	-	2	27	0.2	1.2	1.8	-	-	2.7	-	-
	King Island	22	-	-	23.71	-	-	2	74	1.4	8.4	6.4	-	-	20.9	-	-
	Lady Julia Percy Island	31	7	-	15.42	29.54	-	16	199	1.4	6.4	3.3	2.1	-	6.4	2.7	-
	Laurence Rocks	17	-	-	11.5	-	-	9	33	0.3	1	1.5	-	-	2.7	-	-
	Moncoeur Islands	6	-	-	27.5	-	-	3	14	0.2	0.6	0.9	-	-	0.9	-	-
	Montague Island	11	-	-	43.04	-	-	6	37	0.3	1.4	2.8	-	-	3.6	-	-
	Mornington Peninsula	38	-	-	11.58	-	-	3	59	2	11.6	7.2	-	-	24.5	-	-
	Moyne	87	30	-	1.83	11.38	-	14	398	9.6	42.6	18.4	3	-	77.2	6.4	-
	Norman Island	38	-	-	13.00	-	-	6	29	0.3	1	2	-	-	4.5	-	-
	Phillip Island	55	-	-	11.63	-	-	4	67	1.7	7	5.7	-	-	16.4	-	-
	Rodondo Island	47	-	-	18.13	-	-	8	94	0.4	2	1.7	-	-	2.7	-	-
	Seal Islands	2	-	-	46.46	-	-	2	13	< 0.1	0.3	0.9	-	-	0.9	-	-
	Shellback Island	16	-	-	22.17	-	-	5	34	0.1	0.6	1.1	-	-	1.8	-	-
	Skull Rock	38	-	-	19.46	-	-	7	31	0.3	0.7	1.3	-	-	1.8	-	-
	South Gippsland	64	17	-	11.88	41.63	-	8	204	6	18.9	14	1.6	-	30	1.8	-
	Surf Coast	51	1	-	12.79	16.88	-	4	110	2.3	21.6	7.4	1.8	-	34.5	1.8	-
	Warrnambool	44	5	-	4.25	5.92	-	11	207	3.2	11.2	8.2	1.6	-	20.9	3.6	-
	Wellington	3	-	-	47.63	-	-	2	27	0.4	4	2.1	-	-	2.7	-	-
Sub-LGA Shoreline	Bega Valley	30	-	-	32.96	-	-	3	58	0.8	3.3	1.9	-	-	4.5	-	-
	Cape Conran	3	-	-	55.38	-	-	2	14	0.1	0.7	0.9	-	-	0.9	-	-
	Cape Howe / Mallacoota	15	-	-	46.63	-	-	3	38	0.2	1.6	1.6	-	-	4.5	-	-
	Cape Liptrap (NW)	52	-	-	12.21	-	-	6	76	1.1	4	3.3	-	-	7.3	-	-
	Cape Nelson	24	3	-	11.92	29.25	-	6	181	2.9	16.1	8.5	1.5	-	26.4	1.8	-
	Cape Otway West	100	85	-	3.75	6.63	-	68	912	33.9	80.5	26.2	9.9	-	35.4	20	-
	Cape Patton	80	-	-	8.13	-	-	7	99	2.6	8.4	7.6	-	-	19.1	-	-

Shoreline Receptor	Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
	Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
Childers Cove	48	4	-	4.67	5.92	-	12	207	3.6	14.7	10.2	1.8	-	18.2	4.5	-
Clonmel Island	2	-	-	53.71	-	-	2	26	0.2	1.3	1.4	-	-	1.8	-	-
Croajingolong (West)	35	-	-	37.83	-	-	4	67	0.5	2	1.7	-	-	4.5	-	-
Discovery Bay (East)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discovery Bay (West)	1	-	-	104.75	-	-	2	15	0.2	0.7	0.9	-	-	0.9	-	-
French Island / Crib Point	9	-	-	12.83	-	-	2	25	0.1	0.6	1.1	-	-	1.8	-	-
Kilcunda	14	-	-	13.42	-	-	3	24	0.3	1.3	1.6	-	-	2.7	-	-
Lake Tyers Beach	1	-	-	59.88	-	-	2	10	0.2	0.9	0.9	-	-	0.9	-	-
Lorne	48	-	-	12.79	-	-	4	49	1.1	3.8	4.4	-	-	11.8	-	-
Marlo	14	-	-	46.58	-	-	2	51	0.2	1.2	1.1	-	-	1.8	-	-
Moonlight Head	98	62	1	3.54	9.46	82.29	43	1,008	17.4	97.5	17.4	5.6	0.9	30	15.4	0.9
Mornington Peninsula (S)	29	-	-	11.71	-	-	4	59	0.6	3.9	2.8	-	-	9.1	-	-
Mornington Peninsula (SW)	26	-	-	11.58	-	-	4	57	0.9	5.5	5	-	-	13.6	-	-
New South Wales	31	-	-	32.96	-	-	3	58	1	4.1	2.8	-	-	7.3	-	-
Point Hicks	56	5	-	32.04	56.96	-	10	125	1.3	4.9	2.7	1.1	-	5.5	1.8	-
Port Campbell	89	31	-	1.88	9.5	-	23	305	8.1	33.7	13.8	3.1	-	26.4	8.2	-
Port Fairy	32	5	-	15.50	17.29	-	6	122	1.8	9.1	5.3	0.9	-	23.6	0.9	-
Port Phillip (Queenscliff)	10	-	-	34.46	-	-	3	28	0.3	2.4	3.2	-	-	7.3	-	-
Port Phillip (Sorrento Shore)	14	-	-	12.13	-	-	3	40	0.3	1.7	2.3	-	-	4.5	-	-
Port Welshpool	3	-	-	69.00	-	-	2	14	0.1	0.6	1.2	-	-	1.8	-	-
Portland Bay (East)	7	-	-	18.13	-	-	3	28	0.7	3.9	6.5	-	-	11.8	-	-
Portland Bay (West)	7	-	-	26.25	-	-	6	70	2.1	8	14.9	-	-	18.2	-	-
Snake Island	3	-	-	47.63	-	-	2	27	0.1	1.2	1.2	-	-	1.8	-	-
South Australia State Waters	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tasmania State Waters	24	-	-	23.71	-	-	2	74	1.6	8.9	6.3	-	-	20.9	-	-
Torquay	28	1	-	13.75	16.88	-	4	110	1	16.9	5.4	1.8	-	23.6	1.8	-
Venus Bay	12	-	-	13.67	-	-	2	33	0.3	1.3	1.1	-	-	2.7	-	-
Victoria State Waters	100	88	1	1.83	5.92	82.29	17	1,008	96.6	248.8	126.8	16.6	0.9	268.1	43.6	0.9
Waratah Bay	6	-	-	31.75	-	-	2	29	0.2	2.2	1.8	-	-	4.5	-	-
Warrnambool	31	5	-	4.25	8.63	-	7	161	2	12.5	7.7	1.1	-	23.6	1.8	-
Westernport	11	-	-	12.54	-	-	2	24	0.3	1.4	1.9	-	-	3.6	-	-
Wilsons Promontory (East)	2	-	-	40.08	-	-	2	14	0.2	1.7	1.4	-	-	1.8	-	-
Wilsons Promontory (West)	63	17	-	11.88	41.63	-	11	204	4.6	14.3	11.2	1.6	-	21.8	1.8	-

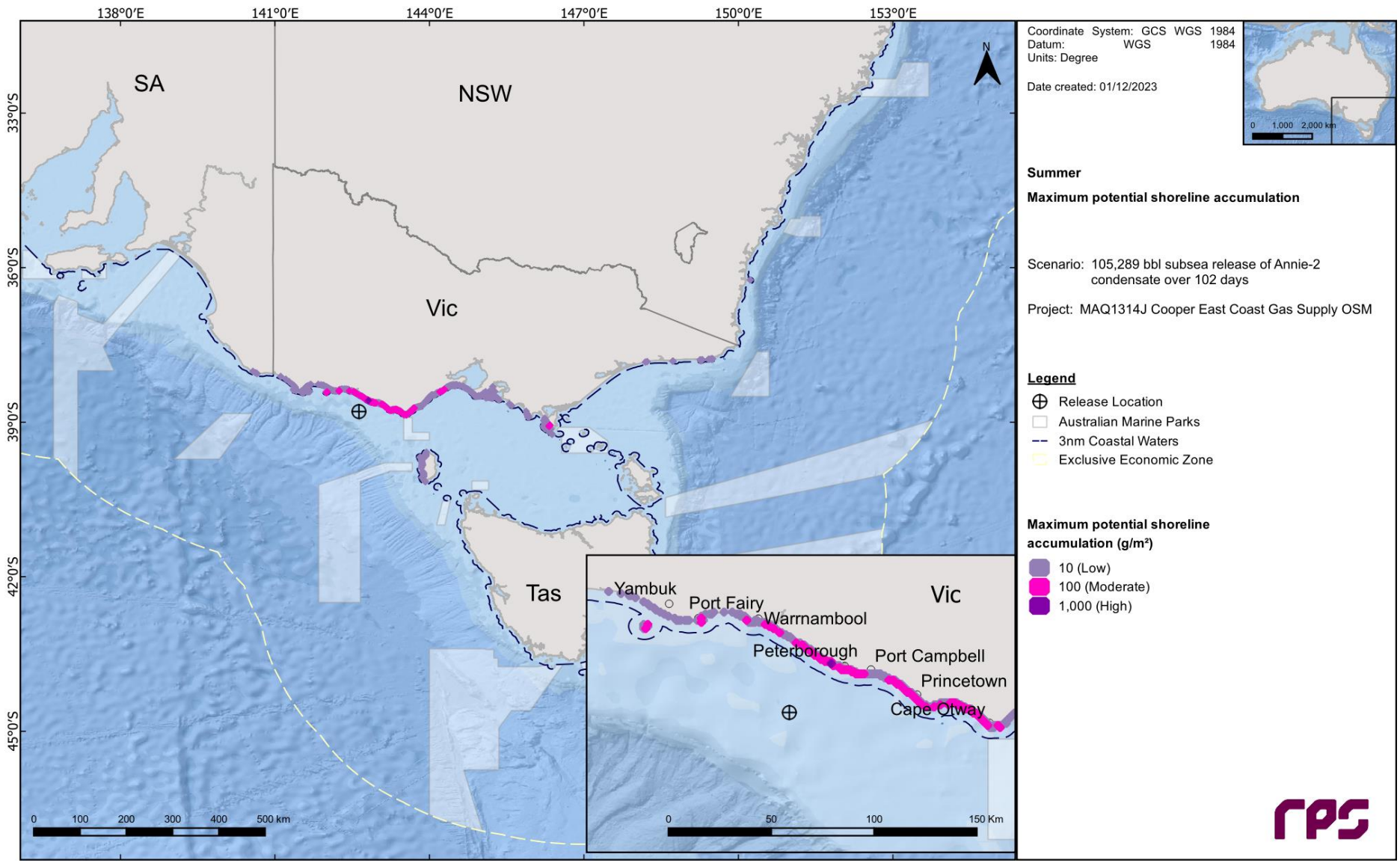

Figure 11.7 Maximum potential shoreline accumulation in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

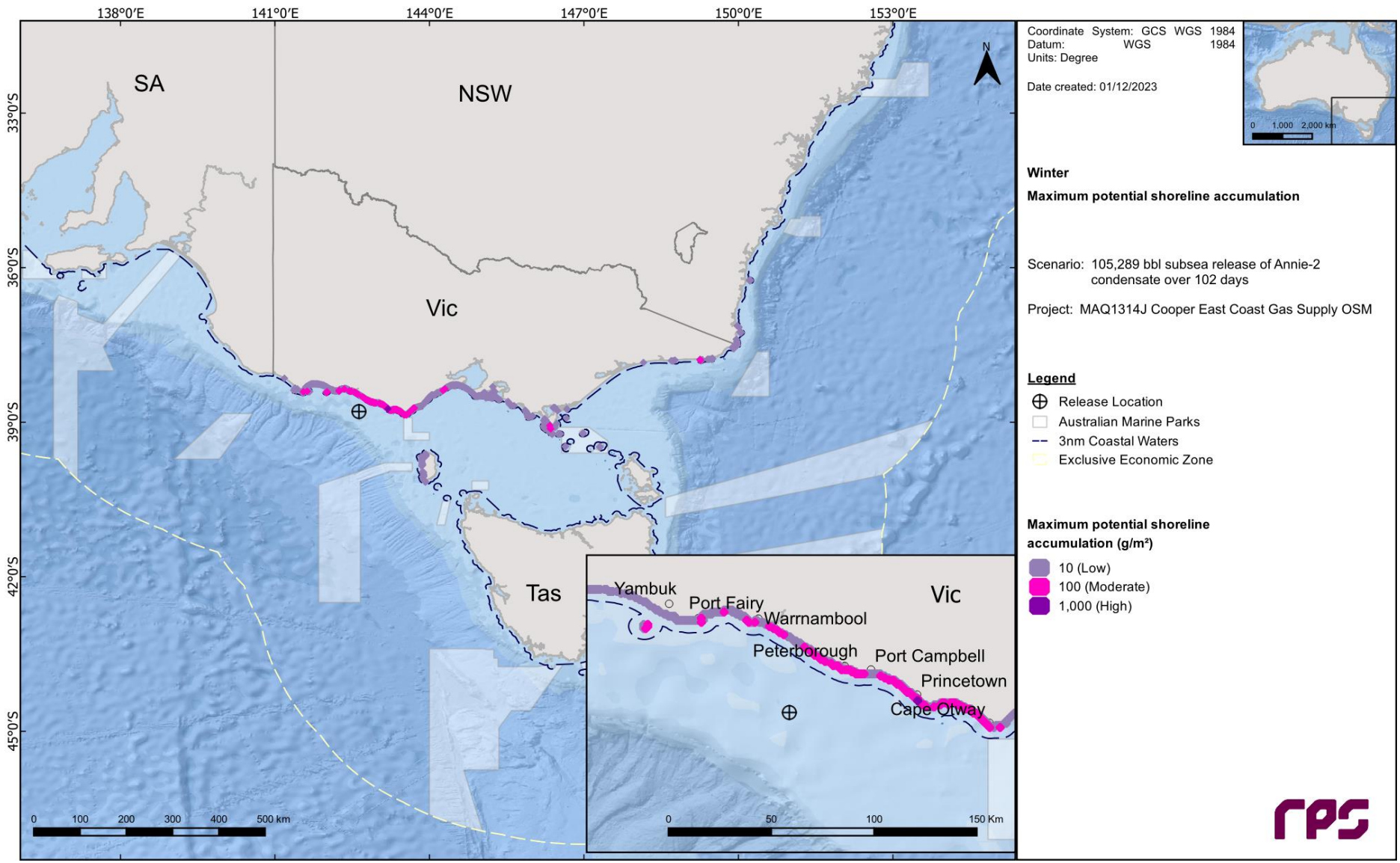

Figure 11.8 Maximum potential shoreline accumulation in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

11.1.3 In-water exposure

11.1.3.1 Dissolved Hydrocarbons

Table 11.7 summarises the potential in-water exposure to individual receptors from dissolved hydrocarbons in the 0-10 m layer.

During summer conditions, a total of 20 BIAs were predicted to be exposed to dissolved hydrocarbon at, or above, the low threshold. Excluding the BIAs that the release location resides within (see Section 10.3), the highest probability of low exposure ranged between 2% (Australasian Gannet - Foraging) and 15% (Southern Right Whale - Aggregation).

Alternatively, during winter, excluding the BIAs that the release location resides within (see Section 10.3), the probability of low exposure ranged between 1% (Australasian Gannet - Foraging) and 21% (Short-tailed Shearwater - Foraging).

The maximum dissolved hydrocarbon concentration at any given receptor(s) was shown to be 51.8 ppb and 60.2 ppb for summer and winter conditions, respectively.

Table 11.8 presents the predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors, in the 0-10 m depth layer, for all thresholds assessed.

Figure 11.9 and Figure 11.10 present the zones of potential dissolved hydrocarbon exposure for the 0-10 m depth layer for each season whilst Figure 11.11 Figure 11.12 present the maximum residence time of dissolved hydrocarbon exposure for the NOPSEMA thresholds.

Table 11.7 Probability of dissolved hydrocarbons exposure to marine based receptors in the 0–10 m depth. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer				Winter			
		Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)			Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)		
			Low	Moderate	High		Low	Moderate	High
AMP	Apollo	19.1	5	-	-	44.3	10	-	-
BIA	Antipodean Albatross - Foraging*	51.8	40	1	-	60.2	66	1	-
	Australasian Gannet - Foraging	17.9	2	-	-	14.3	1	-	-
	Black-browed Albatross - Foraging*	51.8	40	1	-	60.2	66	1	-
	Bullers Albatross - Foraging*	51.8	40	1	-	60.2	66	1	-
	Campbell Albatross - Foraging*	51.8	40	1	-	60.2	66	1	-
	Common Diving-petrel - Foraging*	51.8	40	1	-	60.2	66	1	-
	Indian Yellow-nosed Albatross - Foraging*	51.8	40	1	-	60.2	66	1	-
	Pygmy Blue Whale - Distribution*	51.8	40	1	-	60.2	66	1	-
	Pygmy Blue Whale - Foraging*	51.8	40	1	-	60.2	66	1	-
	Pygmy Blue Whale - Foraging annual high use area*	51.8	40	1	-	60.2	66	1	-
	Pygmy Blue Whale - Known Foraging Area	26.8	4	-	-	44.3	8	-	-
	Short-tailed Shearwater - Foraging	36.5	11	-	-	49.6	21	-	-
	Shy Albatross - Foraging*	51.8	40	1	-	60.2	66	1	-
	Southern Right Whale – Aggregation	34.9	15	-	-	30	17	-	-
	Southern Right Whale - Known Core Range* ^	51.8	40	1	-	60.2	66	1	-
	Wandering Albatross - Foraging*	51.8	40	1	-	60.2	66	1	-
	Wedge-tailed Shearwater - Foraging*	51.8	40	1	-	60.2	66	1	-
	White Shark - Distribution*	51.8	40	1	-	60.2	66	1	-
	White Shark - Foraging	18.8	3	-	-	25.4	4	-	-
	White-faced Storm-petrel - Foraging	26.8	4	-	-	33.9	7	-	-
IBRA	Otway Plain	23.3	4	-	-	34.4	16	-	-
	Otway Ranges	18.9	2	-	-	23.9	3	-	-
	Warrnambool Plain	30.7	5	-	-	25.1	5	-	-
IMCRA	Central Bass Strait	26.8	4	-	-	33.9	7	-	-
	Central Victoria	26.6	4	-	-	44.3	10	-	-

Receptor		Summer				Winter			
		Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)			Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)		
			Low	Moderate	High		Low	Moderate	High
	Otway*	51.8	40	1	-	60.2	66	1	-
KEF	Bonney Coast Upwelling	8.6	-	-	-	14.3	1	-	-
	West Tasmania Canyons	13.4	1	-	-	13.1	1	-	-
MNP	Twelve Apostles	30.7	6	-	-	21.5	6	-	-
RSB	Bravenes Rock	9.8	-	-	-	14.9	4	-	-
Nearshore Waters	Colac Otway	23.3	4	-	-	34.4	16	-	-
	Corangamite	30.7	5	-	-	25.1	5	-	-
	Moyne	23.8	1	-	-	15.6	3	-	-
	Warrnambool	3.9	-	-	-	16.3	1	-	-
State Waters	Victoria State Waters*	34.9	10	-	-	34.4	21	-	-
Nearshore Waters (Sub-LGA)	Apollo Bay	12.1	1	-	-	23.9	2	-	-
	Bay of Islands	23.8	1	-	-	15.6	3	-	-
	Cape Otway West	24.8	4	-	-	34.4	16	-	-
	Cape Patton	10.3	1	-	-	11.4	1	-	-
	Childers Cove	7.4	-	-	-	16.3	1	-	-
	Moonlight Head	30.7	5	-	-	25.1	5	-	-
	Port Campbell	11.6	1	-	-	12.6	2	-	-
	Warrnambool	3.8	-	-	-	11.5	1	-	-

*The release location resides within the receptor boundaries.

^ RPS have utilised BIA's for the southern right whale that were delineated within the 2011-2021 Southern Right Whale. The NCV Atlas now includes updated BIA's for SRW, though the recently drafted National Recovery Plan for the southern right whale has not been published. The updated BIA's have not been used in this report.

Table 11.8 Predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer						Winter					
		Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)			Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
AMP	Apollo	3.50	-	-	0.13	-	-	2.54	-	-	0.13	-	-
BIA	Antipodean Albatross - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Australasian Gannet - Foraging	7.29	-	-	0.08	-	-	11.25	-	-	0.04	-	-
	Black-browed Albatross - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Bullers Albatross - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Campbell Albatross - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Common Diving-petrel - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Indian Yellow-nosed Albatross - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Pygmy Blue Whale - Distribution*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Pygmy Blue Whale - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Pygmy Blue Whale - Foraging annual high use area*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Pygmy Blue Whale - Known Foraging Area	3.54	-	-	0.13	-	-	3.04	-	-	0.13	-	-
	Short-tailed Shearwater - Foraging	2.08	-	-	0.17	-	-	1.88	15.79	-	0.21	-	-
	Shy Albatross - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Southern Right Whale – Aggregation	1.25	-	-	0.13	-	-	1.88	-	-	0.17	-	-
	Southern Right Whale - Known Core Range* ^	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Wandering Albatross - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	Wedge-tailed Shearwater - Foraging*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	White Shark - Distribution*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
	White Shark - Foraging	6.46	-	-	0.08	-	-	6.13	-	-	0.08	-	-
	White-faced Storm-petrel - Foraging	3.58	-	-	0.13	-	-	3.04	-	-	0.13	-	-
IBRA	Otway Plain	7.38	-	-	0.17	-	-	5.92	-	-	0.13	-	-

Receptor		Summer						Winter					
		Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)			Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
	Otway Ranges	6.46	-	-	0.04	-	-	4.88	-	-	0.08	-	-
	Warrnambool Plain	15.88	-	-	0.13	-	-	9.71	-	-	0.08	-	-
IMCRA	Central Bass Strait	6.67	-	-	0.13	-	-	3.04	-	-	0.13	-	-
	Central Victoria	3.58	-	-	0.13	-	-	3.96	-	-	0.13	-	-
	Otway*	0.71	31.92	-	0.29	-	-	0.42	5.79	-	0.33	-	-
KEF	Bonney Coast Upwelling	-	-	-	-	-	-	18.54	-	-	0.04	-	-
KEF	West Tasmania Canyons	13.50	-	-	0.08	-	-	21.96	-	-	0.04	-	-
MNP	Twelve Apostles	7.71	-	-	0.13	-	-	4.96	-	-	0.08	-	-
RSB	Bravenes Rock	24.25	-	-	0.04	-	-	10.25	-	-	0.04	-	-
Nearshore Waters	Colac Otway	6.46	-	-	0.17	-	-	4.88	-	-	0.13	-	-
	Corangamite	16.33	-	-	0.13	-	-	9.71	-	-	0.08	-	-
	Moyne	21.79	-	-	0.08	-	-	10.25	-	-	0.08	-	-
	Warrnambool	-	-	-	-	-	-	10.71	-	-	0.04	-	-
State Waters	Victoria State Waters*	3.08	-	-	0.17	-	-	3.83	-	-	0.21	-	-
Nearshore Waters (Sub-LGA)	Apollo Bay	6.46	-	-	0.04	-	-	4.88	-	-	0.08	-	-
	Bay of Islands	21.79	-	-	0.08	-	-	10.25	-	-	0.08	-	-
	Cape Otway West	5.04	-	-	0.17	-	-	5.75	-	-	0.13	-	-
	Cape Patton	8.58	-	-	0.04	-	-	25.79	-	-	0.04	-	-
	Childers Cove	-	-	-	-	-	-	10.96	-	-	0.04	-	-
	Moonlight Head	15.88	-	-	0.13	-	-	9.71	-	-	0.08	-	-
	Port Campbell	18.42	-	-	0.04	-	-	9.83	-	-	0.04	-	-
	Warrnambool	-	-	-	-	-	-	10.71	-	-	0.04	-	-

*The release location resides within the receptor boundaries.

^ RPS have utilised BIA's for the southern right whale that were delineated within the 2011-2021 Southern Right Whale. The NCV Atlas now includes updated BIA's for SRW, though the recently drafted National Recovery Plan for the southern right whale has not been published. The updated BIA's have not been used in this report.

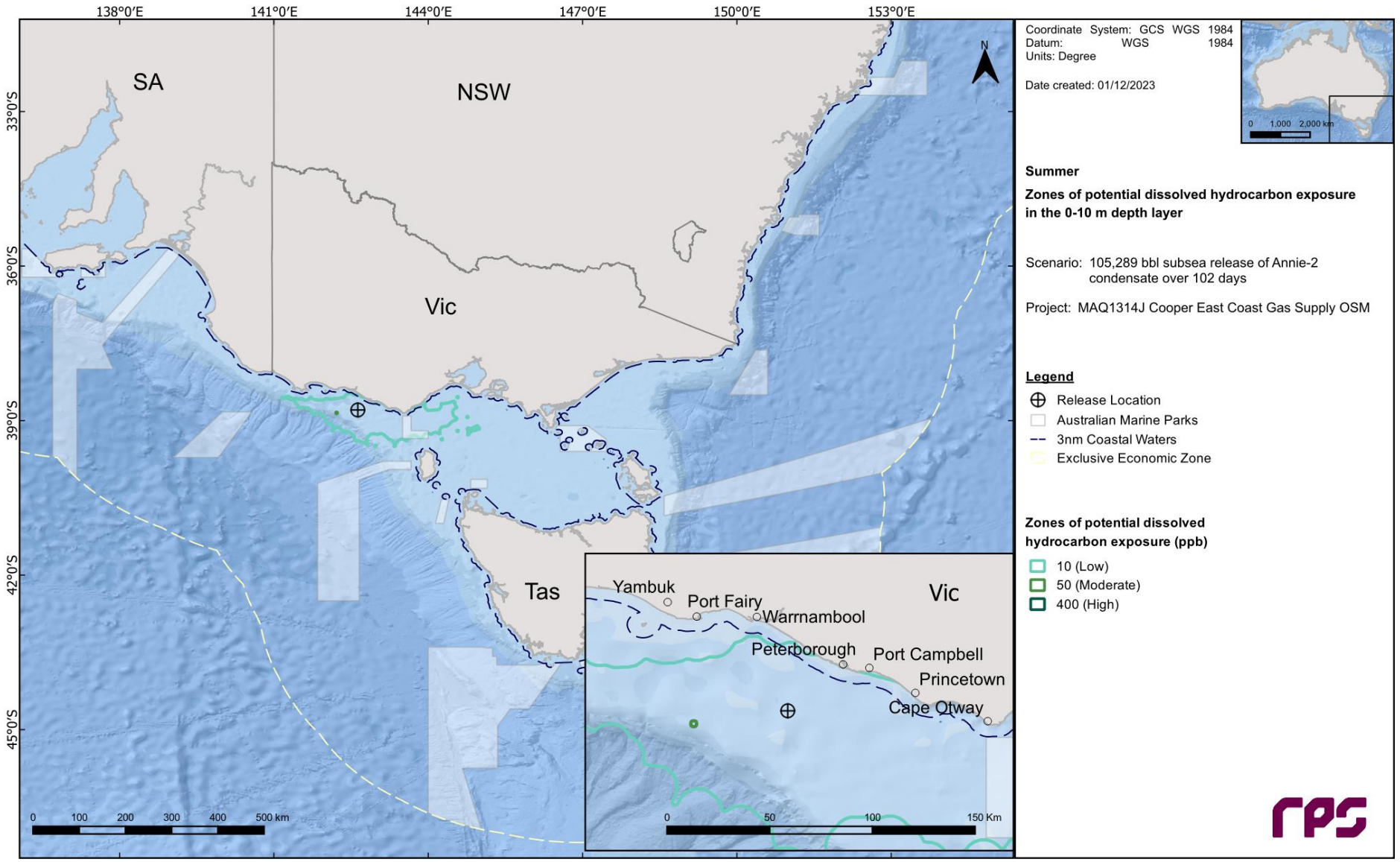

Figure 11.9 Zones of potential dissolved hydrocarbon exposure at 0-10 m below the sea in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

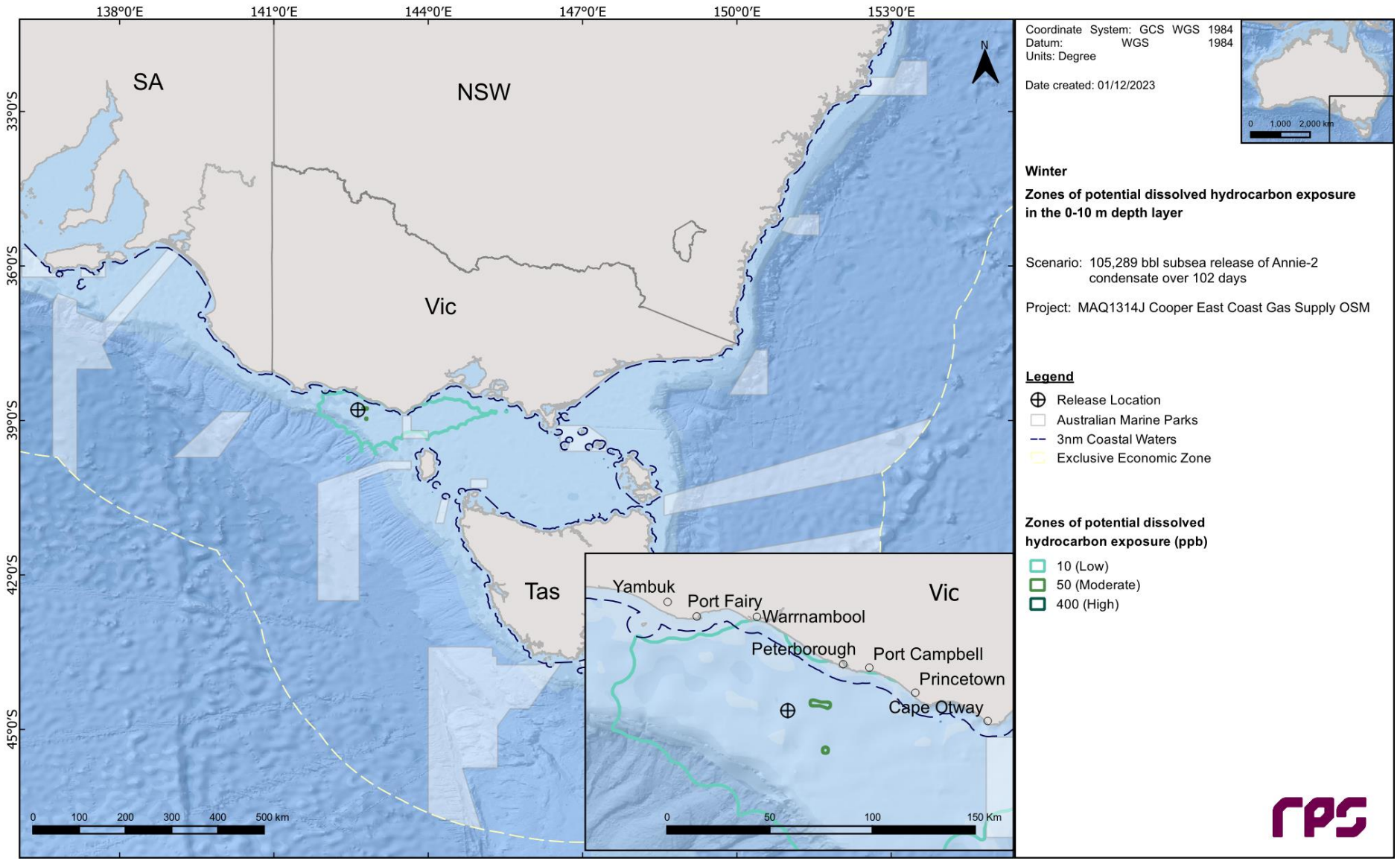

Figure 11.10 Zones of potential dissolved hydrocarbon exposure at 0-10 m below the sea in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

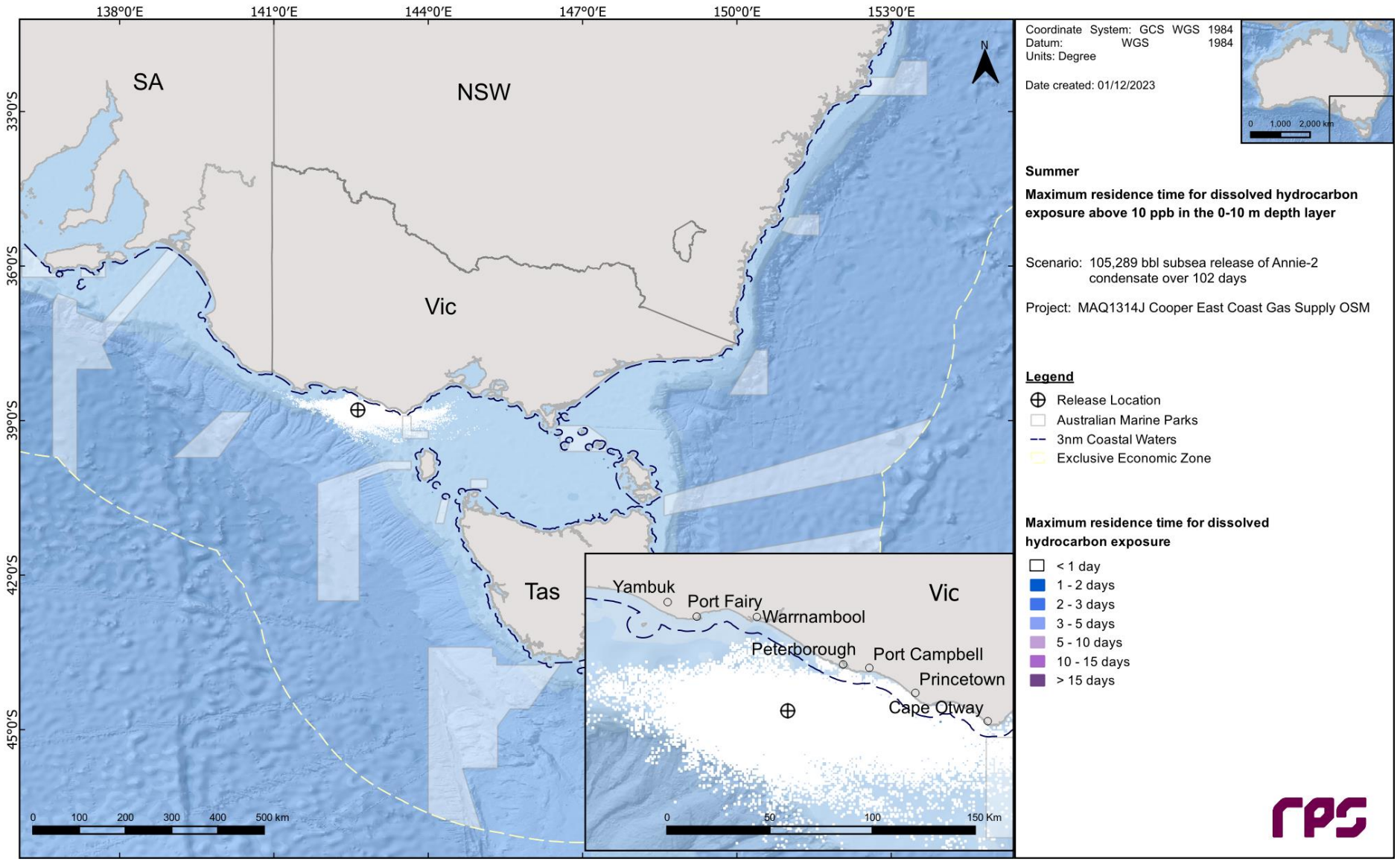

Figure 11.11 Maximum residence time for dissolved hydrocarbon exposure above 10 ppb, at 0-10 m below the sea surface in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

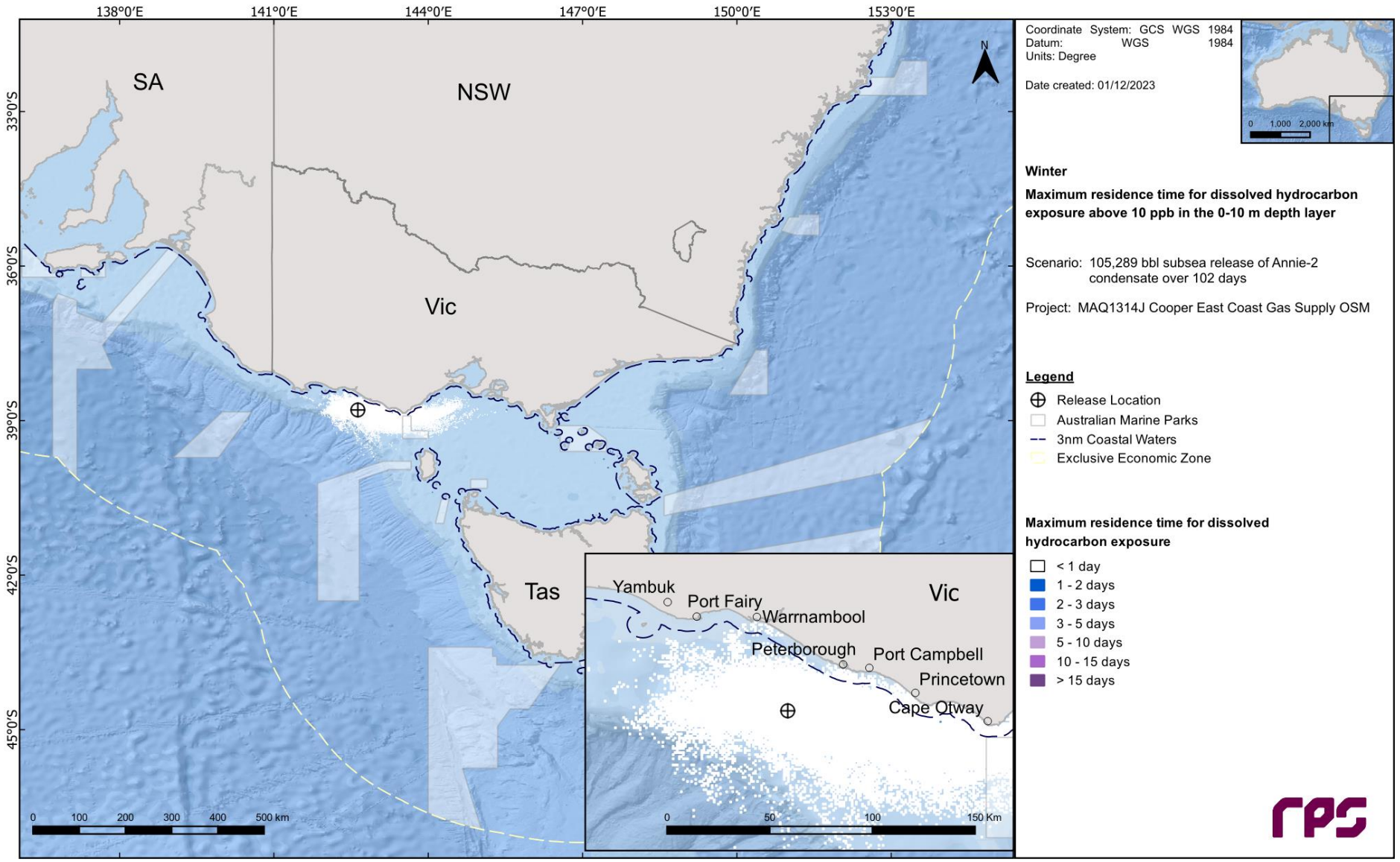

Figure 11.12 Maximum residence time for dissolved hydrocarbon exposure above 10 ppb, at 0-10 m below the sea surface in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

11.1.3.2 Entrained Hydrocarbons

Table 11.9 summarises the potential in-water exposure to individual receptors from entrained hydrocarbons in the 0-10 m depth layer.

Except for the receptors the release location is within, during summer the highest probability of low entrained hydrocarbon exposure was 100% recorded for Southern Right Whale - Aggregation. Additional receptors including LGAs, sub-LGAs, and AMPs were predicted with entrained hydrocarbon exposure (refer to Table 11.9).

During winter, several receptors, including the Apollo AMP, Southern Right Whale – Aggregation and White-faced Storm-petrel - Foraging BIAs revealed a 100% probability of low entrained hydrocarbon exposure.

Table 11.10 presents the predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer, for all thresholds assessed.

Figure 11.13 and Figure 11.14 present the zones of potential entrained hydrocarbon exposure for the 0-10 m depth layer for each season whilst Figure 11.15 and Figure 11.18 present the maximum residence time of entrained hydrocarbon exposure for the NOPSEMA thresholds.

Table 11.9 Probability of entrained hydrocarbons exposure to marine based receptors in the 0–10 m depth layer. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
AMP	Apollo	281.5	98	36	237.4	100	61
	Beagle	38.4	44	-	45.8	63	-
	East Gippsland	16.7	8	-	17.9	5	-
	Franklin	45.4	16	-	44.8	2	-
	Murray	14.8	3	-	7.2	-	-
	Nelson	22.3	11	-	14.4	2	-
	Zeehan	91.2	61	-	91.9	23	-
BIA	Antipodean Albatross - Foraging*	1,334.9	100	100	1,332.9	100	100
	Australasian Gannet - Foraging	132.1	69	4	92.2	90	-
	Australian Sea Lion - Foraging	32	14	-	11.2	1	-
	Black Petrel - Foraging	28.2	7	-	22.8	10	-
	Black-browed Albatross - Foraging*	1,334.9	100	100	1,332.9	100	100
	Black-faced Cormorant - Foraging	45.2	42	-	39.6	31	-
	Bullers Albatross - Foraging*	1,334.9	100	100	1,332.9	100	100
	Campbell Albatross - Foraging*	1,334.9	100	100	1,332.9	100	100
	Common Diving-petrel - Foraging*	1,334.9	100	100	1,332.9	100	100
	Crested Tern - Breeding	19.9	6	-	20.9	10	-
	Crested Tern - Foraging	20.9	7	-	22.8	10	-
	Flesh-footed Shearwater - Foraging	28.2	7	-	22.8	10	-
	Great-winged Petrel - Foraging	28.2	7	-	17.7	10	-
	Grey Nurse Shark - Foraging	27.4	21	-	23.3	32	-
	Grey Nurse Shark - Migration	45.1	27	-	22.8	36	-
	Humpback Whale - Foraging	45.1	27	-	23.8	36	-
	Indian Yellow-nosed Albatross - Foraging*	1,334.9	100	100	1,332.9	100	100
	Indo-Pacific/Spotted Bottlenose Dolphin - Breeding	23.9	13	-	24.5	22	-
	Little Penguin - Breeding	20.7	6	-	22.8	10	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Little Penguin - Foraging	42.1	54	-	61.6	79	-
	Northern Giant Petrel - Foraging	28.2	7	-	17.7	10	-
	Pygmy Blue Whale - Distribution*	1,334.9	100	100	1,332.9	100	100
	Pygmy Blue Whale - Foraging*	1,334.9	100	100	1,332.9	100	100
	Pygmy Blue Whale - Foraging annual high use area*	1,334.9	100	100	1,332.9	100	100
	Pygmy Blue Whale - Known Foraging Area	269.7	98	35	210.4	100	60
	Short-tailed Shearwater - Foraging	439.8	100	85	450.3	100	90
	Shy Albatross - Foraging*	1,334.9	100	100	1,332.9	100	100
	Soft-plumaged Petrel - Foraging	25.6	5	-	13.4	1	-
	Sooty Shearwater - Foraging	38.7	19	-	22.8	33	-
	Southern Giant Petrel - Foraging	28.2	7	-	17.7	10	-
	Southern Right Whale – Aggregation	379	100	87	427.8	100	88
	Southern Right Whale - Connecting Habitat	30.8	31	-	33.6	18	-
	Southern Right Whale - Known Core Range*^	1,334.9	100	100	1,332.9	100	100
	Wandering Albatross - Foraging*	1,334.9	100	100	1,332.9	100	100
	Wedge-tailed Shearwater - Foraging*	1,334.9	100	100	1,332.9	100	100
	White Shark - Breeding	33.6	41	-	34.6	60	-
	White Shark - Distribution*	1,334.9	100	100	1,332.9	100	100
	White Shark - Foraging	176.6	78	26	191.6	81	11
	White-capped Albatross - Foraging	28.2	7	-	17.7	10	-
	White-faced Storm-petrel - Breeding	29.9	12	-	22.8	16	-
	White-faced Storm-petrel - Foraging	269.7	97	28	206.6	100	46
	Wilsons Storm Petrel - Migration	28.2	7	-	17.7	10	-
IBRA	Bateman	15.9	6	-	18	10	-
	Bridgewater	76.1	45	-	65.9	23	-
	East Gippsland Lowlands	23.8	13	-	24	32	-
	Flinders	37.2	25	-	35.8	35	-
	Gippsland Plain	66.6	57	-	83.2	70	-
	Glenelg Plain	77.2	56	-	72.3	28	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	King Island	30.8	31	-	31.6	16	-
	Otway Plain	439.8	99	74	450.3	100	83
	Otway Ranges	355.2	99	48	366.6	100	69
	South East Coastal Ranges	10.1	1	-	9	-	-
	Strzelecki Ranges	37.8	52	-	51.8	70	-
	Tasmanian West	12.6	3	-	12.5	1	-
	Warrnambool Plain	460.3	99	62	350.5	100	60
	Wilsons Promontory	101	62	1	90.6	76	-
IMCRA	Batemans Shelf	22.3	9	-	22.8	13	-
	Central Bass Strait	272.4	96	29	218	100	43
	Central Victoria	265.5	98	35	201.1	100	55
	Coorong	25.9	8	-	12	1	-
	Davey	10.9	1	-	2.3	-	-
	Flinders	106.9	62	2	97.4	77	-
	Franklin	25.6	10	-	14.1	2	-
	Otway*	1,334.9	100	100	1,332.9	100	100
	Twofold Shelf	45.1	33	-	34.2	50	-
	Victorian Embayments	41.5	46	-	63.5	58	-
	Victorian Embayments	12.2	6	-	10.7	3	-
KEF	Big Horseshoe Canyon	16.1	6	-	15.5	11	-
	Bonney Coast Upwelling	107.2	64	1	92	53	-
	Canyons on the Eastern Continental Slope	28.2	6	-	11	3	-
	Shelf rocky reefs	18.8	6	-	19.7	10	-
	Upwelling East of Eden	45.1	27	-	27.6	38	-
	West Tasmania Canyons	108.1	77	2	119	44	1
MNP	Bunurong	32.2	45	-	46.1	64	-
	Cape Howe	25.3	14	-	26.2	24	-
	Churchill Island	21.2	20	-	29.9	31	-
	Discovery Bay	51.1	34	-	24.9	18	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Point Addis	74.6	30	-	55.8	68	-
	Point Hicks	18.1	14	-	21.1	33	-
	Port Phillip Heads	41.5	27	-	61.3	56	-
	Twelve Apostles	376.6	100	65	317.3	100	64
	Wilsons Promontory	106.9	60	2	97.4	75	-
MP	Batemans	19.9	6	-	20.9	10	-
	Lower South East	19.6	19	-	9.5	-	-
MS	Beware Reef	9.5	-	-	10.9	1	-
	Mushroom Reef	31.2	44	-	31.2	50	-
NP	Kent Group	17.3	6	-	13.7	2	-
NPS4	Bunurong Marine Park	32.6	46	-	58.1	59	-
	Corner Inlet Marine and Coastal Park	12.2	6	-	10.7	3	-
	Shallow Inlet Marine and Coastal Park	12.1	3	-	8.5	-	-
	Wilsons Promontory Marine Park	68.7	57	-	63.2	70	-
RAMSAR	Corner Inlet	12.2	6	-	10.7	3	-
	Port Phillip Bay Western Shoreline and Bellarine Peninsula	26.6	14	-	26.7	37	-
	Western Port	24.5	20	-	29.9	31	-
RSB	Bell Reef	11.8	8	-	11.5	4	-
	Beware Reef	9.6	-	-	10.9	1	-
	Bravenes Rock	228.6	99	37	208.5	100	51
	Cody Bank	30.7	63	-	41.3	67	-
	Cutter Rock	29.3	31	-	30.5	45	-
	New Zealand Star Bank	21	22	-	22.5	33	-
Nearshore Waters	Anser Island	101	59	1	90.6	72	-
	Bass Coast	38.7	47	-	66.8	64	-
	Bega Valley	21.4	8	-	24	11	-
	Black Pyramid	28	8	-	29.3	2	-
	Circular Head	8.7	-	-	11.2	1	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Colac Otway	439.8	99	74	450.3	100	83
	Corangamite	365.7	99	62	350.5	100	59
	Curtis Island	37.2	21	-	35.8	30	-
	East Gippsland	21.4	13	-	23.8	32	-
	Eurobodalla	9.3	-	-	13	7	-
	French Island	16.9	13	-	19.4	11	-
	Gabo Island	23.8	13	-	23.3	25	-
	Glenelg	76.7	56	-	72.3	28	-
	Glennie Group	96.5	62	-	87.6	76	-
	Grant	27.5	16	-	9	-	-
	Greater Geelong	61.3	26	-	55.5	53	-
	Hogan Island Group	28	25	-	33.7	35	-
	Kanowna Island	101	59	1	87.4	71	-
	Kent Island Group	20.3	6	-	13.7	2	-
	King Island	30.8	32	-	33.9	16	-
	Lady Julia Percy Island	72.9	61	-	70.3	36	-
	Laurence Rocks	65.3	56	-	64.2	28	-
	Moncoeur Islands	34.3	43	-	42.8	58	-
	Montague Island	15.9	6	-	18	10	-
	Mornington Peninsula	63.3	53	-	83.2	69	-
	Moyne	460.3	96	36	310.1	94	40
	Mud Island	19.5	10	-	33.8	31	-
	Norman Island	83.6	59	-	76.9	75	-
	Phillip Island	40.3	49	-	49.6	62	-
	Reid Rock	13.3	4	-	13.1	3	-
	Rodondo Island	49.9	47	-	50.9	65	-
	Seal Islands	17.9	9	-	18.5	30	-
	Shellback Island	51	54	-	49.5	72	-
	Skull Rock	97.1	59	-	87.4	70	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	South Gippsland	99.9	58	-	88.8	74	-
	Surf Coast	69.7	44	-	56.3	67	-
	Warrnambool	150.6	67	6	171.5	47	11
	West Coast	12.6	3	-	12.5	1	-
State Waters	New South Wales	23.9	13	-	24	22	-
	South Australia State Waters	29	19	-	10.6	2	-
	Tasmania State Waters	44.1	42	-	39.6	42	-
	Victoria State Waters*	460.3	100	77	450.3	100	85
Nearshore Waters (Sub-LGA)	Anglesea	69.7	34	-	44.9	59	-
	Apollo Bay	161.9	95	18	159.4	100	25
	Bay of Islands	460.3	96	36	310.1	94	40
	Bega Valley	21.4	8	-	24	11	-
	Cape Conran	10.8	1	-	12.6	5	-
	Cape Howe / Mallacoota	21.4	8	-	23.8	20	-
	Cape Liptrap - Northwest	37.3	55	-	53.7	70	-
	Cape Nelson	76.7	56	-	72.3	28	-
	Cape Otway West	439.8	99	76	450.3	100	84
	Cape Patton	106.2	84	1	117.4	92	5
	Childers Cove	150.6	77	6	171.5	51	11
	Corner Inlet	12.2	6	-	10.7	3	-
	Corringle	10.5	2	-	8.1	-	-
	Croajingolong - East	12.3	5	-	14.4	12	-
	Croajingolong - West	12.4	9	-	14.1	17	-
	Discovery Bay - East	47.1	30	-	18.5	13	-
	Discovery Bay - West	24.1	25	-	11.2	3	-
	Eurobodalla	9.3	-	-	13	7	-
	French Island - East	10.9	4	-	14.1	2	-
	French Island / Crib Point	17	14	-	19.2	12	-
	French Island / San Remo	22.2	32	-	34.5	42	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Kilcunda	38.1	44	-	66.8	57	-
	Lorne	51.4	44	-	55.8	71	-
	Marlo	9.7	-	-	10.8	1	-
	Moonlight Head	365.7	99	62	350.5	100	60
	Mornington Peninsula - South	40.8	52	-	52.1	64	-
	Mornington Peninsula - Southwest	63.3	53	-	83.2	68	-
	Point Hicks	15.6	13	-	19.7	32	-
	Port Campbell	358.7	97	43	301.1	95	39
	Port Fairy	95.3	49	-	94.5	40	-
	Port Phillip - Mornington	12.3	5	-	16.8	16	-
	Port Phillip - Queenscliff	48.5	26	-	52.9	53	-
	Port Phillip - Sorrento Shore	40.4	40	-	79.3	69	-
	Port Phillip Heads	34.6	20	-	39.9	41	-
	Portland Bay - East	40.5	38	-	57.1	22	-
	Portland Bay - West	63.7	37	-	61.1	17	-
	Sydenham Inlet	14.1	7	-	16.1	15	-
	Torquay	66.3	25	-	55.5	57	-
	Venus Bay	38.7	47	-	63.7	64	-
	Waratah Bay	37.8	52	-	51.8	70	-
	Warrnambool	105.4	59	1	110.4	47	1
	Westernport	29.4	41	-	33.4	50	-
	Wilsons Promontory - East	68.3	52	-	59.2	69	-
	Wilsons Promontory - West	99.9	58	-	88.8	74	-

*The release location resides within the receptor boundaries.^ RPS have utilised BIA's for the southern right whale that were delineated within the 2011-2021 Southern Right Whale. The NCV Atlas now includes updated BIA's for SRW, though the recently drafted National Recovery Plan for the southern right whale has not been published. The updated BIA's have not been used in this report.

Table 11.10 Predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on a 105,289 bbl (16,740 m^3) subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
AMP	Apollo	2.42	3.13	34.25	1.04	1.58	5.33	25.54	1
	Beagle	11.42	-	13.63	-	9.67	-	15.75	-
	East Gippsland	70.88	-	0.46	-	39.67	-	0.5	-
	Franklin	32.21	-	2.13	-	18.5	-	2.17	-
	Murray	37.21	-	0.5	-	-	-	-	-
	Nelson	13.67	-	2.92	-	100.92	-	0.63	-
	Zeehan	8.54	-	9.38	-	7.42	-	7.33	-
BIA	Antipodean Albatross - Foraging*	0.04	0.04	85.58	17.54	0.04	0.04	90.96	17.67
	Australasian Gannet - Foraging	2.92	14.29	72.04	0.25	6.71	-	90.96	-
	Australian Sea Lion - Foraging	14.08	-	4.46	-	24.13	-	0.04	-
	Black Petrel - Foraging	46.92	-	2.83	-	41.21	-	2.96	-
	Black-browed Albatross - Foraging*	0.04	0.04	85.58	17.54	0.04	0.04	90.96	17.67
	Black-faced Cormorant - Foraging	13.79	-	7.33	-	7.63	-	8.96	-
	Bullers Albatross - Foraging*	0.04	0.04	85.58	19.83	0.04	0.04	90.96	17.67
	Campbell Albatross - Foraging*	0.04	0.04	85.58	17.54	0.04	0.04	90.96	17.67
	Common Diving-petrel - Foraging*	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	Crested Tern - Breeding	88.33	-	2.25	-	41.83	-	2.96	-
	Crested Tern - Foraging	47.88	-	2.83	-	41.33	-	2.96	-
	Flesh-footed Shearwater - Foraging	46.92	-	2.83	-	41.21	-	2.96	-
	Great-winged Petrel - Foraging	46.92	-	2.04	-	42.79	-	1.58	-
	Grey Nurse Shark - Foraging	44.29	-	2.75	-	39.92	-	2.54	-
	Grey Nurse Shark - Migration	44.21	-	2.83	-	39.88	-	3.04	-
	Humpback Whale - Foraging	33.04	-	2.83	-	39.63	-	3.04	-
	Indian Yellow-nosed Albatross - Foraging*	0.04	0.04	85.58	17.54	0.04	0.04	90.96	17.67

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Indo-Pacific/Spotted Bottlenose Dolphin - Breeding	44.00	-	2.96	-	40.46	-	2.96	-
	Little Penguin - Breeding	88.25	-	2.38	-	41.75	-	2.96	-
	Little Penguin - Foraging	14.33	-	18.38	-	7.71	-	39.88	-
	Northern Giant Petrel - Foraging	46.92	-	2.04	-	42.79	-	1.58	-
	Pygmy Blue Whale - Distribution*	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	Pygmy Blue Whale - Foraging*	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	Pygmy Blue Whale - Foraging annual high use area*	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	Pygmy Blue Whale - Known Foraging Area	2.58	3.38	59.42	1.88	1.67	3.38	65.92	3.17
	Short-tailed Shearwater - Foraging	1.46	1.58	83.92	22.08	0.75	1.33	92.75	22.13
	Shy Albatross - Foraging*	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	Soft-plumaged Petrel - Foraging	28.71	-	3.79	-	103.92	-	0.29	-
	Sooty Shearwater - Foraging	39.54	-	2.83	-	40.08	-	3.04	-
	Southern Giant Petrel - Foraging	46.92	-	2.04	-	42.79	-	1.58	-
	Southern Right Whale – Aggregation	0.54	1.04	72.04	2.92	0.46	0.58	90.96	3.46
	Southern Right Whale - Connecting Habitat	15.67	-	16.88	-	11.21	-	11.38	-
	Southern Right Whale - Known Core Range*^	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	Wandering Albatross - Foraging*	0.04	0.04	85.58	17.54	0.04	0.04	90.96	17.67
	Wedge-tailed Shearwater - Foraging*	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	White Shark - Breeding	12.04	-	19.5	-	22.13	-	43.42	-
	White Shark - Distribution*	0.04	0.04	85.58	17.54	0.04	0.04	90.96	17.67
	White Shark - Foraging	2.33	2.46	72.04	1.29	2.67	5.63	90.96	1.08
	White-capped Albatross - Foraging	46.92	-	2.04	-	42.79	-	1.58	-
	White-faced Storm-petrel - Breeding	46.29	-	2.83	-	40.58	-	2.96	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	White-faced Storm-petrel - Foraging	2.83	3.42	58.33	1.88	1.75	5.71	65.92	3.17
	Wilsons Storm Petrel - Migration	46.92	-	2.04	-	42.79	-	1.58	-
IBRA	Bateman	88.50	-	1.71	-	42.08	-	1.79	-
	Bridgewater	12.33	-	57.71	-	15.88	-	24.83	-
	East Gippsland Lowlands	48.17	-	3.17	-	34.38	-	9.58	-
	Flinders	30.92	-	5.25	-	22.67	-	5.29	-
	Gippsland Plain	12.42	-	40.83	-	7.92	-	53.88	-
	Glenelg Plain	5.46	-	60.63	-	11.21	-	27.08	-
	King Island	15.75	-	16.88	-	11.29	-	11.04	-
	Otway Plain	2.50	2.96	83.33	19.5	1.79	3.21	77.75	22.04
	Otway Ranges	2.38	5.33	76.04	10.67	1.50	4.13	91.29	12
	South East Coastal Ranges	99.63	-	0.04	-	-	-	-	-
	Strzelecki Ranges	12.00	-	13.96	-	12.96	-	17.67	-
	Tasmanian West	85.83	-	0.13	-	103.92	-	0.21	-
	Warrnambool Plain	2.33	6.21	85.21	11.83	1.21	4.21	86.17	17.17
	Wilsons Promontory	11.29	88.71	45.79	0.08	7.58	-	73.17	-
IMCRA	Batemans Shelf	46.38	-	2.83	-	40.58	-	2.96	-
	Central Bass Strait	2.58	6.67	27.17	1.42	1.79	5.83	38.58	3.17
	Central Victoria	2.54	3.42	57.00	1.88	1.67	5.67	65.92	1.79
	Coorong	16.5	-	4.46	-	24.13	-	0.08	-
	Davey	40.17	-	0.08	-	-	-	-	-
	Flinders	10.75	56.67	47.33	0.08	6.83	-	73.17	-
	Franklin	26.96	-	3.79	-	19.04	-	0.33	-
	Otway*	0.04	0.04	85.83	22.08	0.04	0.04	92.75	22.13
	Twofold Shelf	12.33	-	5.33	-	19.42	-	14.54	-
	Victorian Embayments	14.71	-	12.33	-	9.92	-	28.92	-
	Victorian Embayments	50.17	-	0.13	-	58.25	-	0.04	-
KEF	Big Horseshoe Canyon	42.58	-	0.67	-	64.00	-	0.67	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Bonney Coast Upwelling	3.29	9.42	72.04	0.04	7.00	-	90.96	-
	Canyons on the Eastern Continental Slope	46.96	-	2.04	-	51.67	-	0.04	-
	Shelf rocky reefs	88.21	-	2.17	-	42.08	-	2.08	-
	Upwelling East of Eden	15.29	-	5.33	-	27.88	-	14.54	-
	West Tasmania Canyons	3.04	11.79	12.17	0.17	9.13	12.83	8.17	0.21
MNP	Bunurong	36.38	-	10.83	-	13.00	-	11.13	-
	Cape Howe	43.96	-	3.25	-	41.5	-	3.25	-
	Churchill Island	37.00	-	5.92	-	29.63	-	18.21	-
	Discovery Bay	14.29	-	22.38	-	15.88	-	10.04	-
	Point Addis	13.46	-	46.25	-	12.29	-	35.54	-
	Point Hicks	65.92	-	2.67	-	34.04	-	14.54	-
	Port Phillip Heads	18.63	-	6.17	-	20.67	-	26.25	-
	Twelve Apostles	2.13	4.08	85.83	11.83	1.33	4.08	78.54	17.46
	Wilsons Promontory	11.29	56.67	47.33	0.08	7.71	-	73.17	-
MP	Batemans	88.33	-	2.25	-	41.83	-	2.96	-
	Lower South East	26.88	-	4.08	-	-	-	-	-
MS	Beware Reef	-	-	-	-	91.75	-	0.04	-
	Mushroom Reef	14.75	-	11.58	-	10.00	-	7.88	-
NP	Kent Group	32.67	-	0.88	-	41.96	-	0.13	-
NPS4	Bunurong Marine Park	41.08	-	11.25	-	12.13	-	14.00	-
	Corner Inlet Marine and Coastal Park	50.17	-	0.13	-	58.25	-	0.04	-
	Shallow Inlet Marine and Coastal Park	40.04	-	0.17	-	-	-	-	-
	Wilsons Promontory Marine Park	12.54	-	41.79	-	8.33	-	54	-
RAMSAR	Corner Inlet	50.17	-	0.13	-	58.25	-	0.04	-
	Port Phillip Bay Western Shoreline and Bellarine Peninsula	24.21	-	6.83	-	20.83	-	14.79	-
	Western Port	30.58	-	9.08	-	29.63	-	18.21	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
RSB	Bell Reef	33.33	-	0.17	-	19.96	-	0.08	-
	Beware Reef	-	-	-	-	89.00	-	0.04	-
	Bravenes Rock	1.96	5.17	75.96	3.88	1.25	6.38	78.79	3.54
	Cody Bank	11.54	-	9.75	-	6.88	-	6.29	-
	Cutter Rock	31.54	-	5.63	-	19.00	-	4.67	-
	New Zealand Star Bank	39.75	-	3.38	-	36.63	-	4.13	-
Nearshore Waters	Anser Island	11.67	88.71	43.5	0.08	7.88	-	73.17	-
	Bass Coast	33.33	-	11.67	-	11.71	-	17.96	-
	Bega Valley	74.83	-	2.54	-	44.54	-	2.42	-
	Black Pyramid	33.75	-	1.58	-	20	-	1.58	-
	Circular Head	-	-	-	-	108.38	-	0.04	-
	Colac Otway	2.5	2.96	83.33	19.5	1.79	3.21	91.13	22.04
	Corangamite	2.25	6.21	85.21	11.83	1.21	4.21	91.29	17.17
	Curtis Island	30.92	-	2.71	-	22.67	-	3.42	-
	East Gippsland	64.63	-	2.67	-	34.38	-	9.58	-
	Eurobodalla	-	-	-	-	46.79	-	0.25	-
	French Island	38.42	-	0.33	-	55.54	-	6.21	-
	Gabo Island	48.17	-	3.42	-	41.71	-	3.17	-
	Glenelg	5.46	-	60.63	-	11.21	-	72.75	-
	Glennie Group	11.54	-	45.79	-	7.63	-	71.92	-
	Grant	22.38	-	6.38	-	-	-	-	-
	Greater Geelong	17.58	-	19.17	-	14.00	-	44.04	-
	Hogan Island Group	31.83	-	5.25	-	23.42	-	5.29	-
	Kanowna Island	11.38	88.71	43.25	0.04	7.88	-	70.71	-
	Kent Island Group	32.38	-	1.17	-	41.96	-	0.13	-
	King Island	15.75	-	16.88	-	11.29	-	11.04	-
	Lady Julia Percy Island	8.00	-	53.25	-	9.33	-	84.88	-
	Laurence Rocks	8.71	-	60.75	-	10.46	-	27.29	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Moncoeur Islands	11.58	-	13.04	-	9.75	-	7.83	-
	Montague Island	88.5	-	1.71	-	42.08	-	1.79	-
	Mornington Peninsula	14.33	-	20	-	9.50	-	36.54	-
	Moyne	2.38	6.25	50.21	10.79	1.46	6.67	68.63	7.92
	Mud Island	42.17	-	5.71	-	41.17	-	13.25	-
	Norman Island	12.00	-	41.83	-	7.58	-	67.71	-
	Phillip Island	14.67	-	15.13	-	9.88	-	33.58	-
	Reid Rock	30.00	-	0.42	-	24.33	-	0.13	-
	Rodondo Island	11.33	-	19.58	-	9.46	-	28.04	-
	Seal Islands	48.29	-	0.54	-	28.25	-	1.33	-
	Shellback Island	12.29	-	36.42	-	9.79	-	52.04	-
	Skull Rock	11.29	-	43.25	-	7.88	-	70.71	-
	South Gippsland	11.63	-	44.21	-	7.92	-	73.17	-
	Surf Coast	8.92	-	55.38	-	12.13	-	39.83	-
	Warrnambool	8.33	49	56.42	1.13	4.00	6.54	86.17	1.5
	West Coast	85.83	-	0.13	-	103.92	-	0.21	-
State Waters	New South Wales	44.42	-	2.75	-	41.83	-	2.96	-
	South Australia State Waters	20.42	-	6.38	-	19.63	-	0.04	-
	Tasmania State Waters	14.79	-	17.63	-	7.71	-	11.71	-
	Victoria State Waters*	1.50	2.58	85.83	22.08	0.83	3	92.75	22.13
Nearshore Waters (Sub-LGA)	Anglesea	15.00	-	40.5	-	12.46	-	39.83	-
	Apollo Bay	3.42	3.92	59.79	1.25	2.25	20	65.92	0.88
	Bay of Islands	2.38	6.25	39.25	10.79	1.46	6.67	39.29	7.92
	Bega Valley	74.83	-	2.54	-	44.54	-	2.42	-
	Cape Conran	114.29	-	0.04	-	48.63	-	0.13	-
	Cape Howe / Mallacoota	70.29	-	2.67	-	41.75	-	2.75	-
	Cape Liptrap - Northwest	16.29	-	13.38	-	12.75	-	22.33	-
	Cape Nelson	5.46	-	60.63	-	11.13	-	27.13	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Cape Otway West	2.46	2.96	83.54	22.04	1.79	3.21	91.13	22.08
	Cape Patton	4.83	48.21	46	0.04	5.25	21.79	63.04	0.08
	Childers Cove	8.33	48.96	46.96	1.13	4.33	5	46.92	1.5
	Corner Inlet	50.17	-	0.13	-	58.25	-	0.04	-
	Corringle	64.63	-	0.04	-	-	-	-	-
	Croajingolong - East	81.83	-	0.17	-	48.5	-	0.63	-
	Croajingolong - West	67.00	-	0.25	-	45.17	-	0.46	-
	Discovery Bay - East	16.88	-	24.29	-	18.42	-	6.17	-
	Discovery Bay - West	21.79	-	4.38	-	95.96	-	0.04	-
	Eurobodalla	-	-	-	-	46.79	-	0.25	-
	French Island - East	76.5	-	0.04	-	64.96	-	0.54	-
	French Island / Crib Point	38.38	-	0.29	-	55.54	-	2	-
	French Island / San Remo	33.38	-	8.54	-	11.79	-	16.38	-
	Kilcunda	33.33	-	11.04	-	11.71	-	17.96	-
	Lorne	8.38	-	22.92	-	10.42	-	37.25	-
	Marlo	-	-	-	-	81.08	-	0.04	-
	Moonlight Head	2.33	6.21	76.5	10.29	1.46	4.21	91.29	17.17
	Mornington Peninsula - South	14.33	-	18.83	-	9.5	-	23.58	-
	Mornington Peninsula - Southwest	14.33	-	20	-	9.5	-	30.42	-
	Point Hicks	66.08	-	2.25	-	34.25	-	9.58	-
	Port Campbell	2.25	6.38	85.21	11.83	1.21	7.08	76.08	7.67
	Port Fairy	7.83	-	49.67	-	14.00	-	68.63	-
	Port Phillip - Mornington	55.21	-	0.54	-	47.29	-	3.63	-
	Port Phillip - Queenscliff	18.08	-	16	-	19.63	-	26.38	-
	Port Phillip - Sorrento Shore	15.96	-	9.29	-	11.17	-	37.13	-
	Port Phillip Heads	18.75	-	4.92	-	20.71	-	20.96	-
	Portland Bay - East	11.67	-	40.33	-	15.25	-	68.58	-
	Portland Bay - West	12.21	-	50.92	-	19.71	-	72.75	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Sydenham Inlet	66.46	-	0.42	-	46.83	-	1.75	-
	Torquay	15.04	-	55.38	-	13.00	-	36.21	-
	Venus Bay	34.38	-	11.67	-	11.88	-	17.42	-
	Waratah Bay	12.00	-	25.63	-	12.96	-	17.67	-
	Warrnambool	8.42	64.13	56.42	0.04	4.00	10.42	86.17	0.13
	Westernport	14.75	-	11.42	-	9.96	-	7.88	-
	Wilsons Promontory - East	11.79	-	35.5	-	11.50	-	57.46	-
	Wilsons Promontory - West	11.63	-	44.21	-	7.92	-	73.17	-

*The release location resides within the receptor boundaries. ^ RPS have utilised BIA's for the southern right whale that were delineated within the 2011-2021 Southern Right Whale. The NCV Atlas now includes updated BIA's for SRW, though the recently drafted National Recovery Plan for the southern right whale has not been published. The updated BIA's have not been used in this report.

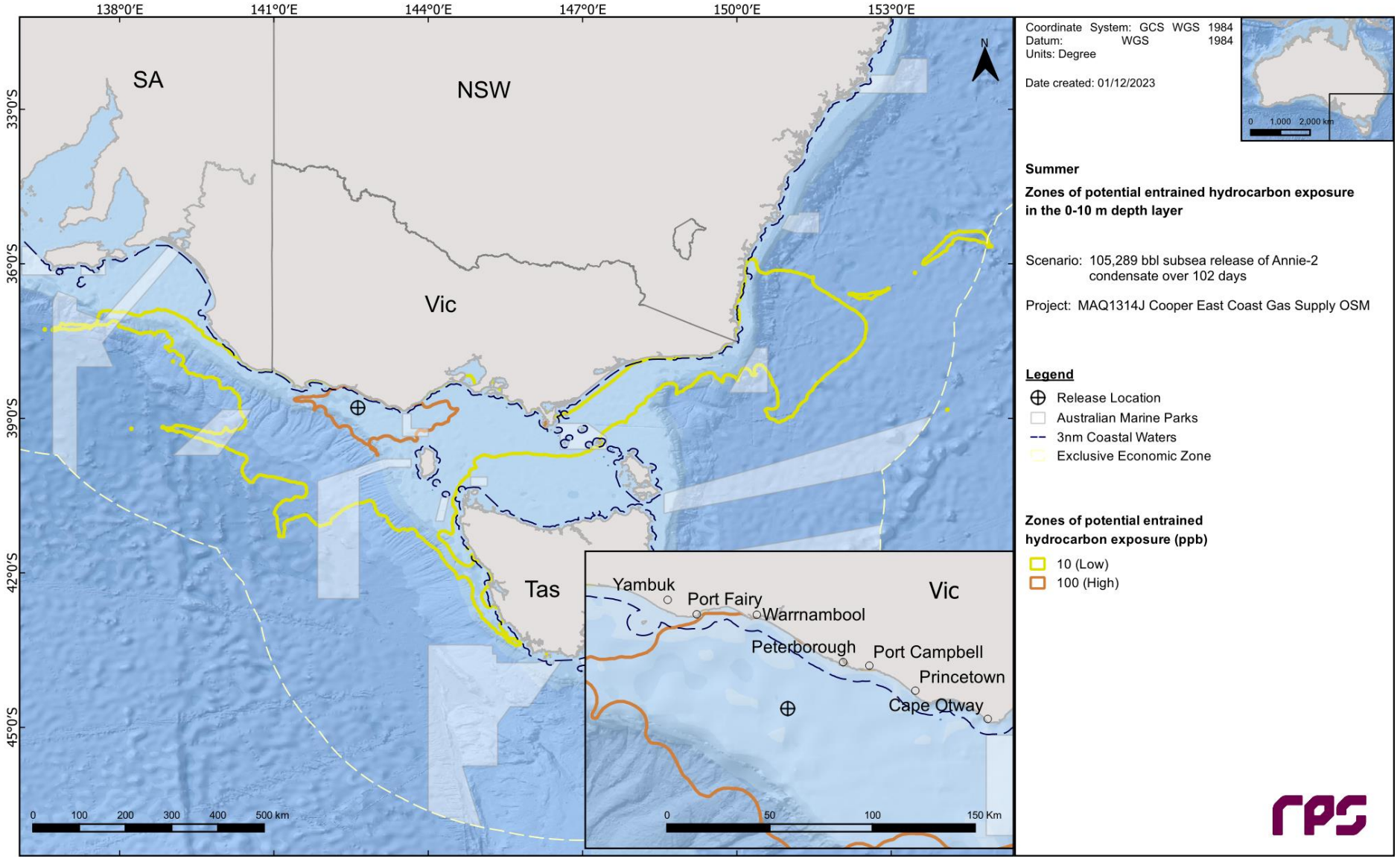

Figure 11.13 Zones of potential entrained hydrocarbon exposure at 0-10 m below the sea surface in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

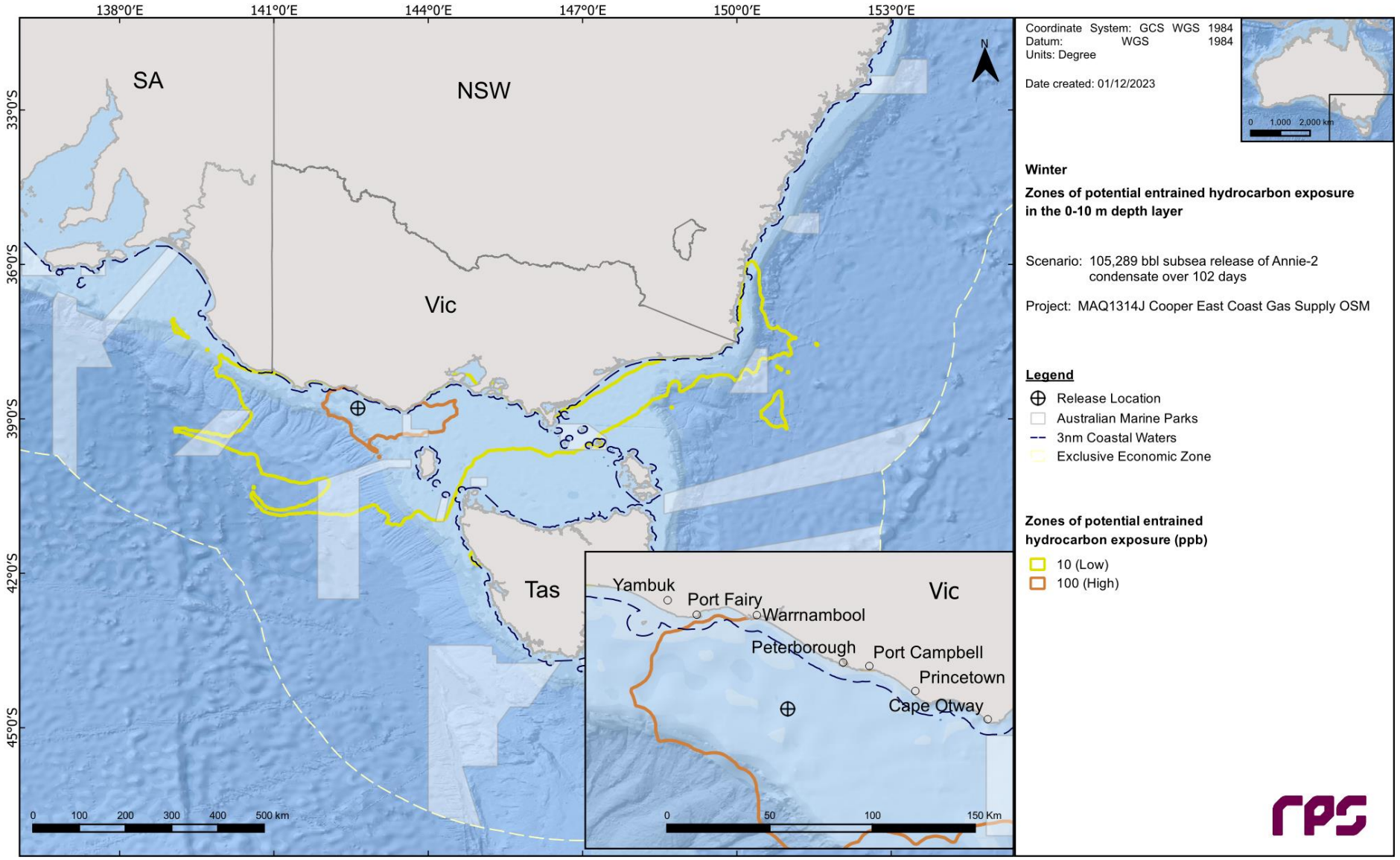

Figure 11.14 Zones of potential entrained hydrocarbon exposure at 0-10 m below the sea surface in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

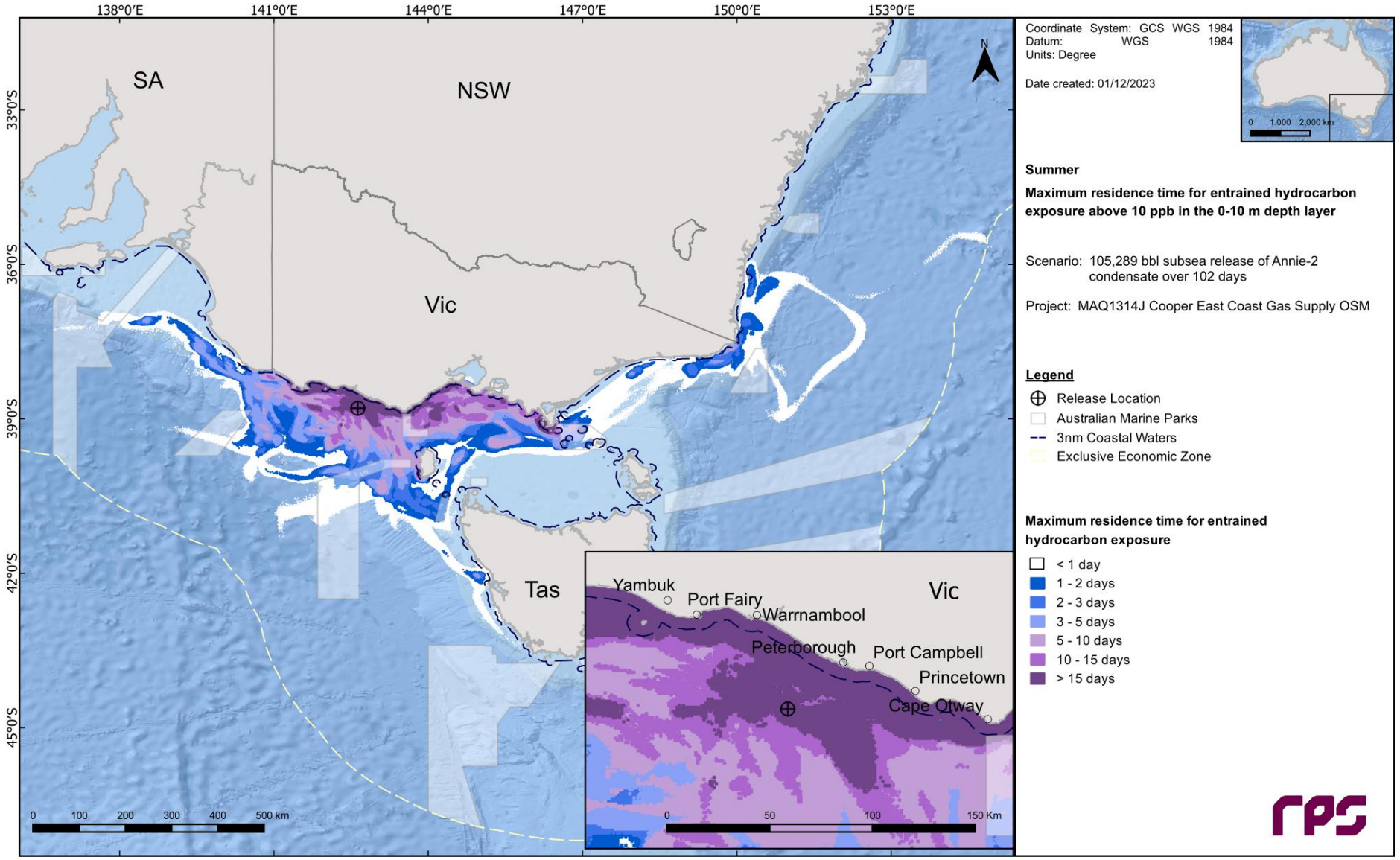

Figure 11.15 Maximum residence time for entrained hydrocarbon exposure above 10 ppb, at 0-10 m below the sea in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

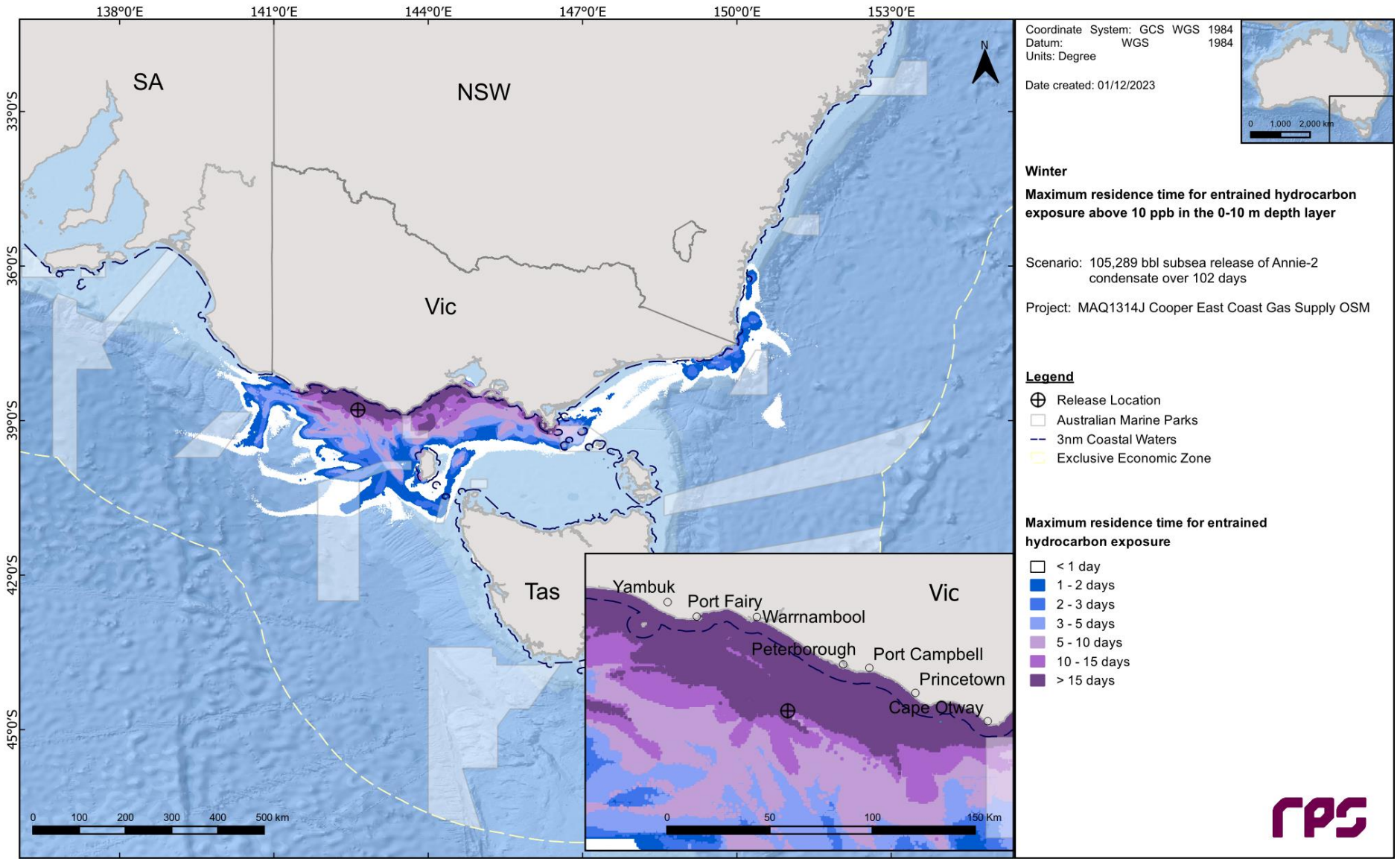

Figure 11.16 Maximum residence time for entrained hydrocarbon exposure above 10 ppb, at 0-10 m below the sea in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

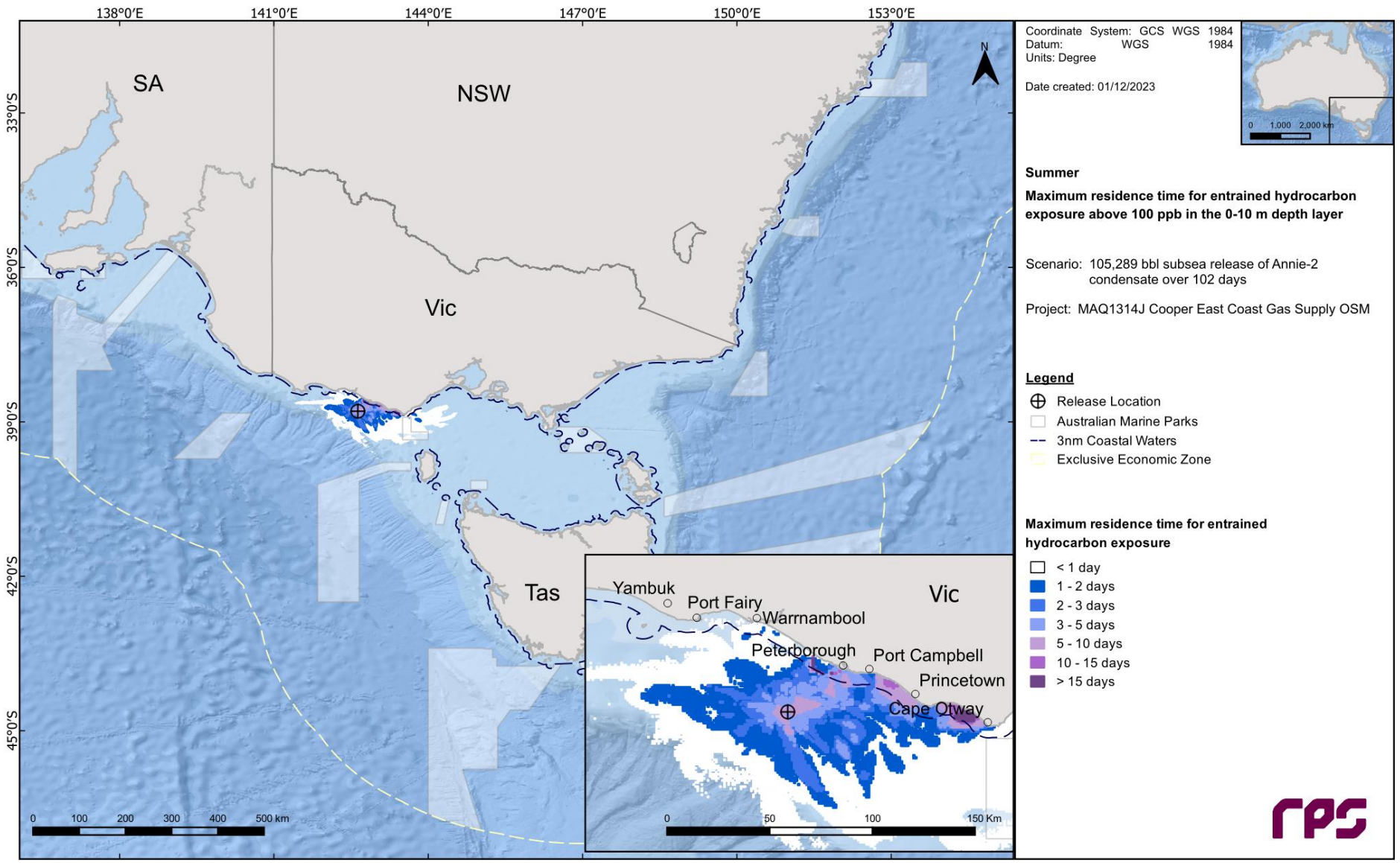

Figure 11.17 Maximum residence time for entrained hydrocarbon exposure above 100 ppb, at 0-10 m below the sea in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during summer conditions.

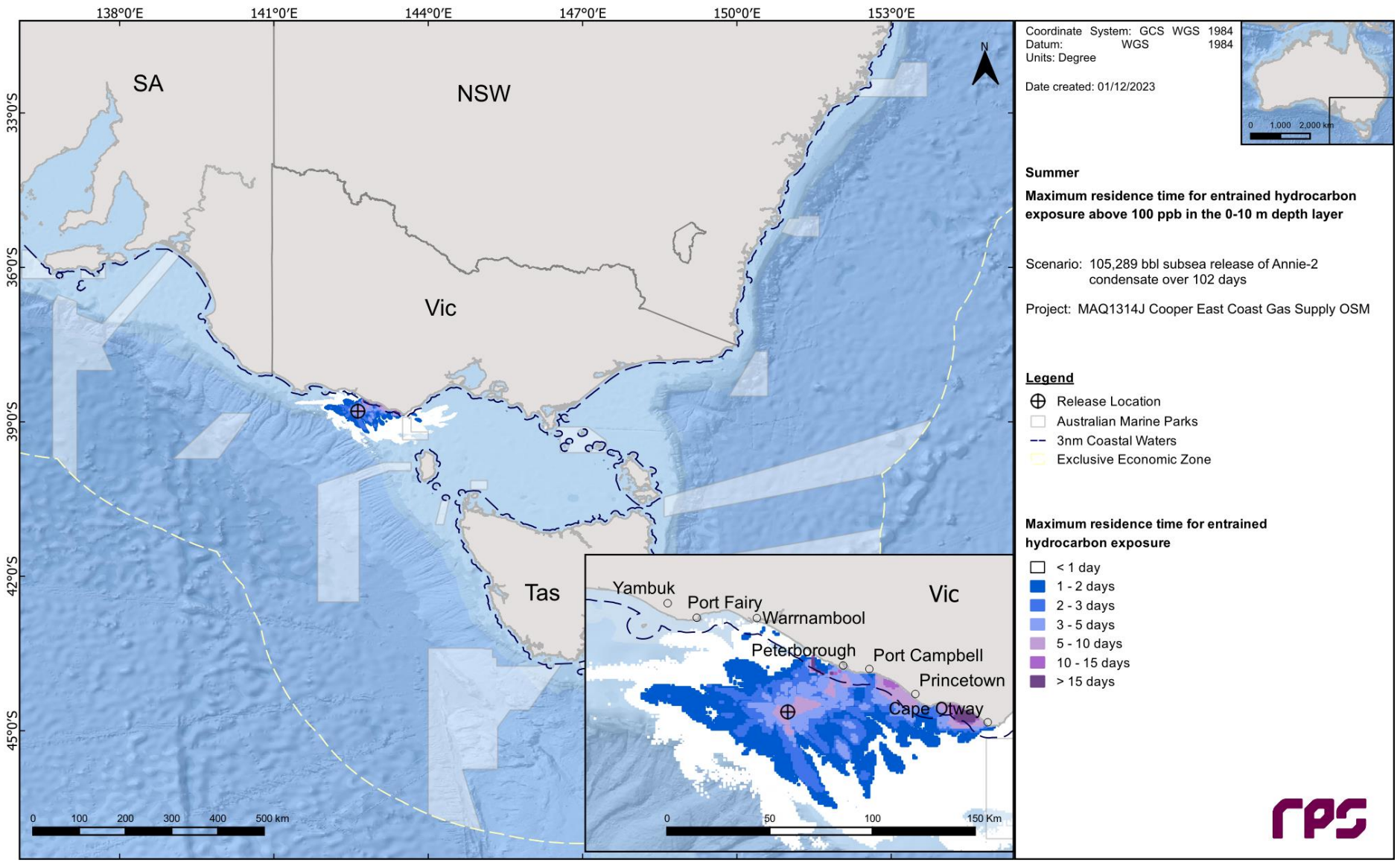

Figure 11.18 Maximum residence time for entrained hydrocarbon exposure above 100 ppb, at 0-10 m below the sea in the event of a 105,289 bbl subsurface release from a loss of well control at Elanora-1 ST1 (Isabella) over 102 days. The results were calculated from 100 spill simulations during winter conditions.

11.2 Deterministic Analysis

The stochastic modelling results were assessed, and the “worst case” deterministic runs were identified and are presented below for the following criteria:

a. Largest swept area for surface oil above 10 g/m^2;
b. Largest (total) volume of oil ashore;
c. Longest length of shoreline with oil accumulation above 100 g/m$^{2;}$
d. Largest area of entrained hydrocarbon exposure above 100 ppb; and
e. Largest area of dissolved hydrocarbon exposure above 50 ppb.

Table 11.11 presents a summary of sea surface and in-water exposure and shoreline accumulation at the assessed thresholds for the identified deterministic simulations.

Table 11.11 Summary of the worst-case deterministic analysis based on the scenario presented in the stochastic analysis section.

Variable	Threshold	Deterministic Analysis Criteria				
		Largest swept area of floating oil >10 g/m²	Largest volume of oil ashore	Longest length of shoreline with accumulation >100 g/m²	Largest area of entrained hydrocarbon exposure >100 ppb	Largest area of dissolved hydrocarbon exposure >50 ppb
Season		Summer	Winter	Winter	Summer	Summer
Run Number		5	92	17	44	29
Total area of floating Oil exposure (km²)	1 g/m²	360	251	293	276	341
	10 g/m²	**40**	7	5	16	9
	50 g/m²	-	-	-	-	-
Total length of shoreline accumulation (km)	10 g/m²	166	189	268	34	158
	100 g/m²	15	43	**44**	5	12
	1,000 g/m²	-	0	**-**	-	-
Minimum time before accumulation on any shoreline (hours)	10 g/m²	335	44	269	1035	366
	100 g/m²	994	296	619	1073	436
	1,000 g/m²	-	-	**-**	-	**-**
Total volume of oil ashore (m³)		82	**212**	189	22	74
Total area of entrained hydrocarbon exposure (km²)	10 ppb	49,508	24,945	24,641	60,183	48,694
	100 ppb	5,196	5,084	3,596	**6,272**	5,835
Total area of dissolved hydrocarbon exposure (km²)	10 ppb	141	413	400	273	319
	50 ppb	-	-	-	-	**1**
	400 ppb	-	-	-	-	-
Start Date		3rd April 2018 5 am	1st August 2010 1 am	24th September 2013 7 pm	4th January 2018 10 am	12th March 2015 2 pm

NC = No contact at, or above the specified shoreline accumulation threshold.

11.2.1 Deterministic Case: Largest swept area of floating oil above 10 g/m^2

The deterministic trajectory that resulted in the largest swept area of floating oil above 10 g/m^2 was identified as summer run number 5, which started on 3rd April 2018.

Figure 11.19 illustrates the floating oil exposure and shoreline accumulation over the 116-day simulation.

Figure 11.20 displays the time series of the area of sea surface exposure above the low (1 g/m^2), moderate (10 g/m^2) and high (50 g/m^2) thresholds over the 116-day simulation.

Figure 11.21 presents the fates and weathering graph for the corresponding single spill trajectory and Table 11.12 summarises the mass balance peaks and at the end of the simulation.

Table 11.12 Summary of the mass balance for the trajectory with the largest swept area of floating oil above 10 g/m^2.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	260.3	26.8	6.4
Entrained (m^3)	2,515.2	96.7	2,002.1
Dissolved (m^3)	8.9	33.8	0.5
Evaporation (m^3)	9,881.7	116.0	9,881.7
Decay (m^3)	4,047.6	116.0	4,047.6
Ashore (m^3)	84.7	101.0	82.0

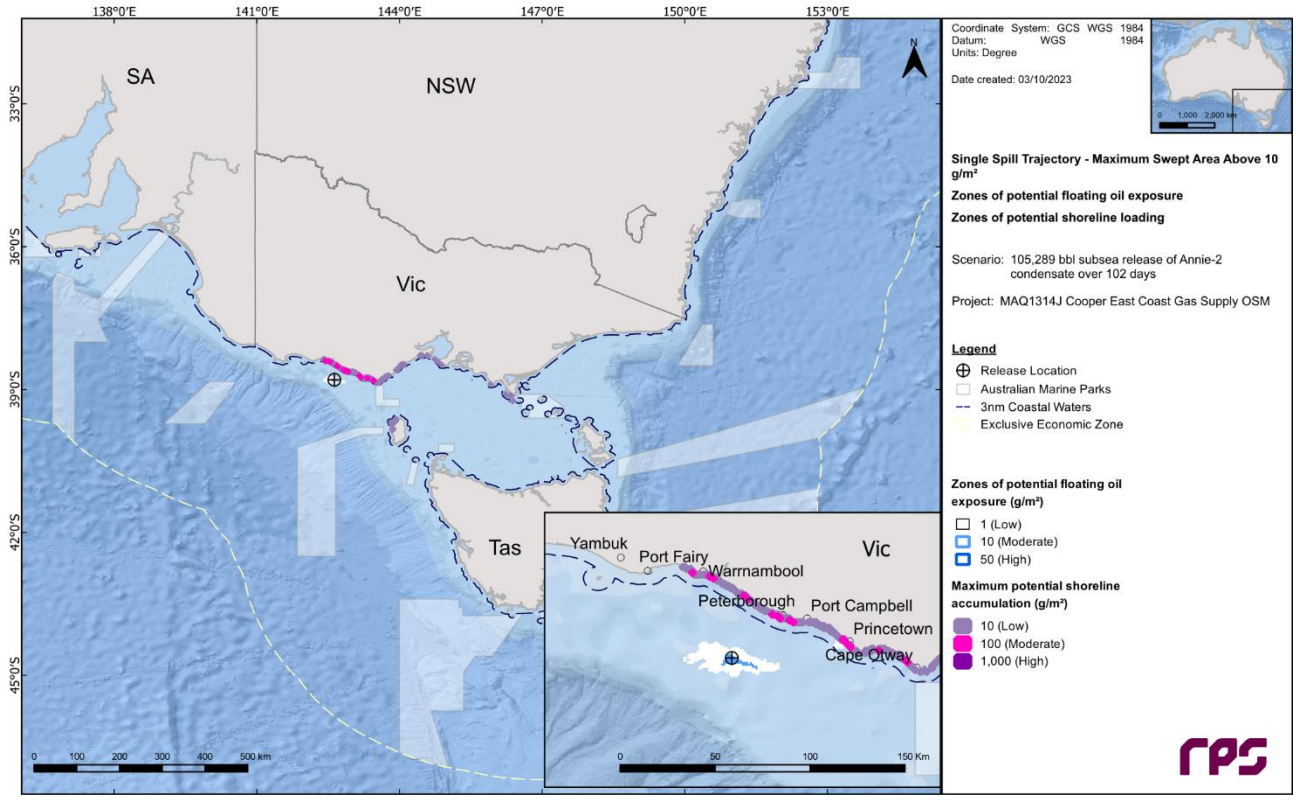

Figure 11.19 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest swept area of floating oil above 10 g/m^2.

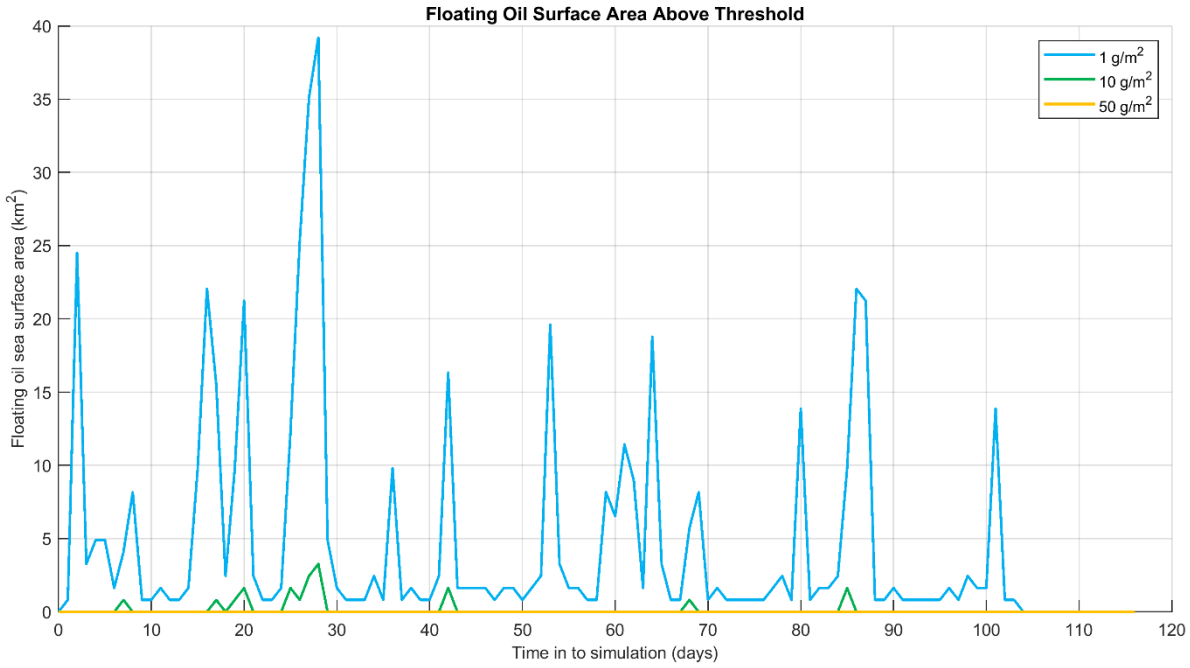

Figure 11.20 Time series of the sea surface exposure above each threshold for the trajectory with the largest swept area of floating oil above 10 g/m².

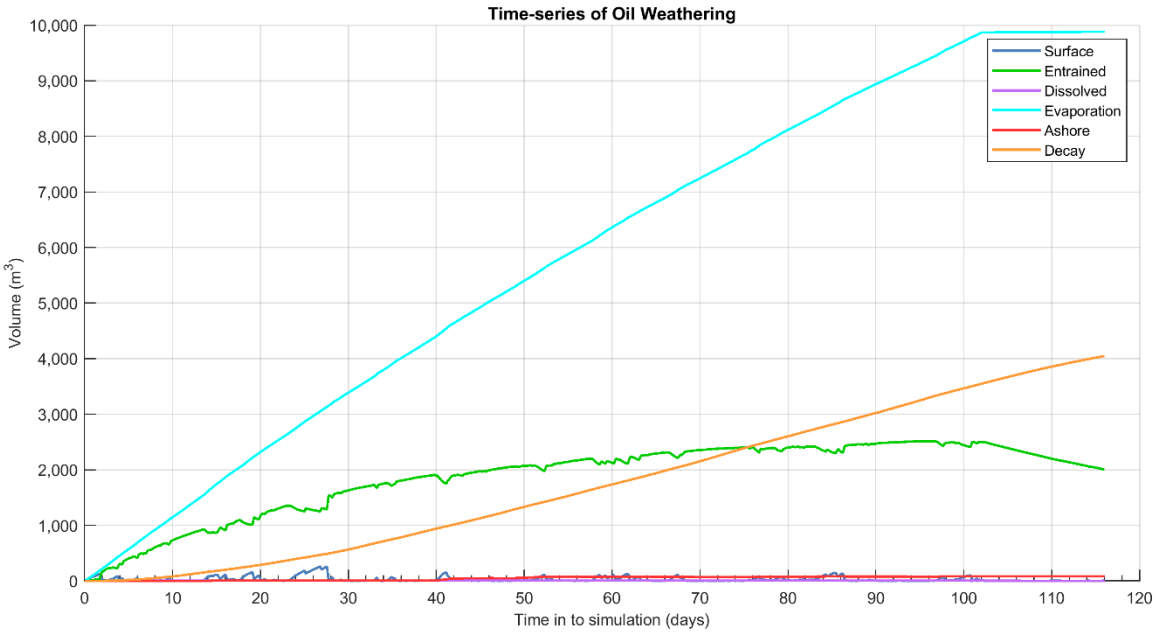

Figure 11.21 Predicted weathering and fates graph for the trajectory with the largest swept area of floating oil above 10 g/m².

11.2.2 Deterministic Case: Largest volume of oil ashore

The deterministic trajectory that resulted in the largest volume of oil ashore was identified as winter run number 92, which started on 1st August 2010.

Figure 11.22 illustrates the floating oil exposure and shoreline accumulation over the 116-day simulation.

Figure 11.23 displays the time series of the shoreline accumulation above the low (10 g/m^2), moderate (100 g/m^2) and high (1,000 g/m^2) thresholds over the 116-day simulation.

Figure 11.24 presents the fates and weathering graph for the corresponding single spill trajectory and Table 11.13 summarises the mass balance peaks and at the end of the simulation.

Table 11.13 Summary of the mass balance for the trajectory with the largest volume of oil ashore.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	194.2	28.4	0.8
Entrained (m^3)	2,506.9	99.3	1,990.3
Dissolved (m^3)	10.1	24.8	0.7
Evaporation (m^3)	9,748.3	116.0	9,748.3
Decay (m^3)	4,070.4	116.0	4,070.4
Ashore (m^3)	211.7	111.1	209.8

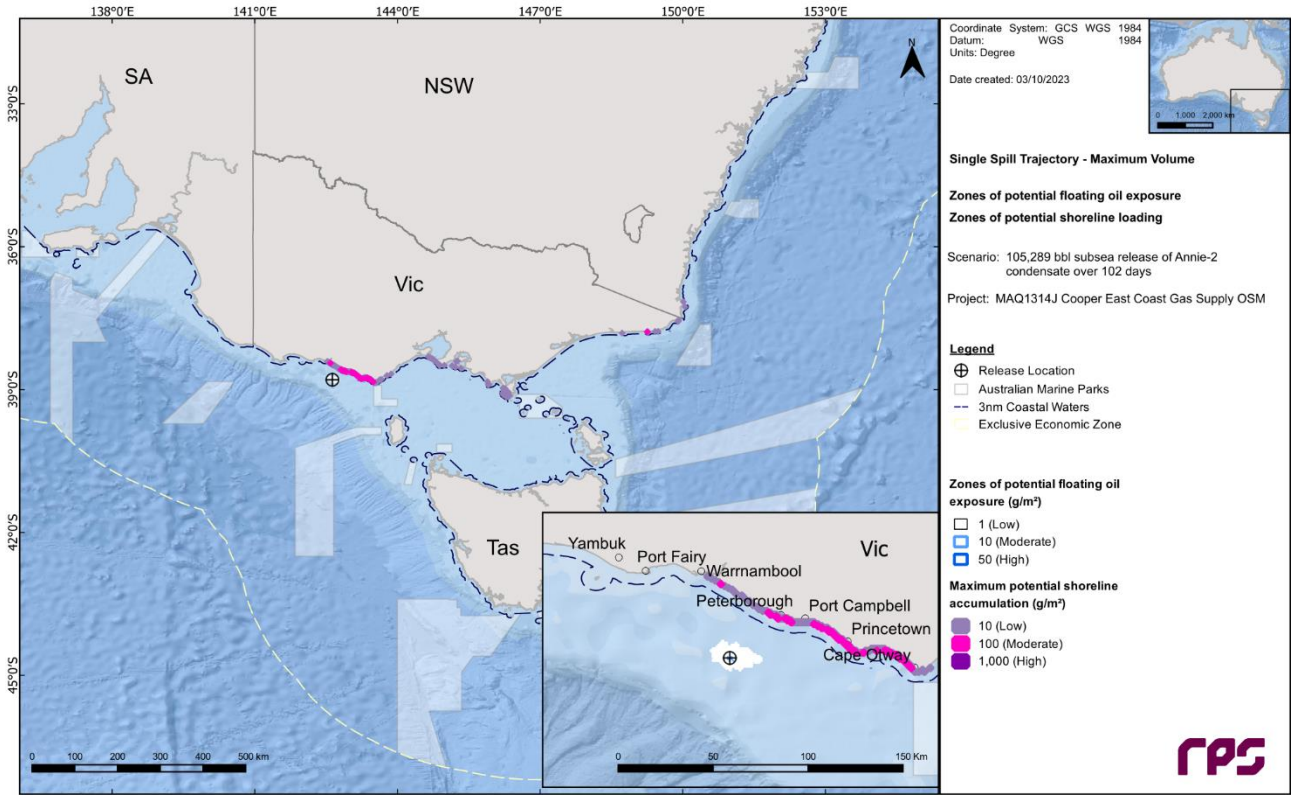

Figure 11.22 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest volume of oil ashore.

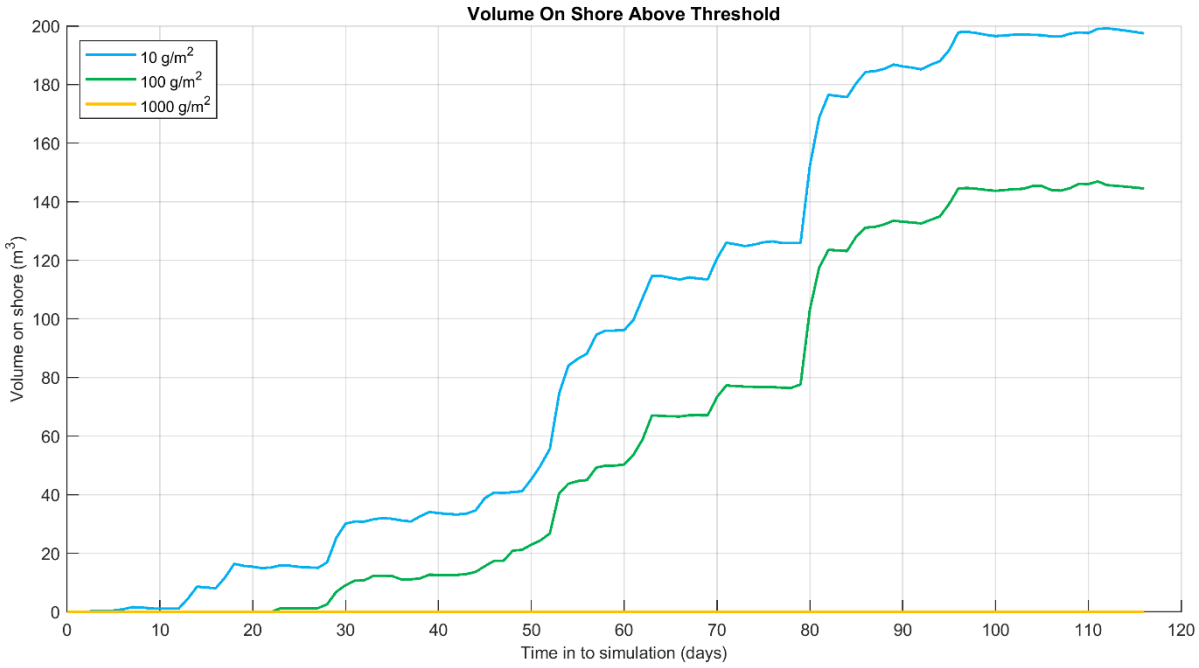

Figure 11.23 Time series of oil accumulation on the shoreline above each threshold for the trajectory with the largest volume of oil ashore.

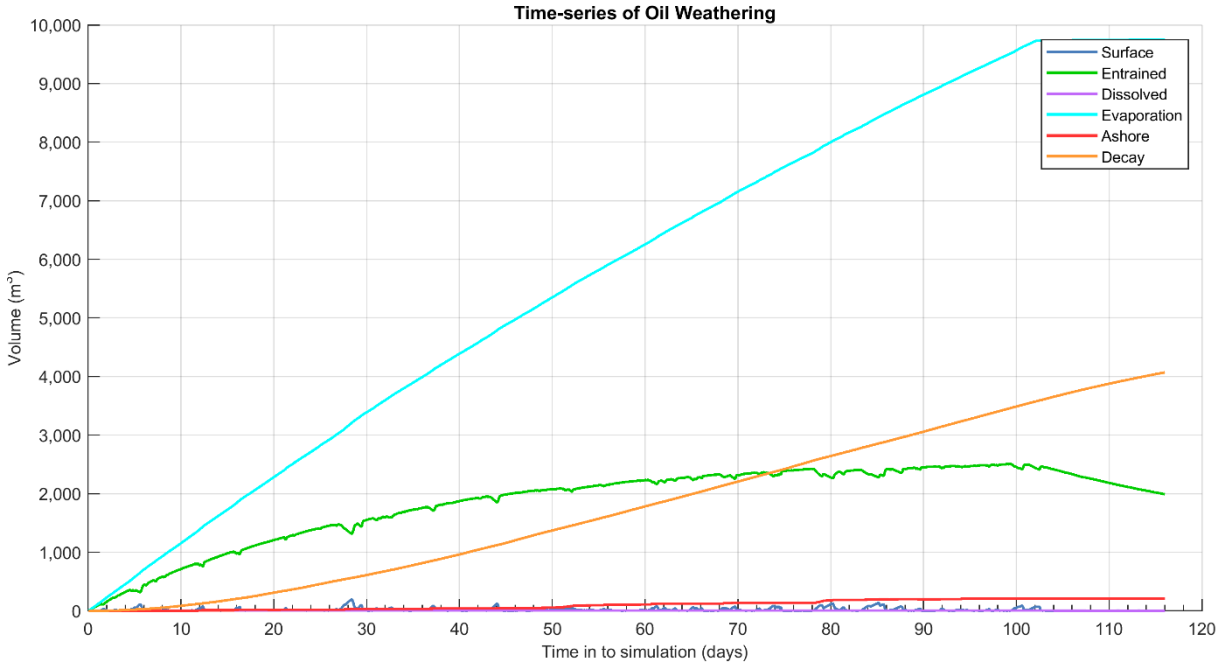

Figure 11.24 Predicted weathering and fates graph for the trajectory with the largest volume of oil ashore.

11.2.3 Deterministic Case: Longest length of shoreline with accumulation above 100 g/m^2

The deterministic trajectory that resulted in the longest length of shoreline with accumulation above 100 g/m^2 was identified as winter run number 17, which started on 24th September 2013.

Figure 11.25 illustrates the floating oil exposure and shoreline accumulation over the 116-day simulation.

Figure 11.26 displays the time series of the length of shoreline with accumulation at the low (10 g/m^2), moderate (100 g/m^2) and high (1,000 g/m^2) thresholds over the 116-day simulation.

Figure 11.27 presents the fates and weathering graph for the corresponding single spill trajectory and Table 11.14 summarises the mass balance peaks and at the end of the simulation.

Table 11.14 Summary of the mass balance for the trajectory with the longest length of shoreline with accumulation above 100 g/m^2.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	192.1	37.9	0.1
Entrained (m^3)	2,556.1	102.0	2,026.8
Dissolved (m^3)	10.2	21.7	0.5
Evaporation (m^3)	9,776.3	116.0	9,776.3
Decay (m^3)	4,027.9	116.0	4,027.9
Ashore (m^3)	190.0	112.7	188.6

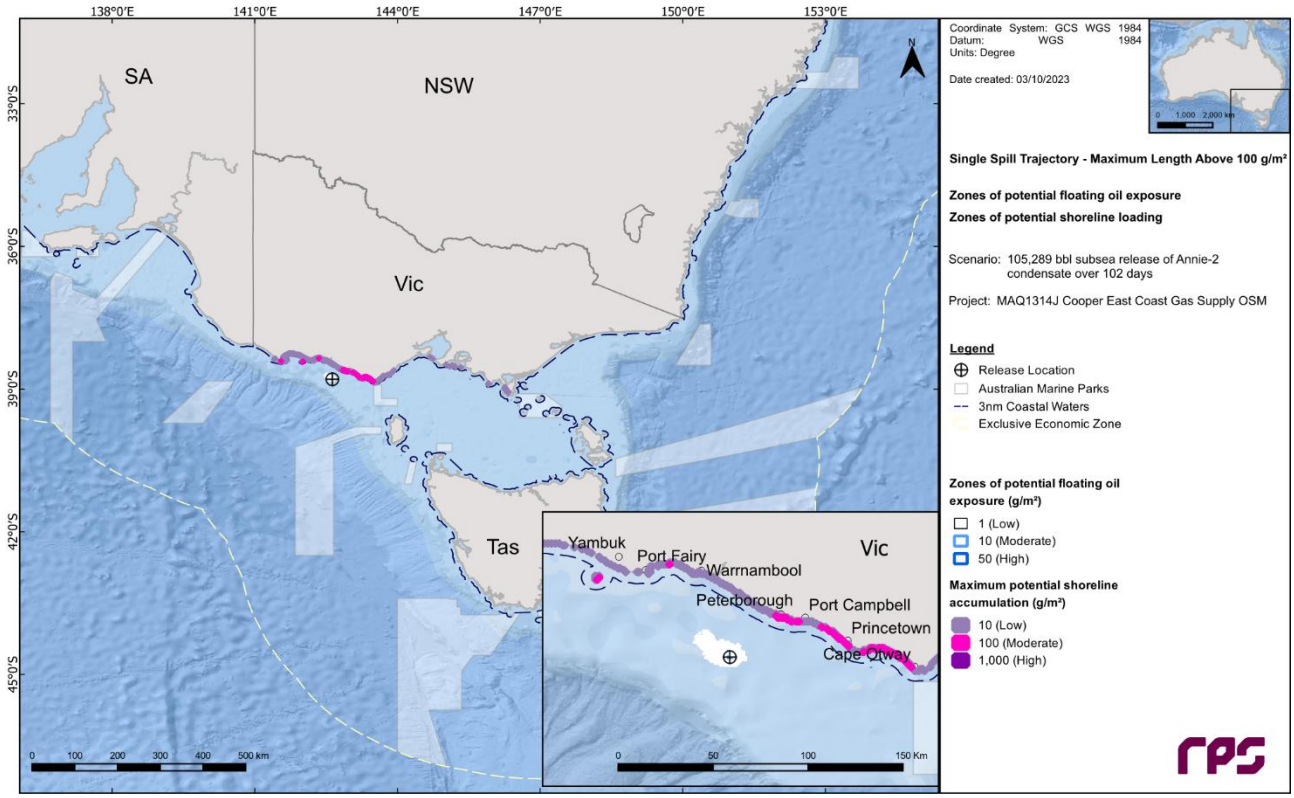

Figure 11.25 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the longest length of shoreline with accumulation above 100 g/m^2.

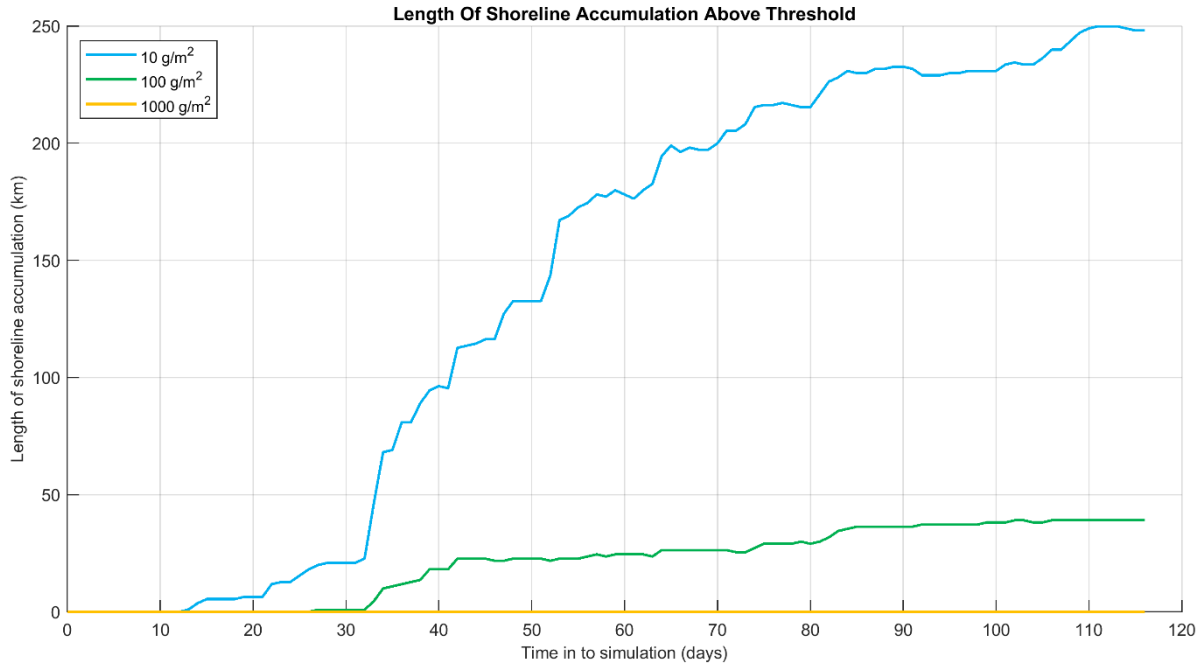

Figure 11.26 Time series of the length of shoreline with accumulation above each threshold for the trajectory with the longest length of shoreline with accumulation above 100 g/m².

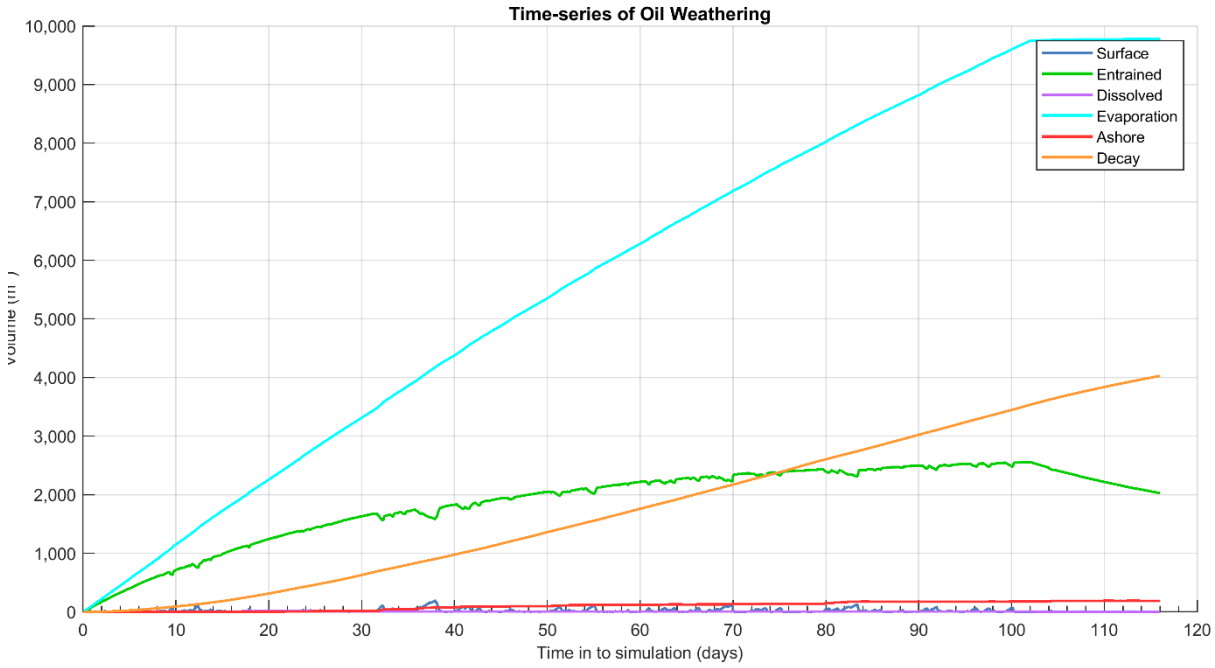

Figure 11.27 Predicted weathering and fates graph for the trajectory with the longest length of shoreline with accumulation above 100 g/m².

11.2.4 Deterministic Case: Largest area of entrained hydrocarbon exposure above 100 ppb

The deterministic trajectory that resulted in the largest area of entrained hydrocarbon exposure above 100 ppb was identified as summer run number 44, which started on 4th January 2018.

Figure 11.28 illustrates the zones of potential entrained hydrocarbon exposure over the 116-day simulation.

Figure 11.29 displays the time series of the area of entrained hydrocarbon exposure at the low (10 ppb) and high (100 ppb) thresholds over the 116-day simulation.

Figure 11.30 presents the fates and weathering graph for the corresponding single spill trajectory and Table 11.15 summarises the mass balance peaks and at the end of the simulation.

Table 11.15 Summary of the mass balance for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	183.0	19.8	2.2
Entrained (m^3)	2,654.6	100.1	2,087.2
Dissolved (m^3)	9.7	29.7	0.5
Evaporation (m^3)	9,778.9	116.0	9,778.9
Decay (m^3)	4,130.0	116.0	4,130.0
Ashore (m^3)	21.8	105.5	21.5

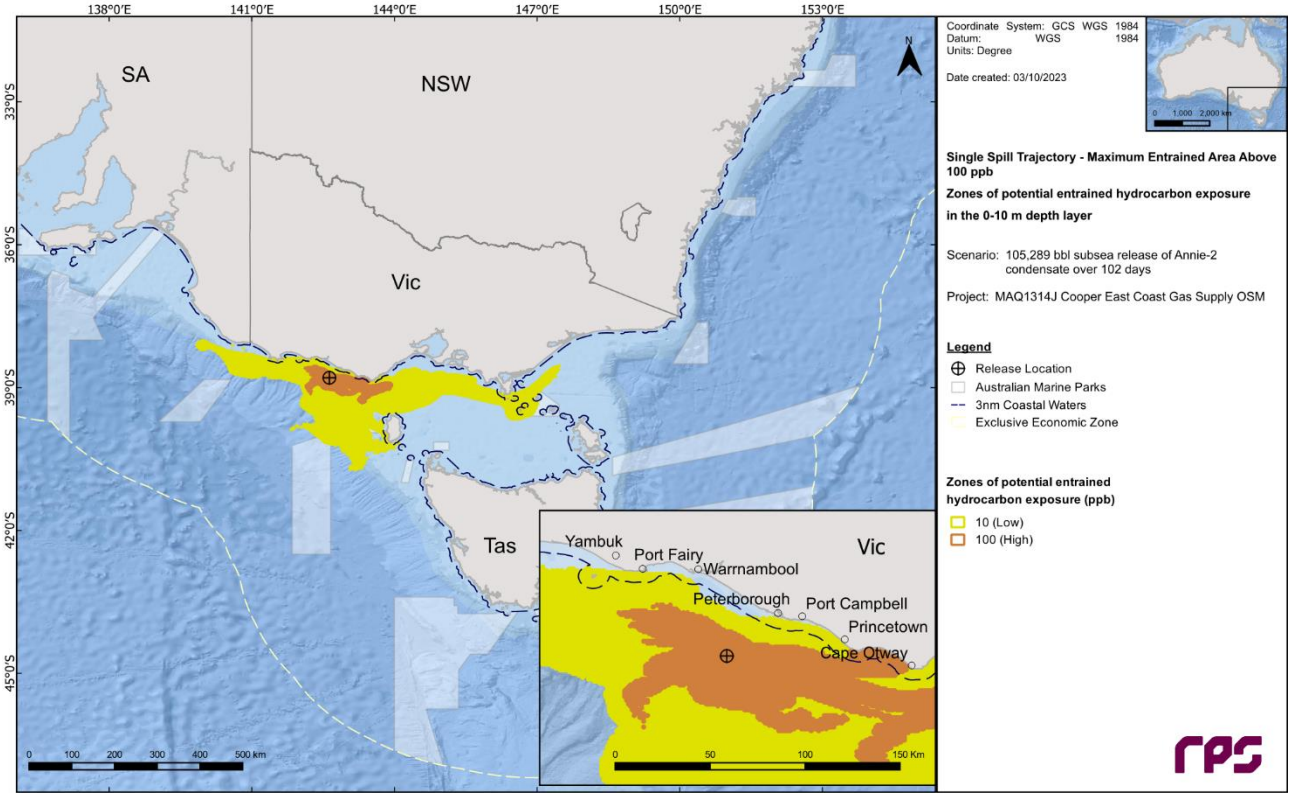

Figure 11.28 Zones of potential entrained hydrocarbon exposure, for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

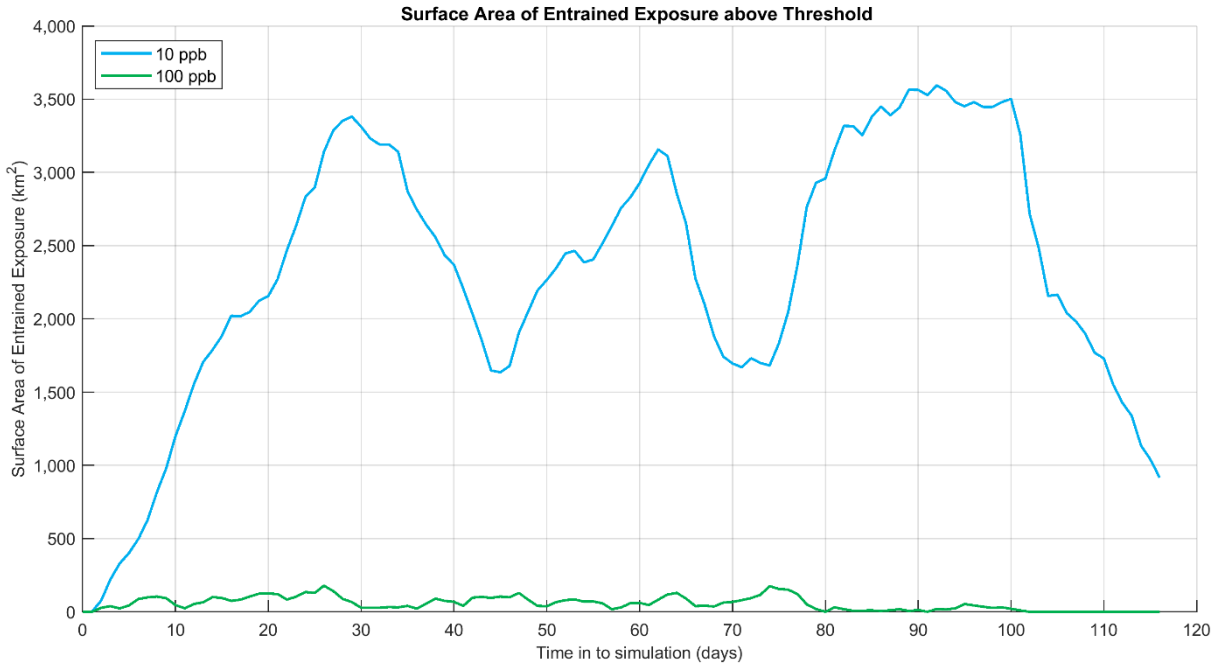

Figure 11.29 Time series of the entrained hydrocarbon exposure area above each threshold for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

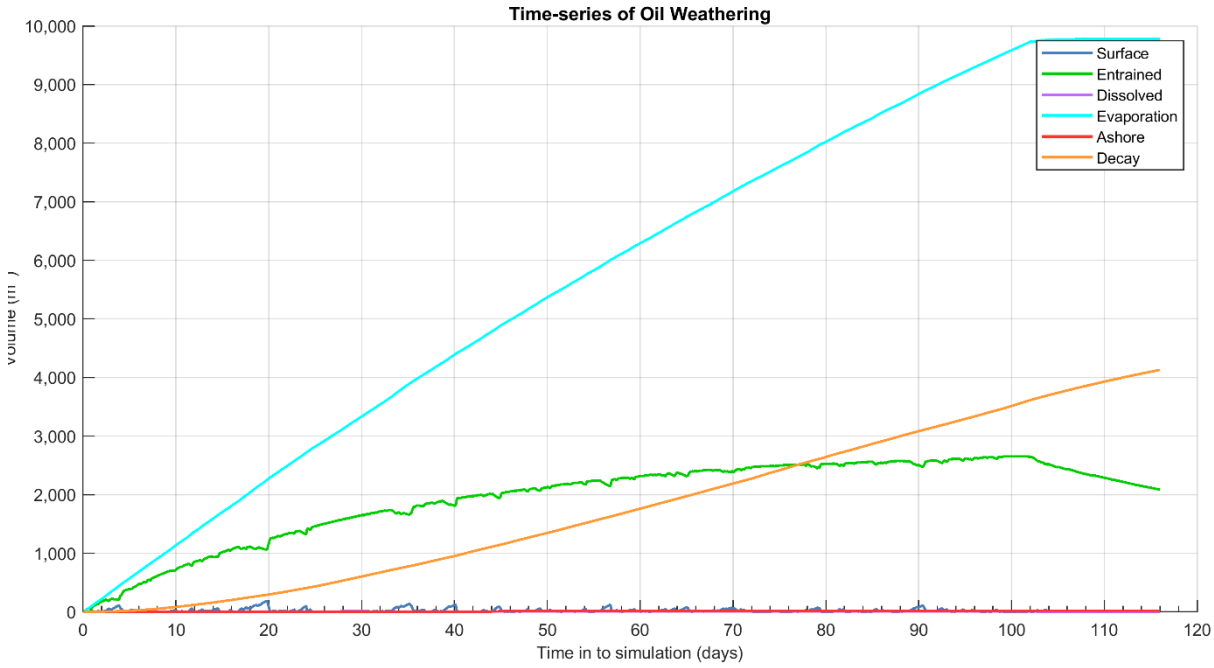

Figure 11.30 Predicted weathering and fates graph for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

11.2.5 Deterministic Case: Largest area of dissolved hydrocarbon exposure above 50 ppb

The deterministic trajectory that resulted in the largest area of dissolved hydrocarbon exposure above 50 ppb was identified as summer run number 29, which started on 12th March 2015.

Figure 11.31 illustrates the zones of potential dissolved hydrocarbon exposure over the 116-day simulation.

Figure 11.32 displays the time series of the area of dissolved hydrocarbon exposure at the low (10 ppb), moderate (50 ppb) and high (400 ppb) thresholds over the 116-day simulation.

Figure 11.33 presents the fates and weathering graph for the corresponding single spill trajectory and Table 11.16 summarises the mass balance peaks and at the end of the simulation.

Table 11.16 Summary of the mass balance for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	155.8	65.1	0.4
Entrained (m^3)	2,557.9	102.0	2,041.7
Dissolved (m^3)	9.0	22.1	0.6
Evaporation (m^3)	9,827.6	116.0	9,827.6
Decay (m^3)	4,076.3	116.0	4,076.3
Ashore (m^3)	76.6	93.8	73.8

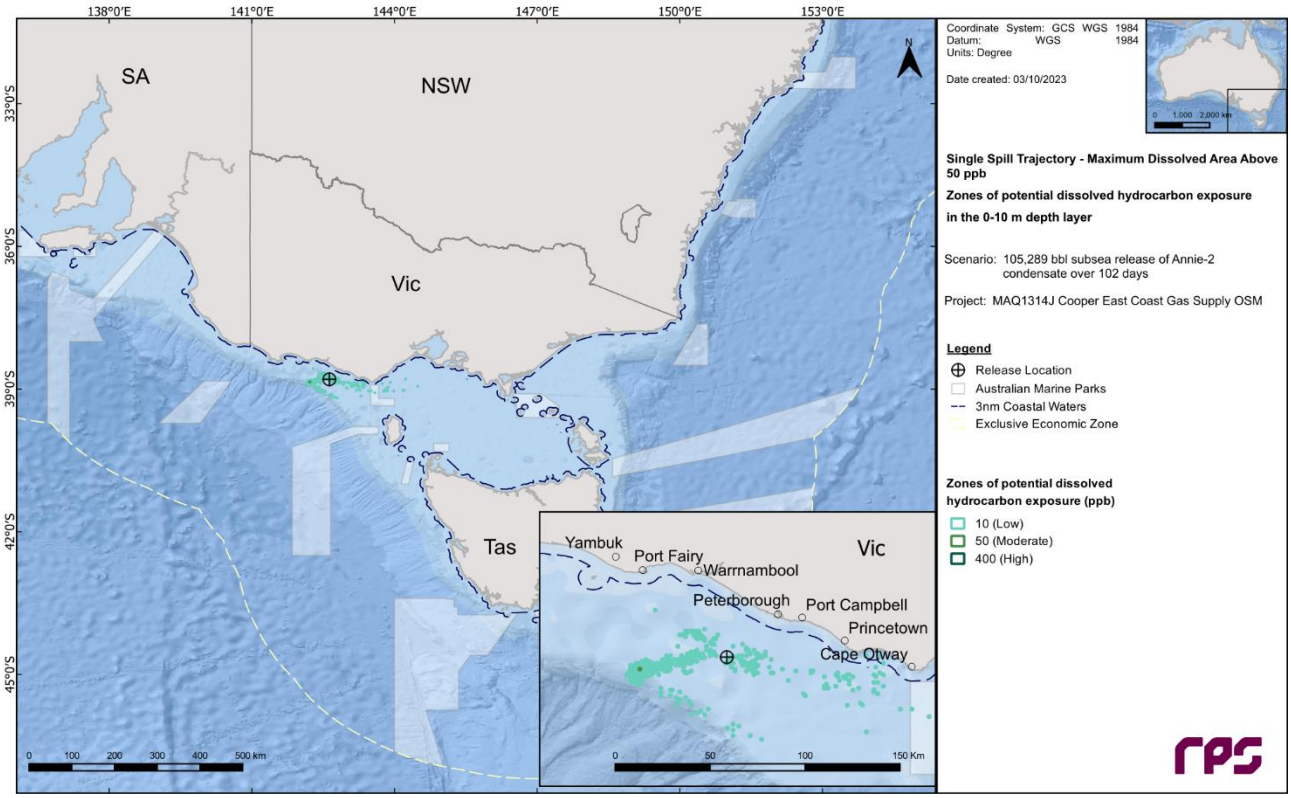

Figure 11.31 Zones of potential dissolved hydrocarbon exposure, for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

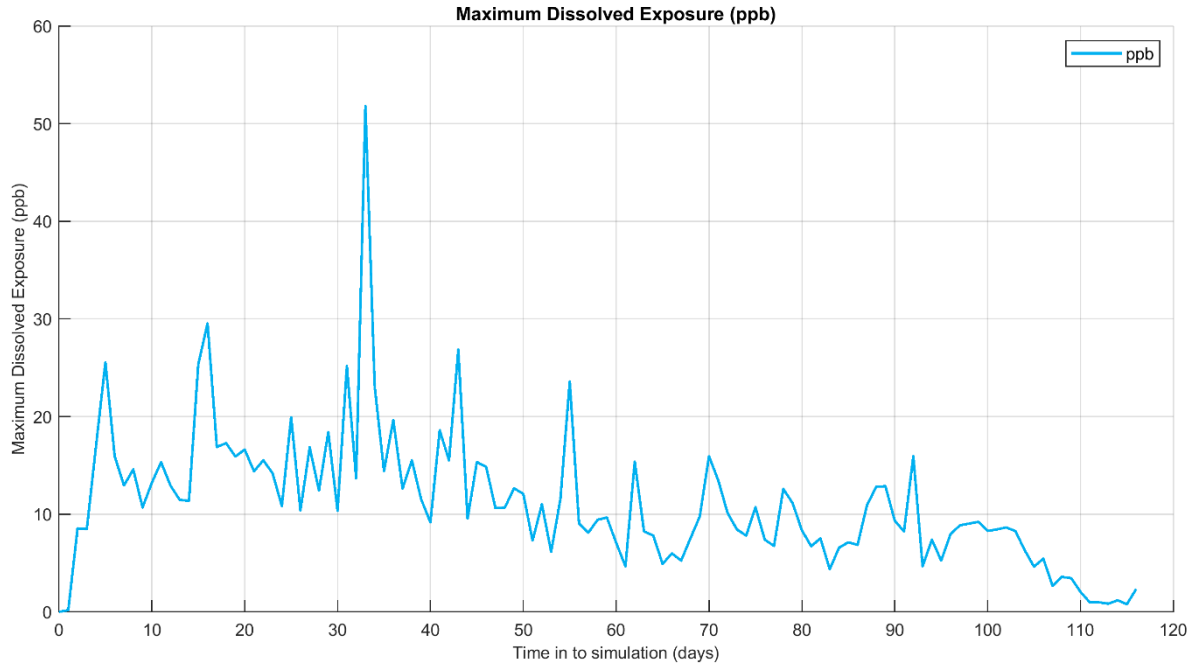

Figure 11.32 Time series of the dissolved hydrocarbon exposure area above each threshold for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

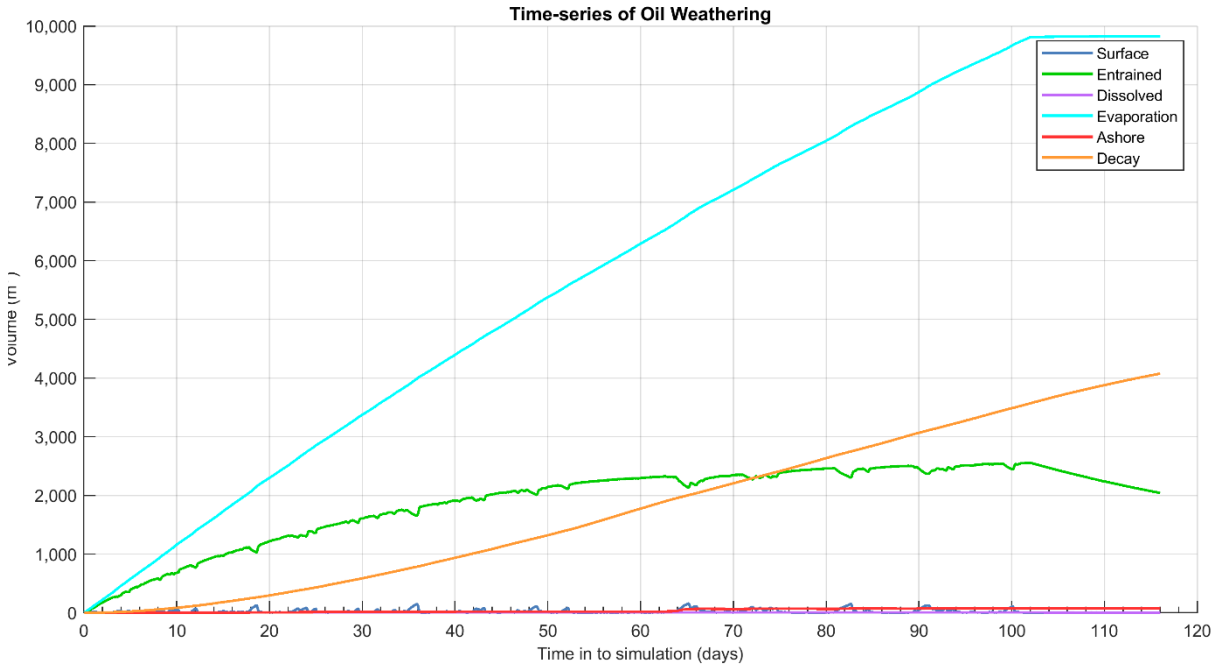

Figure 11.33 Predicted weathering and fates graph for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

12 RESULTS – SCENARIO 2 – 83,273 BBL (13,239 M^3) SUBSURFACE RELEASE FROM A LOSS OF WELL CONTROL AT PECTEN EAST-2

This scenario examined an 83,273 bbl (13,239 m^3) subsurface release of condensate over 102 days to represent a LOWC scenario at Pecten East-2 well. A total of 100 spill simulations were run per season (summer and winter) and each simulation was tracked for 116 days. The results are presented on a seasonal basis.

Sections 12.1 and 12.1.1 present the seasonal stochastic analysis and deterministic analysis results, respectively.

12.1 Stochastic Analysis

12.1.1 Floating Oil Exposure

Table 12.1 summarises the maximum distance travelled by floating oil on the sea surface at each threshold. The maximum distance and corresponding direction from the release location to the low (1–10 g/m^2) and moderate (10–50 g/m^2) exposure zones was 74.4 km (east-southeast, winter) and 15.2 km (east-southeast, winter), respectively. No high (>50 g/m^2) exposure zones were predicted during either summer or winter conditions.

Table 12.2 summarises the potential floating oil exposure to individual receptors.

In summer conditions, a total of 18 BIAs were predicted to be exposed to floating oil at, or above, the low threshold. Excluding the BIAs that the release location resides within (see Section 10.3), the highest probability (8%) of low exposure was predicted at the Short-tailed Shearwater – Foraging BIA. The minimum time before low exposure to the Short-tailed Shearwater – Foraging BIA was 11.63 days.

Additionally, during winter, a total of 18 BIAs were predicted to be exposed to floating oil at, or above, the low threshold. Again, the highest probability (20%) of low exposure for any BIA was predicted at the Short-tailed Shearwater – Foraging BIA. The minimum time before low exposure to the Short-tailed Shearwater – Foraging BIA was 8.46 days.

Table 12.3 presents the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor.

Figure 12.1 and Figure 12.2 present the zones of potential floating oil exposure for each season whilst Figure 12.3 to Figure 12.6 present the maximum residence time of floating oil exposure for the NOPSEMA thresholds.

Table 12.1 Maximum distance and direction from the release location to the edge of floating oil exposure. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Distance and direction travelled	Zones of potential floating oil exposure					
	Summer			Winter		
	Low	Moderate	High	Low	Moderate	High
Maximum distance (km) from release location	67.4	12.7	-	74.4	15.2	-
Maximum distance (km) from release location (99th percentile)	45.5	12.4	-	49.7	14.9	-
Direction	ESE	ESE	-	ESE	ESE	-

Table 12.2 Summary of the potential floating oil exposure to individual receptors. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer						Winter					
		Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)			Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)		
		Low	Mod.	High	Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
BIA	Antipodean Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Australasian Gannet - Foraging	-	-	-	-	-	-	2	-	-	10.29	-	-
	Black-browed Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Bullers Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Campbell Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Common Diving-petrel - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Indian Yellow-nosed Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Pygmy Blue Whale - Distribution*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Pygmy Blue Whale - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Pygmy Blue Whale - Foraging annual high use area*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Short-tailed Shearwater - Foraging	8	-	-	11.63	-	-	20	-	-	8.46	-	-
	Shy Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Southern Right Whale - Aggregation	100	78	-	0.04	0.75	-	100	62	-	0.13	0.58	-
	Southern Right Whale - Known Core Range*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Wandering Albatross - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	Wedge-tailed Shearwater - Foraging*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	White Shark - Distribution*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
	White Shark - Foraging	-	-	-	-	-	-	2	-	-	10.29	-	-
IBRA	Otway Plain	8	-	-	11.63	-	-	11	-	-	8.96	-	-
	Otway Ranges	-	-	-	-	-	-	8	-	-	8.46	-	-
	Warrnambool Plain	87	-	-	1.71	-	-	90	-	-	2.04	-	-
IMCRA	Otway*	100	100	-	0.04	0.08	-	100	100	-	0.04	0.08	-
KEF	Bonney Coast Upwelling	-	-	-	-	-	-	2	-	-	10.29	-	-

Receptor		Summer						Winter					
		Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)			Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)		
		Low	Mod.	High	Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
MNP	Twelve Apostles	51	-	-	4.38	-	-	65	-	-	2.54	-	-
Nearshore Waters	Colac Otway	8	-	-	11.63	-	-	16	-	-	8.46	-	-
	Corangamite	67	-	-	2.75	-	-	81	-	-	2.54	-	-
	Lady Julia Percy Island	-	-	-	-	-	-	2	-	-	10.29	-	-
	Moyne	64	-	-	1.71	-	-	59	-	-	2.04	-	-
	Warrnambool	2	-	-	69	-	-	6	-	-	6.63	-	-
State Waters	Victoria State Waters	100	-	-	0.67	-	-	100	-	-	0.83	-	-
Nearshore Waters (Sub-LGA)	Bay of Islands	56	-	-	1.71	-	-	56	-	-	2.04	-	-
	Cape Otway West	8	-	-	11.63	-	-	16	-	-	8.46	-	-
	Childers Cove	23	-	-	3.83	-	-	9	-	-	6.63	-	-
	Moonlight Head	56	-	-	4.38	-	-	73	-	-	5.54	-	-
	Port Campbell	44	-	-	2.75	-	-	59	-	-	2.54	-	-
	Warrnambool	-	-	-	-	-	-	2	-	-	6.83	-	-

*The release location resides within the receptor boundaries.

Table 12.3 Summary of the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer			Winter		
		Maximum residence time of floating oil exposure (hours)			Maximum residence time of floating oil exposure (hours)		
		Low	Moderate	High	Low	Moderate	High
BIA	Antipodean Albatross - Foraging*	21.92	1.08	-	21	1.42	-
	Australasian Gannet - Foraging	-	-	-	0.13	-	-
	Black-browed Albatross - Foraging*	21.92	1.08	-	21	1.42	-
	Bullers Albatross - Foraging*	21.92	1.08	-	21	1.42	-
	Campbell Albatross - Foraging*	21.92	1.08	-	21	1.42	-
	Common Diving-petrel - Foraging*	21.92	1.08	-	21	1.42	-
	Indian Yellow-nosed Albatross - Foraging*	21.92	1.08	-	21	1.42	-
	Pygmy Blue Whale - Distribution*	21.92	1.08	-	21	1.42	-
	Pygmy Blue Whale - Foraging*	21.92	1.08	-	21	1.42	-
	Pygmy Blue Whale - Foraging annual high use area*	21.92	1.08	-	21	1.42	-
	Short-tailed Shearwater - Foraging	0.33	-	-	0.25	-	-
	Shy Albatross - Foraging*	21.92	1.08	-	21	1.42	-
	Southern Right Whale - Aggregation	2.5	0.21	-	2.58	0.42	-
	Southern Right Whale - Known Core Range*	21.92	1.08	-	21	1.42	-
	Wandering Albatross - Foraging*	21.92	1.08	-	21	1.42	-
	Wedge-tailed Shearwater - Foraging*	21.92	1.08	-	21	1.42	-
	White Shark - Distribution*	21.92	1.08	-	21	1.42	-
	White Shark - Foraging	-	-	-	0.13	-	-
IBRA	Otway Plain	0.33	-	-	0.25	-	-
	Otway Ranges	-	-	-	0.17	-	-
	Warrnambool Plain	1.17	-	-	1.08	-	-
IMCRA	Otway*	21.92	1.08	-	21	1.42	-
KEF	Bonney Coast Upwelling	-	-	-	0.13	-	-
MNP	Twelve Apostles	0.71	-	-	0.71	-	-

Receptor		Summer			Winter		
		Maximum residence time of floating oil exposure (hours)			Maximum residence time of floating oil exposure (hours)		
		Low	Moderate	High	Low	Moderate	High
Nearshore Waters	Colac Otway	0.33	-	-	0.25	-	-
	Corangamite	0.71	-	-	1.08	-	-
	Lady Julia Percy Island	-	-	-	0.13	-	-
	Moyne	1.08	-	-	0.79	-	-
	Warrnambool	0.17	-	-	0.67	-	-
State Waters	Victoria State Waters	1.58	-	-	1.08	-	-
Nearshore Waters (Sub-LGA)	Bay of Islands	0.96	-	-	0.79	-	-
	Cape Otway West	0.33	-	-	0.25	-	-
	Childers Cove	1.08	-	-	0.67	-	-
	Moonlight Head	0.71	-	-	0.83	-	-
	Port Campbell	0.71	-	-	1.08	-	-
	Warrnambool	-	-	-	0.04	-	-

*The release location resides within the receptor boundaries.

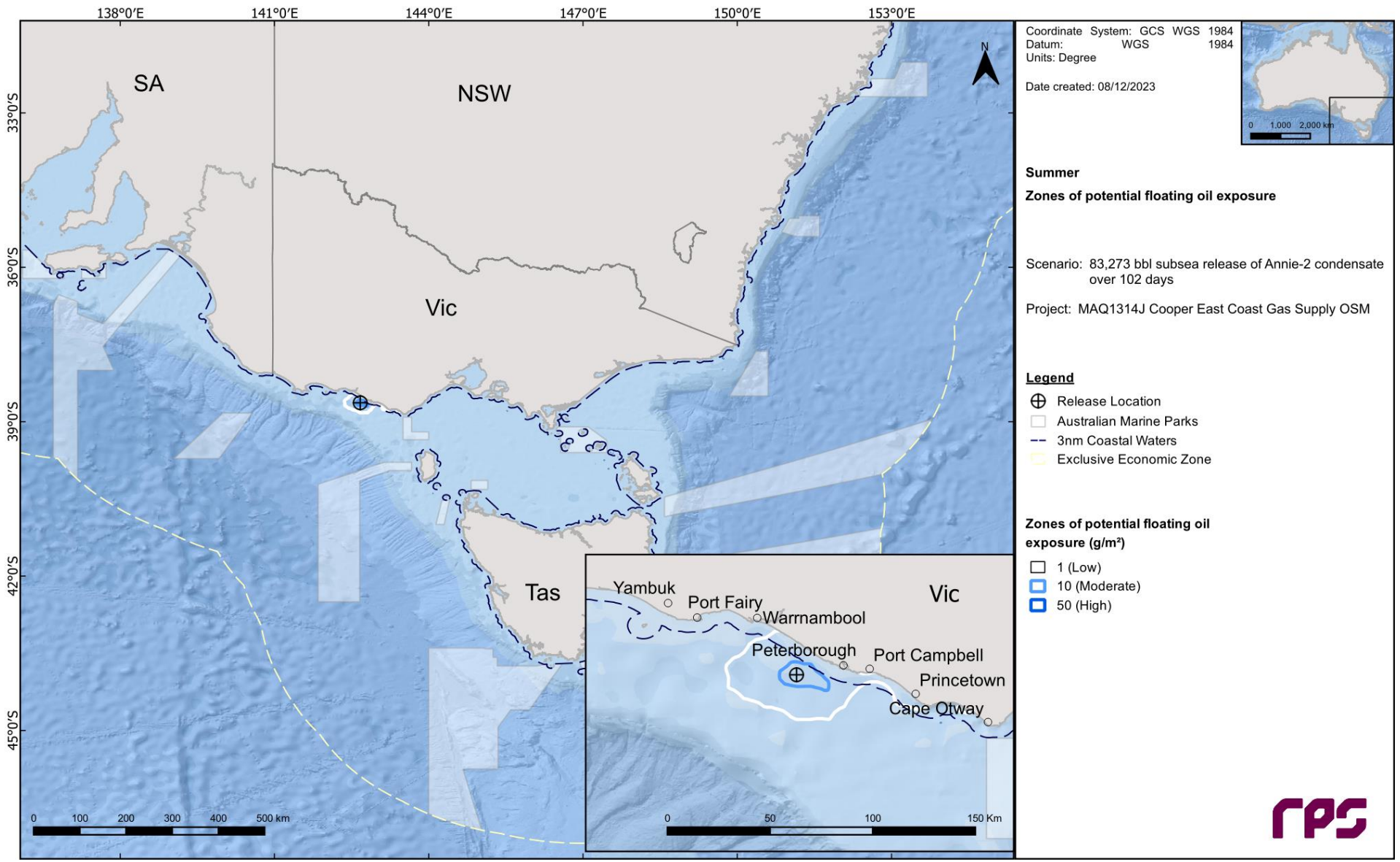

Figure 12.1 Zones of potential floating oil exposure in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

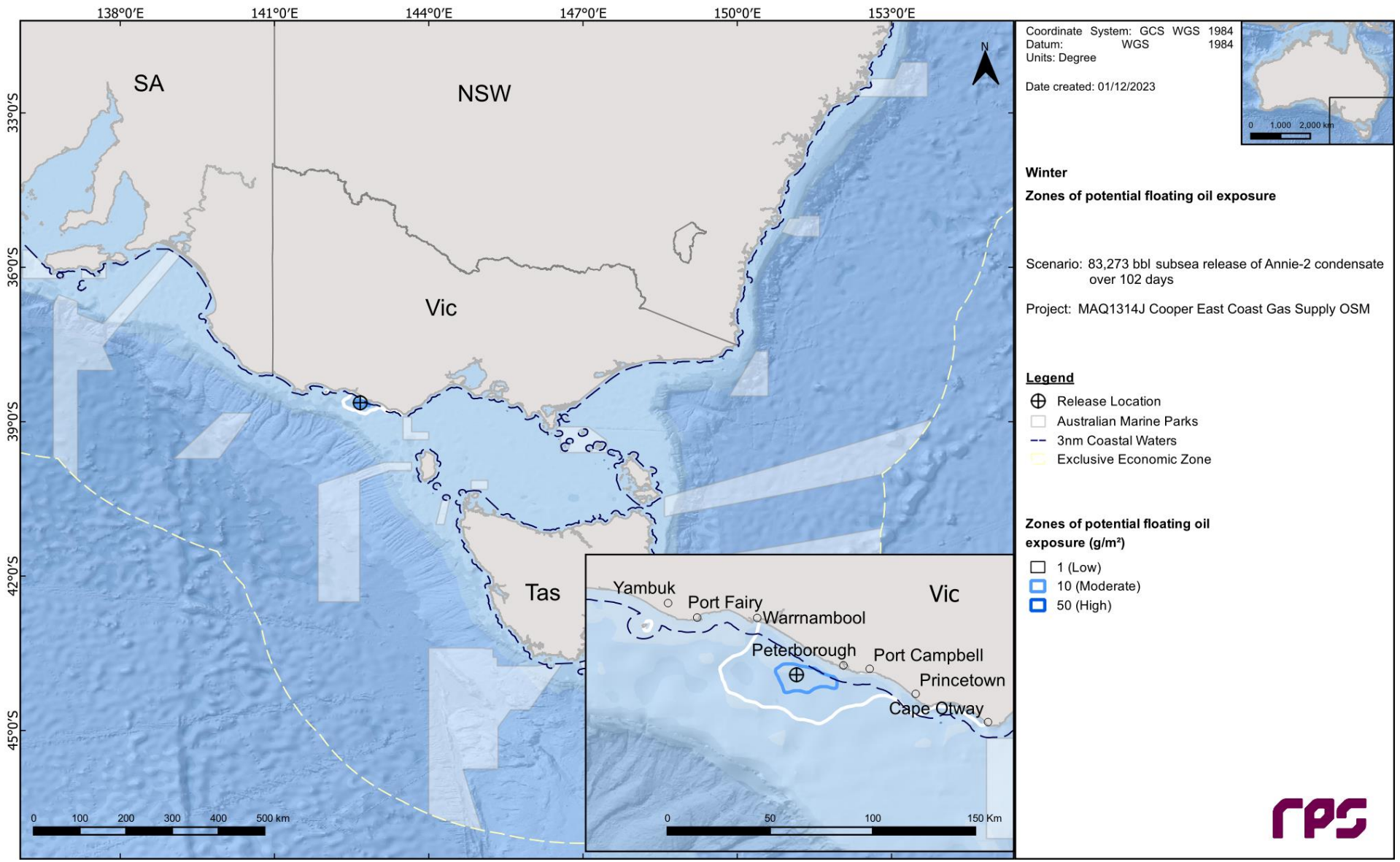

Figure 12.2 Zones of potential floating oil exposure in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

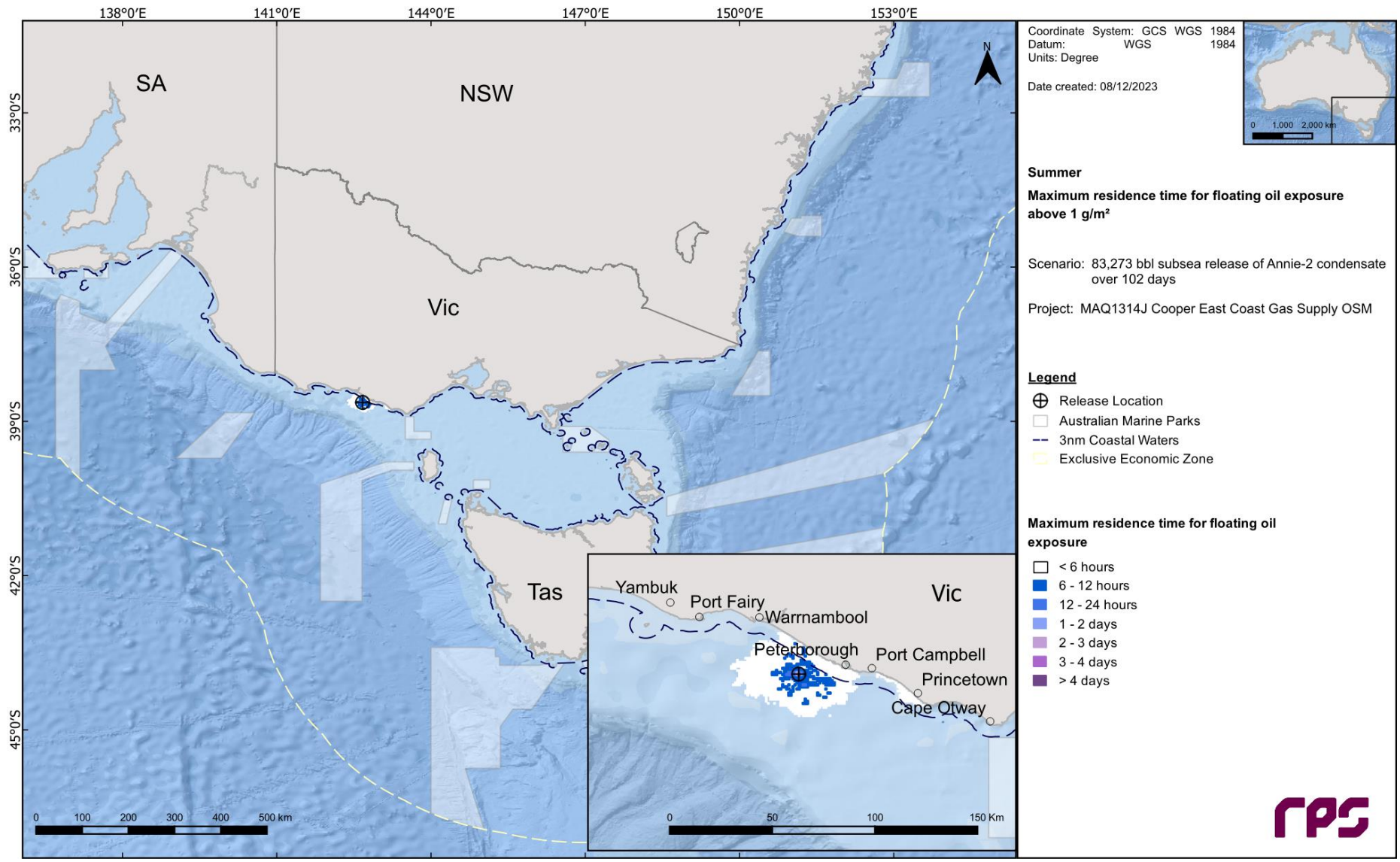

Figure 12.3 Maximum residence time of floating oil exposure above 1 g/m^2, in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

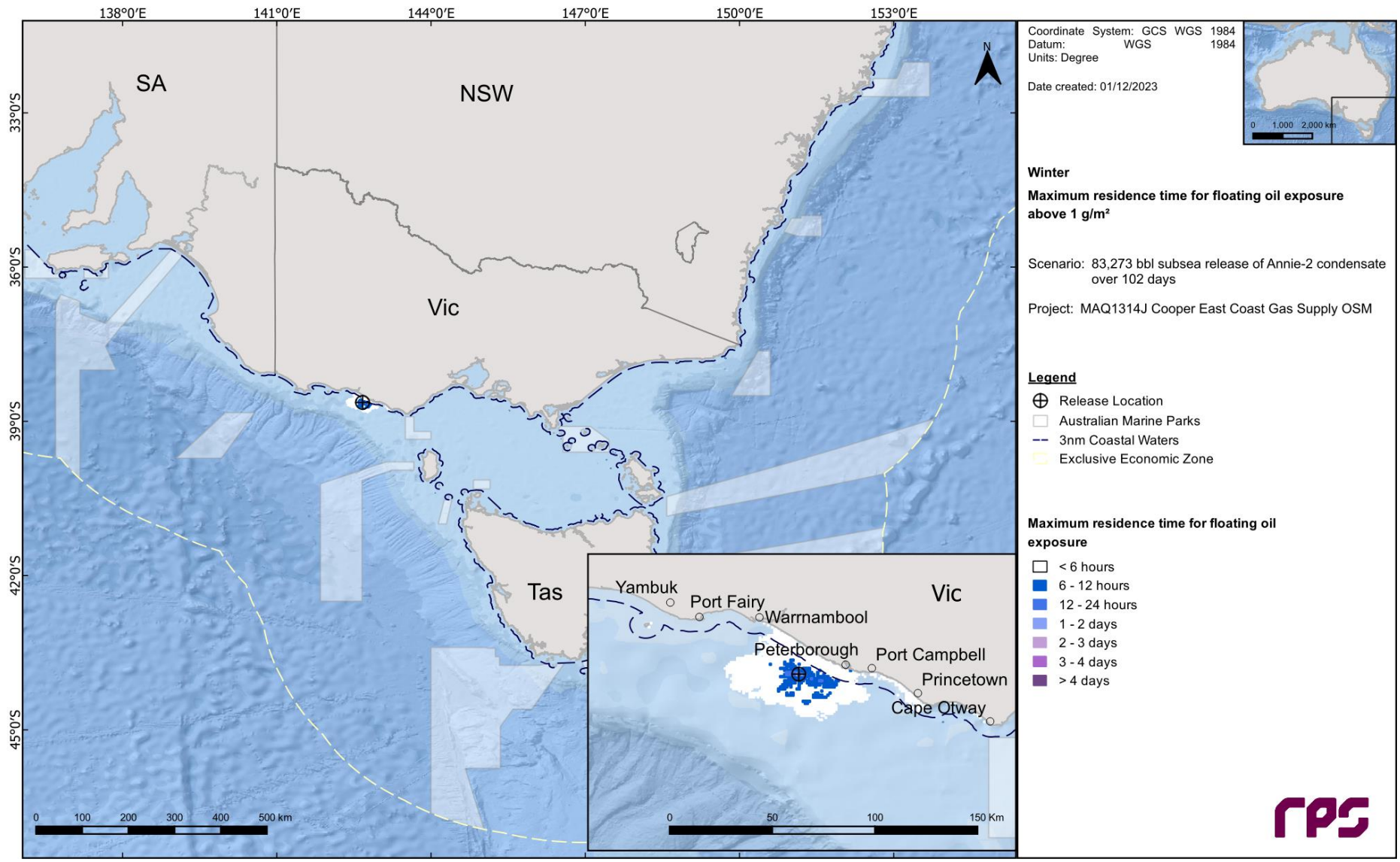

Figure 12.4 Maximum residence time of floating oil exposure above 1 g/m^2, in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

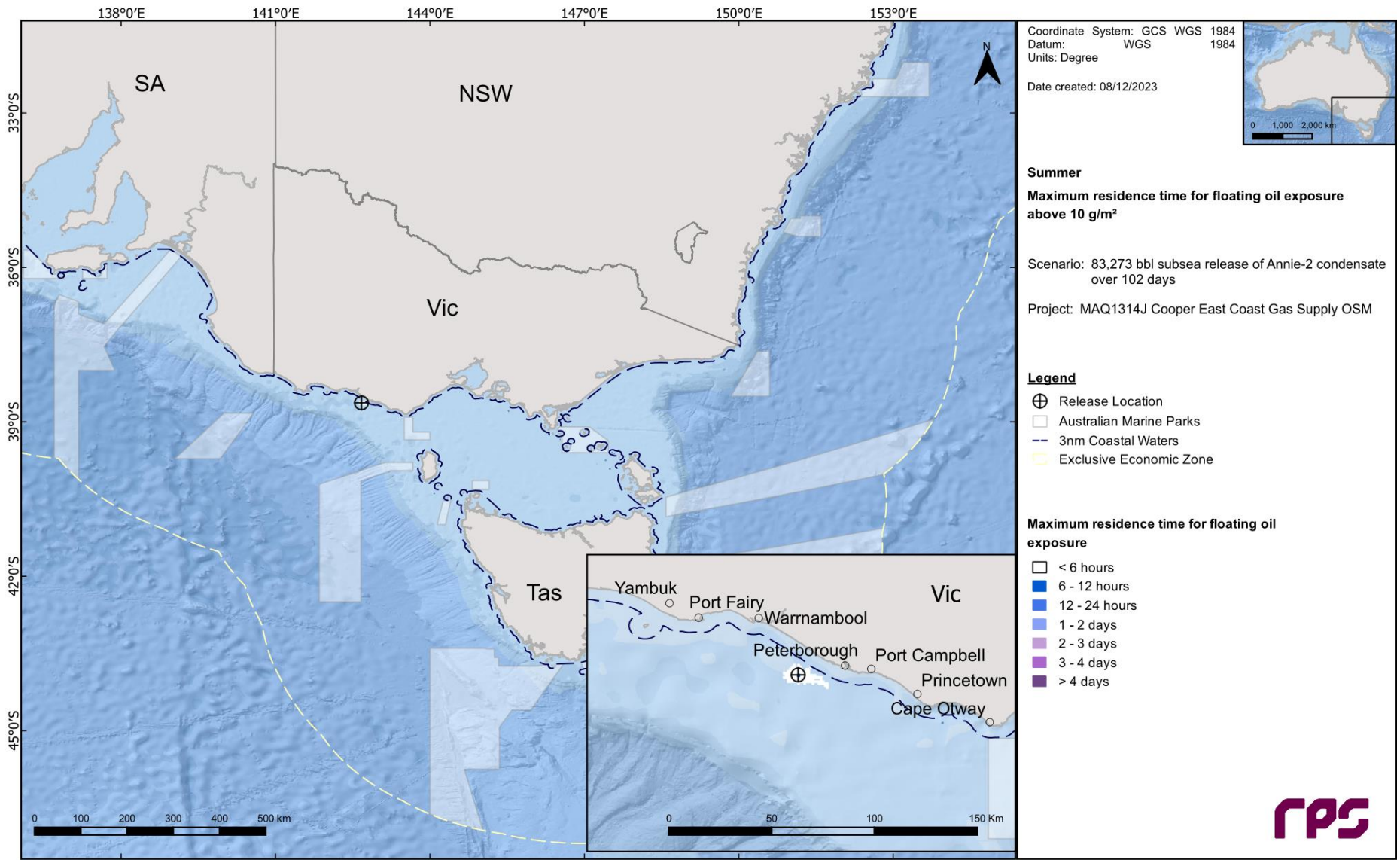

Figure 12.5 Maximum residence time of floating oil exposure above 10 g/m^2, in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

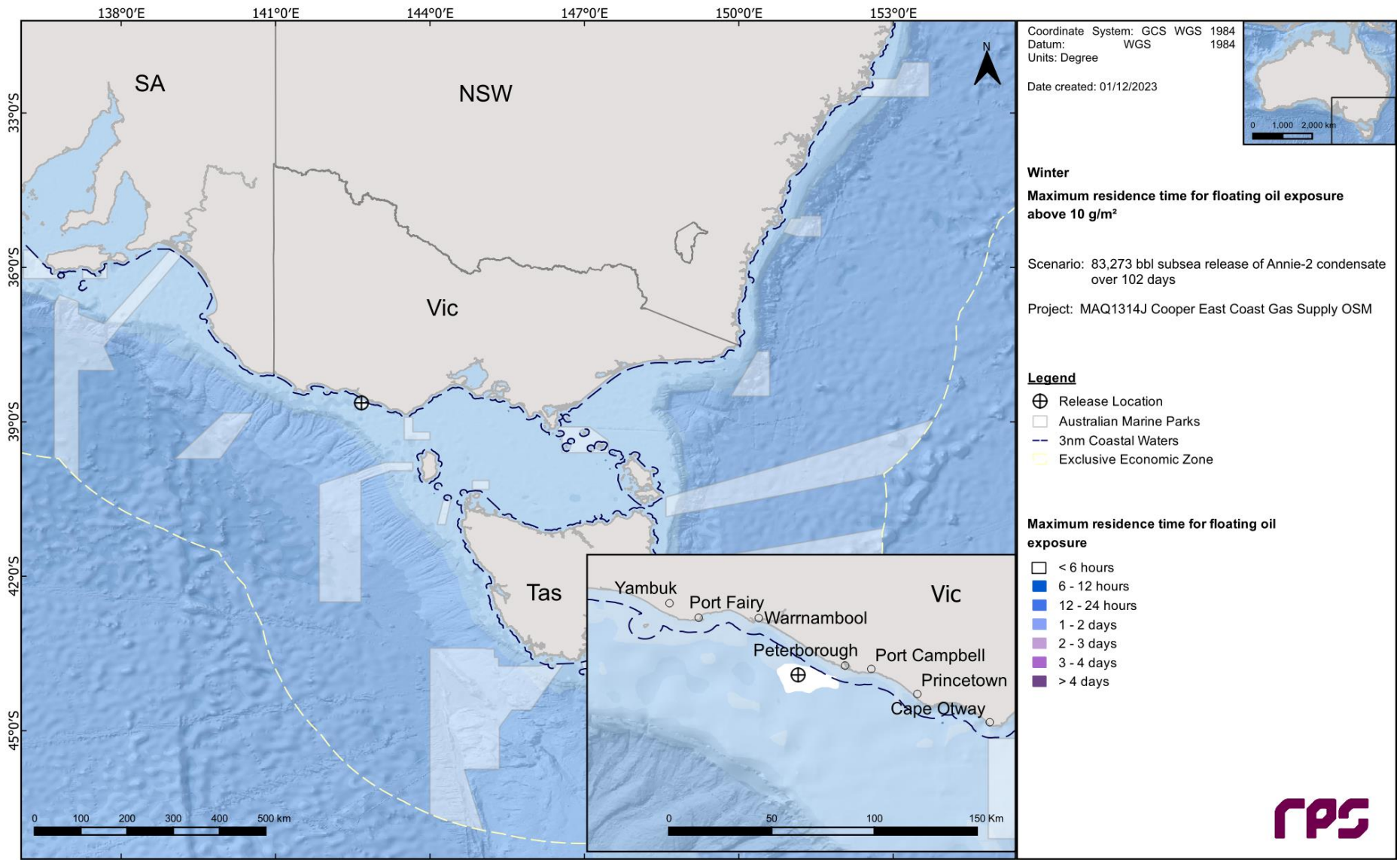

Figure 12.6 Maximum residence time of floating oil exposure above 10 g/m², in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

12.1.2 Shoreline Accumulation

Table 12.4 presents a summary of the potential shoreline accumulation. The probability of accumulation to any shoreline at, or above, the low (10 g/m^2) threshold was 100% throughout the year. The minimum time before oil accumulation at, or above, the low threshold was 1.17 days. The maximum total volume ashore for a single spill trajectory was 406.6 m^3, and the maximum length of shoreline with accumulation above the low, moderate and high thresholds were 269.0 km (summer), 75.0 km (summer) and 6.0 km (winter), respectively.

Table 12.5 and Table 12.6 summarises the shoreline accumulation on individual receptors during summer and winter, respectively.

During summer conditions, the shoreline segment of Bay of Islands and Moyne had the highest probabilities of accumulation above all three thresholds with probabilities of 100%, 99% and 14% for the low, moderate and high thresholds. It is acknowledged that Corangamite and Moyne LGA and Port Campbell sub-LGA demonstrated 100% for low threshold shoreline accumulation. The minimum time for low threshold shoreline accumulation at these receptors was 1.21 days (Bay of Islands and Moyne LGAs).

Alternatively, in winter the shoreline segment with the highest probability of accumulation above all three thresholds was Corangamite with probabilities of 100%, 100% and 23% for the low, moderate and high thresholds. The minimum time for low threshold shoreline accumulation at Bay of Islands and Moyne LGA was 1.17 days.

The maximum potential shoreline loadings above each shoreline thresholds are presented in Figure 12.7 and Figure 12.8 for summer and winter respectively.

Table 12.4 Summary of oil accumulation across all shorelines. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Shoreline Statistics	Summer	Winter
Probability of accumulation on any shoreline (%)	100	100
Absolute minimum time for visible oil to shore (days)	1.21	1.17
Maximum total volume of hydrocarbons ashore (m^3)	347.3	406.6
Average total volume of hydrocarbons ashore (m^3)	169.8	204.1
Maximum length of the shoreline at **10 g/m^2** (km)	269.0	251.0
Average shoreline length (km) at **10 g/m^2** (km)	150.8	154.0
Maximum length of the shoreline at **100 g/m^2** (km)	78.0	76.0
Average shoreline length (km) at **100 g/m^2** (km)	37.9	42.5
Maximum length of the shoreline at **1,000 g/m^2** (km)	4.0	6.0
Average shoreline length (km) at **1,000 g/m^2** (km)	2.4	2.0

Table 12.5 Summary of oil accumulation on individual shoreline receptors. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

Shoreline Receptor		Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
		Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
LGA Shoreline	Anglesea	7	-	-	54.54	-	-	3	27	0.5	2.8	5.1	-	-	9.1	-	-
	Apollo Bay	62	-	-	10.92	-	-	6	73	1.9	5.5	6	-	-	13.6	-	-
	Bass Coast	6	-	-	20.38	-	-	2	22	0.3	1.3	1.4	-	-	3.6	-	-
	Bay of Islands	100	99	14	1.21	1.50	26.46	134	2,545	52	142.8	24.3	11.4	2	29.1	21.8	3.6
	Bega Valley	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Colac Otway	92	60	-	4.46	12.17	-	21	471	21.1	59.3	26.6	7.3	-	54.5	17.3	-
	Corangamite	100	99	-	1.75	3.21	-	81	936	61.6	118.8	43.6	14.3	-	56.3	26.4	-
	East Gippsland	10	-	-	80.50	-	-	2	25	0.6	1.8	1.9	-	-	3.6	-	-
	French Island	2	-	-	53.83	-	-	2	21	< 0.1	0.5	0.9	-	-	0.9	-	-
	Gabo Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Glenelg	53	12	-	6.92	10.58	-	9	250	9.4	23.2	16.3	2.7	-	47.2	6.4	-
	Glennie Group	19	-	-	24.92	-	-	4	39	0.5	1.9	2.1	-	-	5.5	-	-
	Grant	4	-	-	22.33	-	-	2	25	0.6	5.2	4.3	-	-	9.1	-	-
	Greater Geelong	14	5	-	32.04	57.71	-	6	137	1.8	9.6	6.4	1.6	-	14.5	1.8	-
	Hogan Island Group	1	-	-	110.67	-	-	1	11	0.1	0.4	0.9	-	-	0.9	-	-
	Kanowna Island	9	-	-	92.04	-	-	3	16	0.2	0.7	1.2	-	-	1.8	-	-
	King Island	2	-	-	84.63	-	-	1	14	0.4	1.4	1.4	-	-	1.8	-	-
	Lady Julia Percy Island	60	23	-	4.21	16.67	-	30	195	2.8	5.8	4.3	1.6	-	6.4	2.7	-
	Laurence Rocks	45	-	-	8.67	-	-	19	78	0.7	1.9	2.1	-	-	2.7	-	-
	Moncoeur Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Montague Island	1	-	-	87.79	-	-	2	15	< 0.1	0.4	0.9	-	-	0.9	-	-
	Mornington Peninsula	18	-	-	38.29	-	-	2	32	1	5.2	4.8	-	-	14.5	-	-
	Moyne	100	99	14	1.21	1.50	26.33	71	2,545	69.4	168.1	40.1	14.6	2.2	81.8	31.8	3.6
	Norman Island	8	-	-	21.96	-	-	4	29	0.2	0.8	1.4	-	-	2.7	-	-
	Phillip Island	10	-	-	45.67	-	-	2	33	0.4	3.1	2.3	-	-	7.3	-	-
	Rodondo Island	12	-	-	71.58	-	-	4	36	0.2	0.8	1.1	-	-	1.8	-	-
	Shellback Island	1	-	-	31.13	-	-	3	11	< 0.1	0.2	0.9	-	-	0.9	-	-
	Skull Rock	3	-	-	92.04	-	-	3	16	< 0.1	0.3	0.9	-	-	0.9	-	-
	South Gippsland	28	-	-	20.17	-	-	3	77	2.3	13.4	9.7	-	-	29.1	-	-
	Surf Coast	13	2	-	24.96	58.96	-	3	116	1.5	11.3	10.4	0.9	-	24.5	0.9	-
	Warrnambool	81	23	-	3.50	12.17	-	20	738	6.1	28.2	11.6	3.2	-	22.7	6.4	-
Sub-LGA Shoreline	Bega Valley	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cape Conran	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cape Howe / Mallacoota	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cape Liptrap (NW)	16	-	-	20.17	-	-	3	77	0.7	4.2	4.4	-	-	10	-	-
	Cape Nelson	53	12	-	6.92	10.58	-	12	250	8.2	22.3	14.5	2.7	-	30.9	6.4	-
	Cape Otway West	92	60	-	4.46	12.17	-	38	471	18.4	53.9	20.4	7.3	-	34.5	17.3	-
	Cape Patton	33	-	-	16.46	-	-	4	71	1.2	8	5.6	-	-	17.3	-	-
	Childers Cove	96	65	2	1.42	3.88	26.33	50	1,577	17.9	87	15.6	5.3	1.4	24.5	12.7	1.8
	Croajingolong (West)	5	-	-	86.63	-	-	2	24	0.2	0.8	0.9	-	-	0.9	-	-
	Discovery Bay (East)	4	-	-	27.75	-	-	2	17	0.3	1.6	2	-	-	4.5	-	-
	Discovery Bay (West)	2	-	-	29.83	-	-	2	20	0.3	1.9	4.1	-	-	5.5	-	-
	French Island / Crib Point	1	-	-	96.63	-	-	2	14	< 0.1	0.2	0.9	-	-	0.9	-	-

Shoreline Receptor	Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
	Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
Kilcunda	5	-	-	21.13	-	-	2	22	0.2	0.6	0.9	-	-	0.9	-	-
Lorne	13	-	-	24.96	-	-	3	17	0.5	1.9	2	-	-	5.5	-	-
Marlo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moonlight Head	98	94	-	2.50	4.58	-	84	781	34	83.6	20.4	8.5	-	30	14.5	-
Mornington Peninsula (S)	11	-	-	39.96	-	-	3	32	0.4	2.7	4	-	-	7.3	-	-
Mornington Peninsula (SW)	16	-	-	38.29	-	-	2	28	0.5	2.7	2.5	-	-	9.1	-	-
New South Wales	1	-	-	87.79	-	-	2	15	0.3	0.9	0.9	-	-	0.9	-	-
Point Hicks	9	-	-	80.50	-	-	3	25	0.3	0.8	1.6	-	-	2.7	-	-
Port Campbell	100	91	-	1.75	3.21	-	79	936	27.8	62.2	23.3	6.7	-	26.4	15.4	-
Port Fairy	64	8	-	7.75	13.38	-	11	249	4	15	7.8	2.3	-	26.4	4.5	-
Port Phillip (Queenscliff)	14	-	-	32.04	-	-	3	30	0.5	1.2	1.8	-	-	2.7	-	-
Port Phillip (Sorrento Shore)	1	-	-	50.13	-	-	2	11	0.2	0.5	0.9	-	-	0.9	-	-
Portland Bay (East)	13	-	-	20.29	-	-	3	26	0.5	2.1	2	-	-	4.5	-	-
Portland Bay (West)	22	-	-	24.5	-	-	3	31	0.7	2.2	2.8	-	-	6.4	-	-
South Australia State Waters	4	-	-	22.33	-	-	2	25	0.7	6	4.3	-	-	9.1	-	-
Tasmania State Waters	3	-	-	84.63	-	-	1	14	0.4	1.6	1.2	-	-	1.8	-	-
Torquay	8	5	-	32.96	57.71	-	6	137	2.2	16.2	18.9	2	-	26.4	2.7	-
Venus Bay	2	-	-	20.38	-	-	2	14	0.2	0.8	1.8	-	-	2.7	-	-
Victoria State Waters	100	100	14	1.21	1.5	26.33	39	2,545	169.2	347.3	136.8	34.4	2.2	244.4	70.9	3.6
Waratah Bay	4	-	-	97.17	-	-	2	30	0.2	0.7	0.9	-	-	0.9	-	-
Warrnambool	67	9	-	3.83	12.17	-	10	179	2.8	14.9	7.4	2	-	20.9	5.5	-
Westernport	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsons Promontory (East)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsons Promontory (West)	28	-	-	21.54	-	-	5	74	1.7	9.1	7	-	-	19.1	-	-

Table 12.6 Summary of oil accumulation on individual shoreline receptors. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

Shoreline Receptor		Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
		Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
LGA Shoreline	Anglesea	6	-	-	14.71	-	-	2	43	0.3	3.9	4.1	-	-	9.1	-	-
	Apollo Bay	89	-	-	7.17	-	-	8	92	2.5	7.2	6.4	-	-	14.5	-	-
	Bass Coast	9	-	-	31.33	-	-	2	22	0.4	1.6	1.5	-	-	3.6	-	-
	Bay of Islands	100	97	11	1.17	2.42	36.13	119	1,431	45.6	136.7	21.4	10	1.4	29.1	20.9	3.6
	Bega Valley	17	-	-	35.21	-	-	2	32	0.5	1.6	1.9	-	-	3.6	-	-
	Colac Otway	98	87	-	4.08	8.54	-	27	394	29.3	67.8	34.1	7.7	-	63.6	15.4	-
	Corangamite	100	100	23	2.04	3.96	41.5	132	1,603	102.4	237.4	48.9	19.5	1.5	57.2	35.4	5.5
	East Gippsland	46	-	-	40.92	-	-	3	66	1.4	4.6	3.2	-	-	6.4	-	-
	French Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Gabo Island	15	-	-	41.83	-	-	4	33	0.2	0.9	1.8	-	-	2.7	-	-
	Glenelg	19	1	-	25.96	108.21	-	4	109	3.9	16.3	12.6	0.9	-	37.3	0.9	-
	Glennie Group	48	-	-	24.75	-	-	5	41	0.7	2.3	2.5	-	-	7.3	-	-
	Grant	4	-	-	58.38	-	-	2	25	0.8	3.9	2.7	-	-	5.5	-	-
	Greater Geelong	5	3	-	15.58	17.21	-	3	187	0.7	12.3	8.7	3	-	14.5	3.6	-
	Hogan Island Group	1	-	-	82.46	-	-	2	12	0.2	0.7	2.7	-	-	2.7	-	-
	Kanowna Island	29	-	-	27.63	-	-	5	41	0.4	1	2	-	-	2.7	-	-
	King Island	10	-	-	33.79	-	-	2	26	0.8	2.7	2.2	-	-	4.5	-	-
	Lady Julia Percy Island	34	11	-	10	10.5	-	22	234	2.1	7	3.9	1.6	-	6.4	2.7	-
	Laurence Rocks	13	-	-	21.54	-	-	9	37	0.3	1	1.8	-	-	2.7	-	-
	Moncoeur Islands	2	-	-	92.5	-	-	2	12	0.1	0.4	0.9	-	-	0.9	-	-
	Montague Island	6	-	-	65.96	-	-	4	25	0.2	0.8	1.5	-	-	2.7	-	-
	Mornington Peninsula	33	-	-	14.08	-	-	3	44	1.2	5.9	3.5	-	-	13.6	-	-
	Moyne	100	99	13	1.17	2.42	12.08	77	1,431	55.3	184.3	32.4	11.4	1.3	98.1	36.3	3.6
	Norman Island	17	-	-	25.75	-	-	4	30	0.2	0.9	1.7	-	-	2.7	-	-
	Phillip Island	39	-	-	15.38	-	-	3	47	0.9	3.2	2.5	-	-	7.3	-	-
	Rodondo Island	34	-	-	16.58	-	-	6	48	0.3	1.3	1.5	-	-	2.7	-	-
	Shellback Island	2	-	-	49.17	-	-	3	12	< 0.1	0.2	0.9	-	-	0.9	-	-
	Skull Rock	27	-	-	27.63	-	-	5	23	0.2	0.5	1.1	-	-	1.8	-	-
	South Gippsland	65	1	-	20.88	72.54	-	5	106	3.5	12.2	9.1	0.9	-	23.6	0.9	-
	Surf Coast	9	2	-	14.71	18.29	-	2	124	0.9	13	8.8	0.9	-	24.5	0.9	-
	Warrnambool	56	23	1	5.13	6.92	12.13	25	1,185	7.5	43.2	11	3.6	0.9	25.4	11.8	0.9
Sub-LGA Shoreline	Bega Valley	17	-	-	35.21	-	-	2	32	0.5	1.6	1.9	-	-	3.6	-	-
	Cape Conran	1	-	-	70.46	-	-	1	11	< 0.1	0.4	0.9	-	-	0.9	-	-
	Cape Howe / Mallacoota	14	-	-	40.92	-	-	3	16	0.2	0.8	1	-	-	1.8	-	-
	Cape Liptrap (NW)	51	-	-	20.88	-	-	5	50	0.8	2.4	2.4	-	-	7.3	-	-
	Cape Nelson	18	1	-	25.96	108.21	-	5	109	2.9	11.8	9.8	0.9	-	24.5	0.9	-
	Cape Otway West	98	87	-	4.08	8.54	-	51	394	25.2	49.6	25	7.7	-	32.7	15.4	-
	Cape Patton	60	1	-	13.75	44.13	-	5	102	1.7	13.1	5.3	0.9	-	19.1	0.9	-
	Childers Cove	80	30	2	2.54	4.92	12.08	30	1,185	10.1	99	11.4	5.6	1.4	24.5	17.3	1.8
	Croajingolong (West)	22	-	-	47	-	-	3	37	0.3	1	1	-	-	1.8	-	-
	Discovery Bay (East)	1	-	-	70.25	-	-	2	16	0.4	1.7	2.7	-	-	2.7	-	-
	Discovery Bay (West)	1	-	-	65.79	-	-	2	12	0.4	1.7	3.6	-	-	3.6	-	-
	French Island / Crib Point	3	-	-	28	-	-	2	19	< 0.1	0.3	0.9	-	-	0.9	-	-

Shoreline Receptor	Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
	Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
Kilcunda	4	-	-	46.42	-	-	2	16	0.2	0.7	1.1	-	-	1.8	-	-
Lorne	8	-	-	20	-	-	2	28	0.3	1.5	2.2	-	-	3.6	-	-
Marlo	12	-	-	69.75	-	-	2	23	0.2	0.6	0.9	-	-	0.9	-	-
Moonlight Head	100	100	21	2.71	5.96	44.92	154	1,603	63.9	167.5	25.5	11.4	1.2	30.9	15.4	4.5
Mornington Peninsula (S)	29	-	-	14.08	-	-	4	44	0.6	3.8	2.7	-	-	10.9	-	-
Mornington Peninsula (SW)	19	-	-	17.42	-	-	3	28	0.5	1.4	1.5	-	-	2.7	-	-
New South Wales	20	-	-	35.21	-	-	2	32	0.6	2	2	-	-	4.5	-	-
Point Hicks	41	-	-	41.04	-	-	6	66	0.7	2.2	2.3	-	-	3.6	-	-
Port Campbell	100	91	10	2.04	3.96	41.5	109	1,348	38.4	108.6	23	8.9	1	26.4	21.8	1.8
Port Fairy	40	17	-	10.21	13.29	-	15	379	5.6	23.9	10	2.1	-	30	4.5	-
Port Phillip (Queenscliff)	5	-	-	20.08	-	-	2	35	0.1	1.1	1.6	-	-	2.7	-	-
Port Phillip (Sorrento Shore)	2	-	-	35.42	-	-	2	12	0.1	0.4	0.9	-	-	0.9	-	-
Portland Bay (East)	10	-	-	12.79	-	-	3	38	0.8	3.7	5.3	-	-	13.6	-	-
Portland Bay (West)	8	-	-	27.71	-	-	4	55	1.1	5.7	6.6	-	-	19.1	-	-
South Australia State Waters	4	-	-	58.38	-	-	2	25	0.9	4.3	2.7	-	-	5.5	-	-
Tasmania State Waters	11	-	-	33.79	-	-	2	26	0.7	3	2.2	-	-	4.5	-	-
Torquay	5	3	-	14.79	17.21	-	4	187	1.1	20.4	16.7	3.6	-	29.1	4.5	-
Venus Bay	7	-	-	31.33	-	-	2	22	0.2	1.2	1.3	-	-	1.8	-	-
Victoria State Waters	100	100	29	1.17	2.42	12.08	42	1,603	203.2	406.3	139.2	38.6	1.8	228.1	69.1	5.5
Waratah Bay	4	-	-	48.04	-	-	2	27	0.1	0.8	0.9	-	-	0.9	-	-
Warrnambool	46	15	-	7	13.38	-	14	470	4.2	34.7	7.7	2.6	-	28.2	9.1	-
Westernport	2	-	-	49.67	-	-	2	11	0.2	0.7	1.4	-	-	1.8	-	-
Wilsons Promontory (East)	1	-	-	107.75	-	-	1	18	0.1	0.9	1.8	-	-	1.8	-	-
Wilsons Promontory (West)	62	1	-	24	72.54	-	7	106	2.7	8.8	7.4	0.9	-	18.2	0.9	-

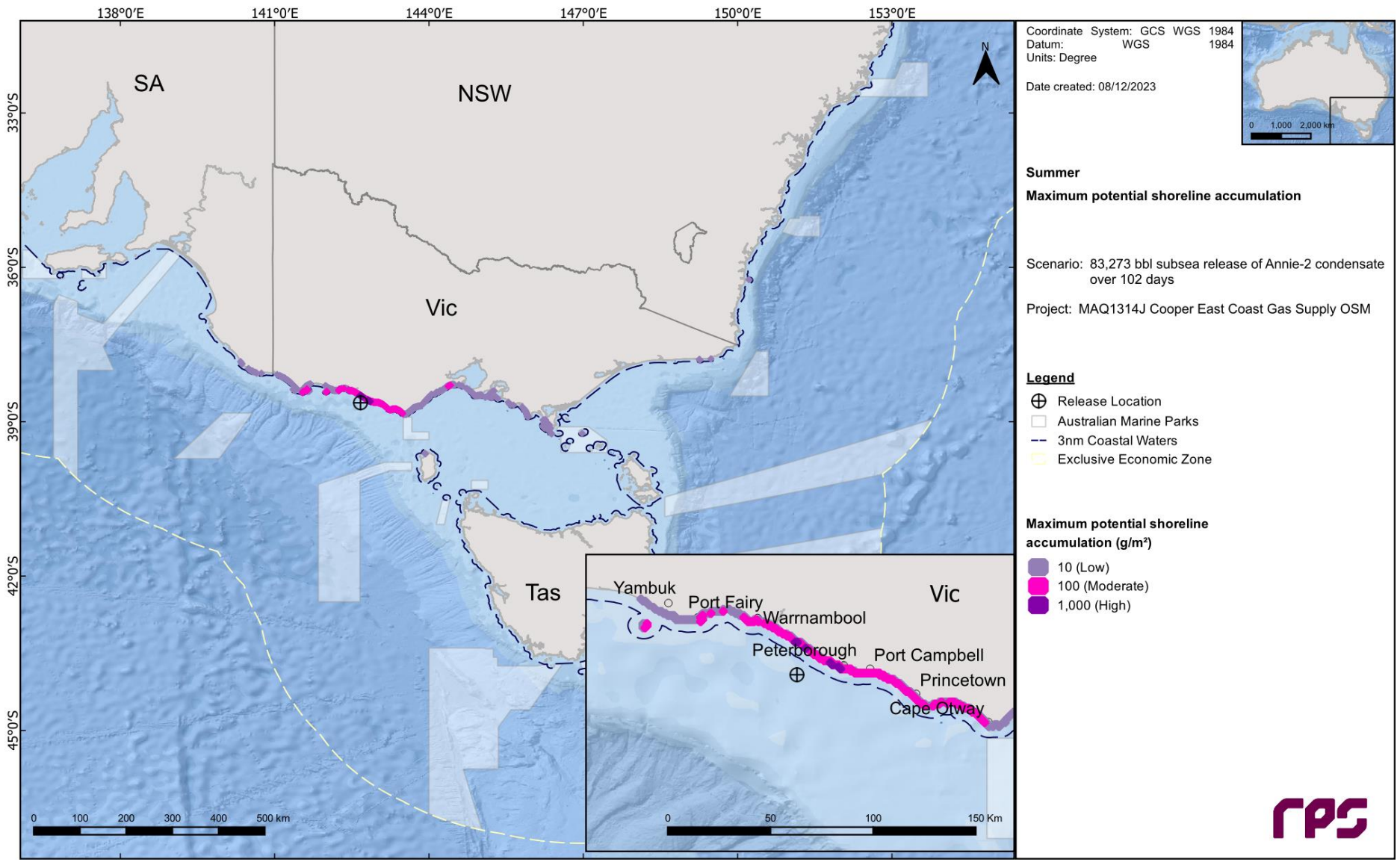

Figure 12.7 Maximum potential shoreline accumulation in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

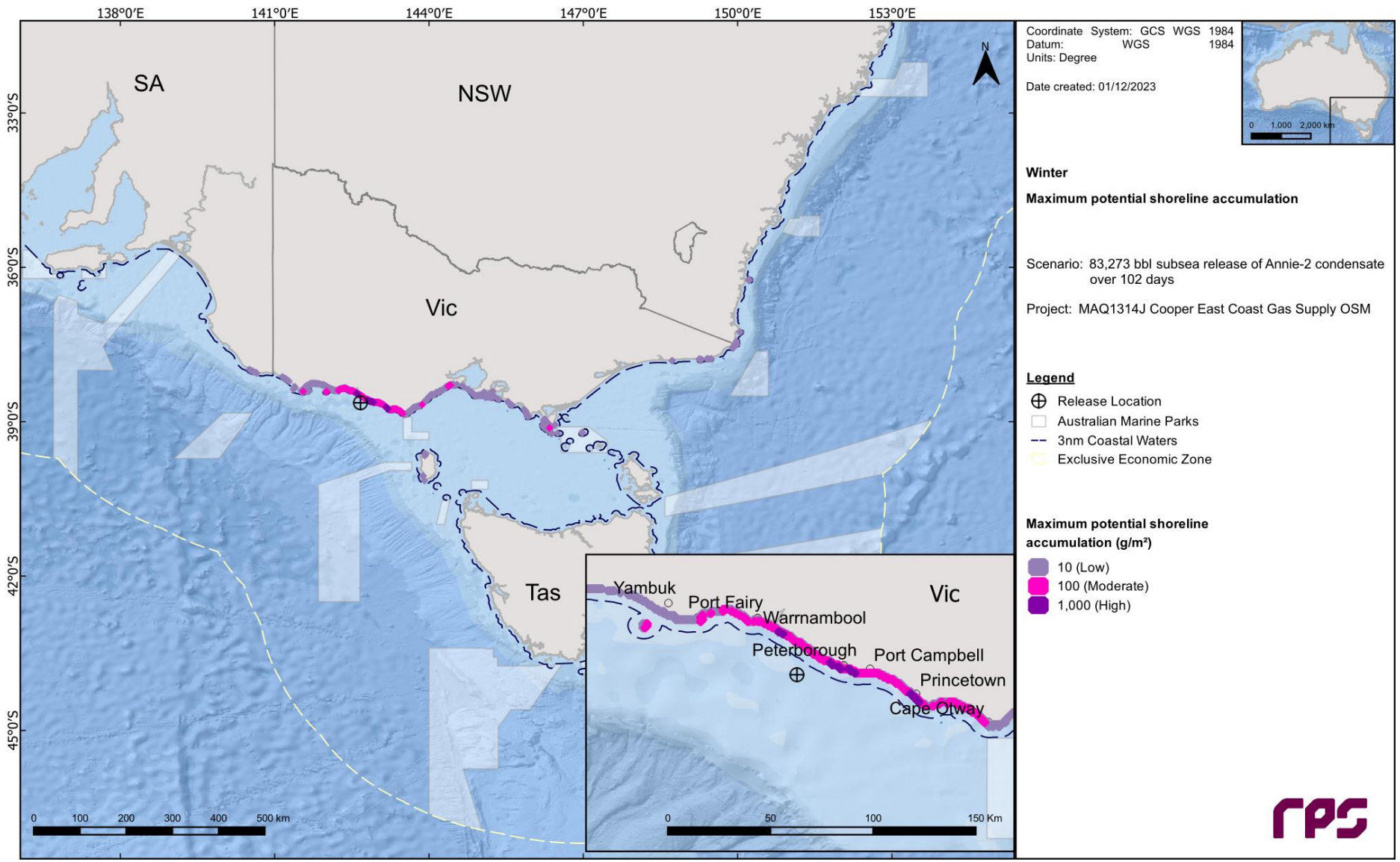

Figure 12.8 Maximum potential shoreline accumulation in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

12.1.3 In-water exposure

12.1.3.1 Dissolved Hydrocarbons

Table 12.7 summarises the potential in-water exposure to individual receptors from dissolved hydrocarbons in the 0-10 m layer.

A total of 20 BIAs were predicted to be exposed to dissolved hydrocarbon at, or above, the low threshold during both winter and summer. Excluding the BIAs that the release location resides within (see Section 10.3), the highest probability of low exposure was 21% during summer (Short-tailed Shearwater - Foraging,) and 59% during winter (Short-tailed Shearwater - Foraging).

The maximum dissolved hydrocarbon concentration at any given receptor(s) was predicted to be 50.1 ppb and 51.7 ppb during summer and winter respectively.

Table 12.8 presents the predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors, in the 0-10 m depth layer, for all thresholds assessed.

Figure 12.9 and Figure 12.10 present the zones of potential dissolved hydrocarbon exposure for the 0-10 m depth layer for each season whilst Figure 12.11to Figure 12.12 present the maximum residence time of dissolved hydrocarbon exposure for the NOPSEMA thresholds.

Table 12.7 Probability of dissolved hydrocarbons exposure to marine based receptors in the 0–10 m depth. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer				Winter			
		Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure(%)			Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)		
			Low	Moderate	High		Low	Moderate	High
AMP	Apollo	13.3	2	-	-	22.8	4	-	-
BIA	Antipodean Albatross - Foraging*	40.4	28	-	-	39.5	35	-	-
	Australasian Gannet - Foraging	18.9	2	-	-	20.9	2	-	-
	Black-browed Albatross - Foraging*	40.4	28	-	-	43.1	35	-	-
	Bullers Albatross - Foraging*	40.4	28	-	-	43.1	35	-	-
	Campbell Albatross - Foraging*	40.4	28	-	-	43.1	35	-	-
	Common Diving-petrel - Foraging*	50.1	36	1	-	51.7	73	1	-
	Indian Yellow-nosed Albatross - Foraging*	40.4	28	-	-	43.1	35	-	-
	Pygmy Blue Whale - Distribution*	50.1	36	1	-	51.7	73	1	-
	Pygmy Blue Whale - Foraging*	50.1	36	1	-	51.7	73	1	-
	Pygmy Blue Whale - Foraging annual high use area*	50.1	36	1	-	51.7	73	1	-
	Pygmy Blue Whale - Known Foraging Area	18.8	2	-	-	43.1	4	-	-
	Short-tailed Shearwater - Foraging	27.7	21	-	-	43.1	59	-	-
	Shy Albatross - Foraging*	50.1	36	1	-	51.7	73	1	-
	Southern Right Whale - Aggregation	40.4	10	-	-	36.1	11	-	-
	Southern Right Whale - Known Core Range*	50.1	36	1	-	51.7	73	1	-
	Wandering Albatross - Foraging*	40.4	28	-	-	43.1	35	-	-
	Wedge-tailed Shearwater - Foraging*	50.1	36	1	-	51.7	73	1	-
	White Shark - Distribution*	40.4	28	-	-	43.1	35	-	-
	White Shark - Foraging	21.2	3	-	-	20.9	2	-	-
	White-faced Storm-petrel - Foraging	16.8	1	-	-	43.1	3	-	-
IBRA	Otway Plain	21.1	6	-	-	25.2	16	-	-
	Otway Ranges	20.4	6	-	-	31.8	30	-	-
	Warrnambool Plain	50.1	35	1	-	44.4	72	-	-

Receptor		Summer				Winter			
		Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure(%)			Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)		
			Low	Moderate	High		Low	Moderate	High
IMCRA	Central Bass Strait	16.8	1	-	-	24.8	3	-	-
	Central Victoria	16.1	1	-	-	43.1	4	-	-
	Otway*	50.1	36	1	-	51.7	73	1	-
KEF	Bonney Coast Upwelling	18.9	1	-	-	20.9	2	-	-
MNP	Twelve Apostles	44.1	35	-	-	51.7	69	1	-
RSB	Bravenes Rock	10.7	1	-	-	8.9	-	-	-
Nearshore Waters	Colac Otway	21.1	6	-	-	25.2	16	-	-
	Corangamite	50.1	35	1	-	44.4	72	-	-
	Lady Julia Percy Island	8.2	-	-	-	15.1	2	-	-
	Moyne	25.2	23	-	-	26.6	27	-	-
	Warrnambool	6.7	-	-	-	19.4	2	-	-
State Waters	Victoria State Waters	50.1	36	1	-	51.7	73	1	-
Nearshore Waters (Sub-LGA)	Apollo Bay	17.8	2	-	-	16.5	1	-	-
	Bay of Islands	25.2	23	-	-	26.6	27	-	-
	Cape Otway West	21.1	6	-	-	25.2	16	-	-
	Childers Cove	12.1	1	-	-	19.4	4	-	-
	Moonlight Head	50.1	35	1	-	44.4	72	-	-
	Port Campbell	38.2	29	-	-	30.9	41	-	-
	Warrnambool	6.7	-	-	-	10	1	-	-

*The release location resides within the receptor boundaries.

Table 12.8 Predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer						Winter					
		Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)			Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
AMP	Apollo	7.13	-	-	0.04	-	-	3.33	-	-	0.08	-	-
BIA	Antipodean Albatross - Foraging*	1.00	-	-	0.25	-	-	0.88	-	-	0.25	-	-
	Australasian Gannet - Foraging	6.21	-	-	0.08	-	-	9.17	-	-	0.08	-	-
	Black-browed Albatross - Foraging*	1.00	-	-	0.25	-	-	0.88	-	-	0.25	-	-
	Bullers Albatross - Foraging*	1.00	-	-	0.25	-	-	0.88	-	-	0.25	-	-
	Campbell Albatross - Foraging*	1.00	-	-	0.25	-	-	0.88	-	-	0.25	-	-
	Common Diving-petrel - Foraging*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
	Indian Yellow-nosed Albatross - Foraging*	1.00	-	-	0.25	-	-	0.88	-	-	0.25	-	-
	Pygmy Blue Whale - Distribution*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
	Pygmy Blue Whale - Foraging*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
	Pygmy Blue Whale - Foraging annual high use area*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
	Pygmy Blue Whale - Known Foraging Area	7.13	-	-	0.08	-	-	3.42	-	-	0.13	-	-
	Short-tailed Shearwater - Foraging	2.58	-	-	0.13	-	-	2.08	-	-	0.25	-	-
	Shy Albatross - Foraging*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
	Southern Right Whale - Aggregation*	1.33	-	-	0.17	-	-	1.13	-	-	0.21	-	-
	Southern Right Whale - Known Core Range*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
	Wandering Albatross - Foraging*	1.00	-	-	0.25	-	-	0.88	-	-	0.25	-	-
	Wedge-tailed Shearwater - Foraging*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
	White Shark - Distribution*	1.00	-	-	0.25	-	-	0.88	-	-	0.25	-	-
	White Shark - Foraging	2.54	-	-	0.08	-	-	6.96	-	-	0.08	-	-
	White-faced Storm-petrel - Foraging	7.29	-	-	0.08	-	-	3.58	-	-	0.08	-	-
IBRA	Otway Plain	3.96	-	-	0.08	-	-	7.00	-	-	0.13	-	-
	Otway Ranges	2.58	-	-	0.13	-	-	4.67	-	-	0.17	-	-
	Warrnambool Plain	2.08	13.92	-	0.25	-	-	2.29	15.58	-	0.29	-	-

Receptor		Summer						Winter					
		Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)			Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
IMCRA	Central Bass Strait	8.88	-	-	0.08	-	-	3.88	-	-	0.08	-	-
	Central Victoria	7.13	-	-	0.08	-	-	3.42	-	-	0.13	-	-
	Otway*	1.00	8.38	-	0.25	-	-	0.88	8.54	-	0.29	-	-
KEF	Bonney Coast Upwelling	6.21	-	-	0.08	-	-	11.67	-	-	0.08	-	-
MNP	Twelve Apostles	2.42	22.33	-	0.21	-	-	2.13	8.54	-	0.21	-	-
RSB	Bravenes Rock	28.33	-	-	0.04	-	-	18.38	-	-	0.04	-	-
Nearshore Waters	Colac Otway	3.96	-	-	0.08	-	-	6.54	-	-	0.13	-	-
	Corangamite	2.58	13.92	-	0.25	-	-	2.50	-	-	0.29	-	-
	Lady Julia Percy Island	-	-	-	-	-	-	13.58	-	-	0.04	-	-
	Moyne	2.08	-	-	0.13	-	-	2.29	-	-	0.17	-	-
	Warrnambool	-	-	-	-	-	-	5.96	-	-	0.04	-	-
State Waters	Victoria State Waters	1.50	8.38	-	0.25	-	-	1.17	8.54	-	0.29	-	-
Nearshore Waters (Sub-LGA)	Apollo Bay	13.5	-	-	0.04	-	-	12.63	-	-	0.04	-	-
	Bay of Islands	2.08	-	-	0.13	-	-	2.29	-	-	0.17	-	-
	Cape Otway West	3.96	-	-	0.08	-	-	6.54	-	-	0.13	-	-
	Childers Cove	18.08	-	-	0.04	-	-	3.29	-	-	0.08	-	-
	Moonlight Head	2.58	13.92	-	0.25	-	-	2.13	15.58	-	0.29	-	-
	Port Campbell	3.50	-	-	0.13	-	-	2.50	-	-	0.17	-	-
	Warrnambool	-	-	-	-	-	-	18.67	-	-	0.04	-	-

*The release location resides within the receptor boundaries.

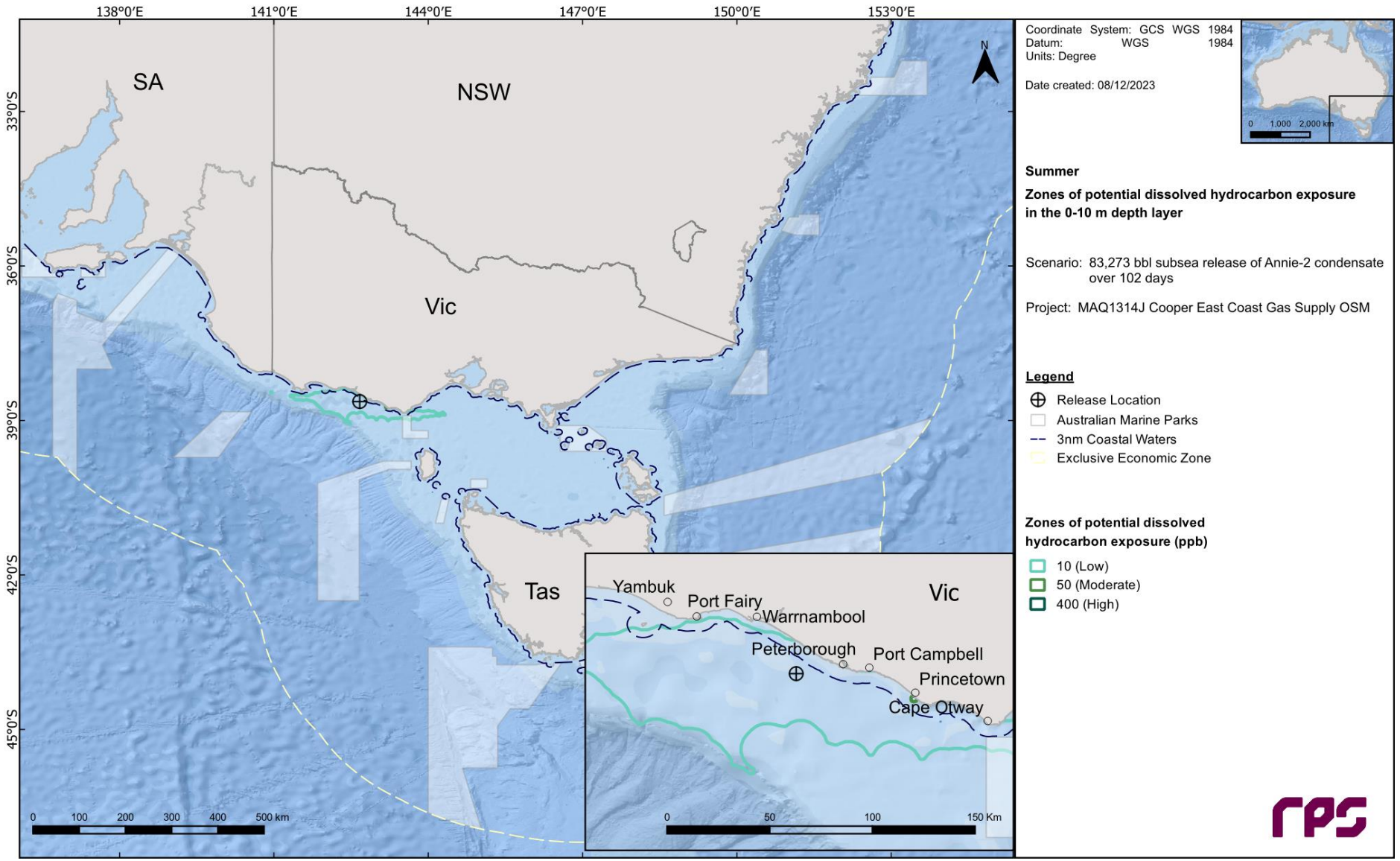

Figure 12.9 Zones of potential dissolved hydrocarbon exposure at 0-10 m below the sea in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

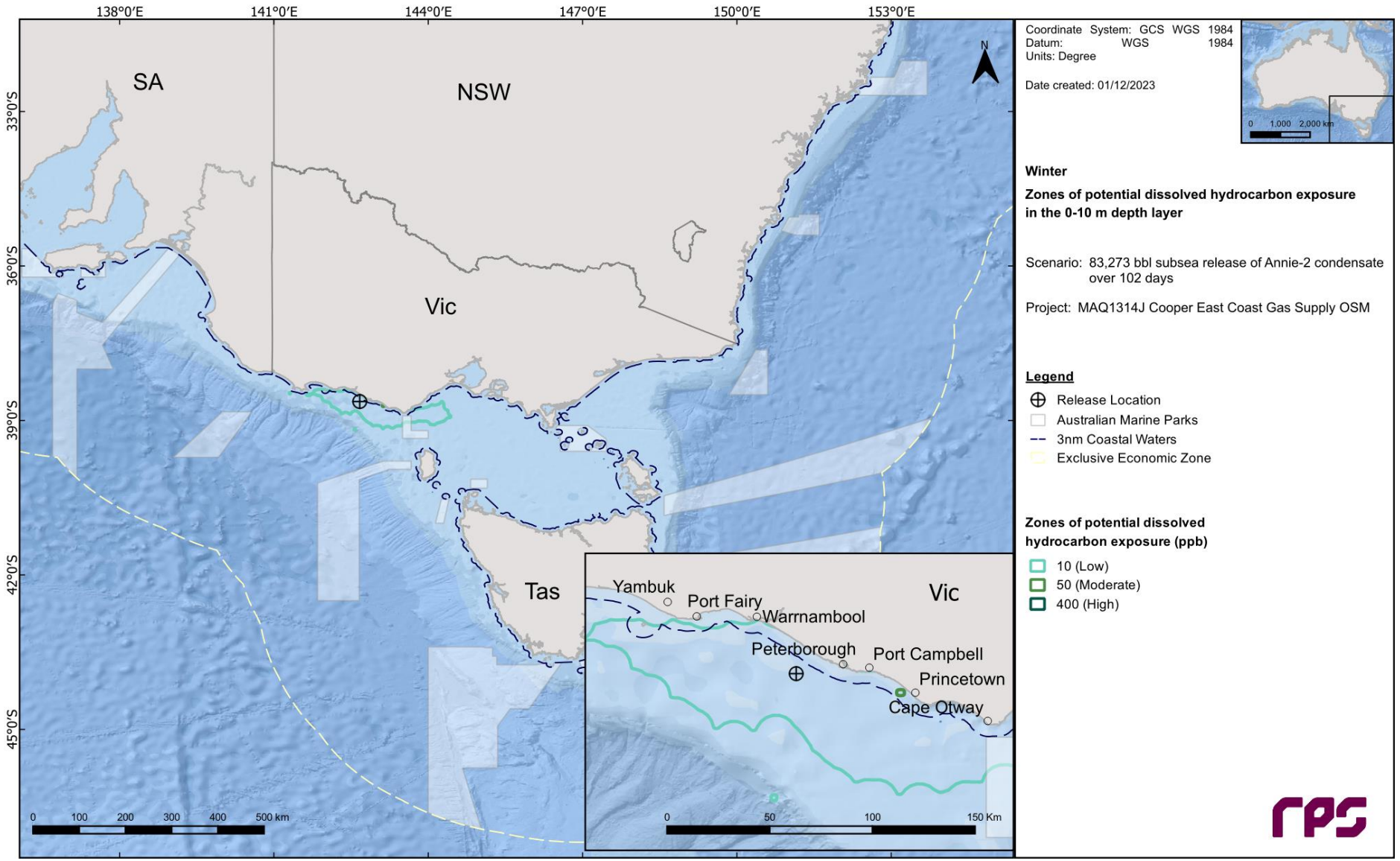

Figure 12.10 Zones of potential dissolved hydrocarbon exposure at 0-10 m below the sea in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

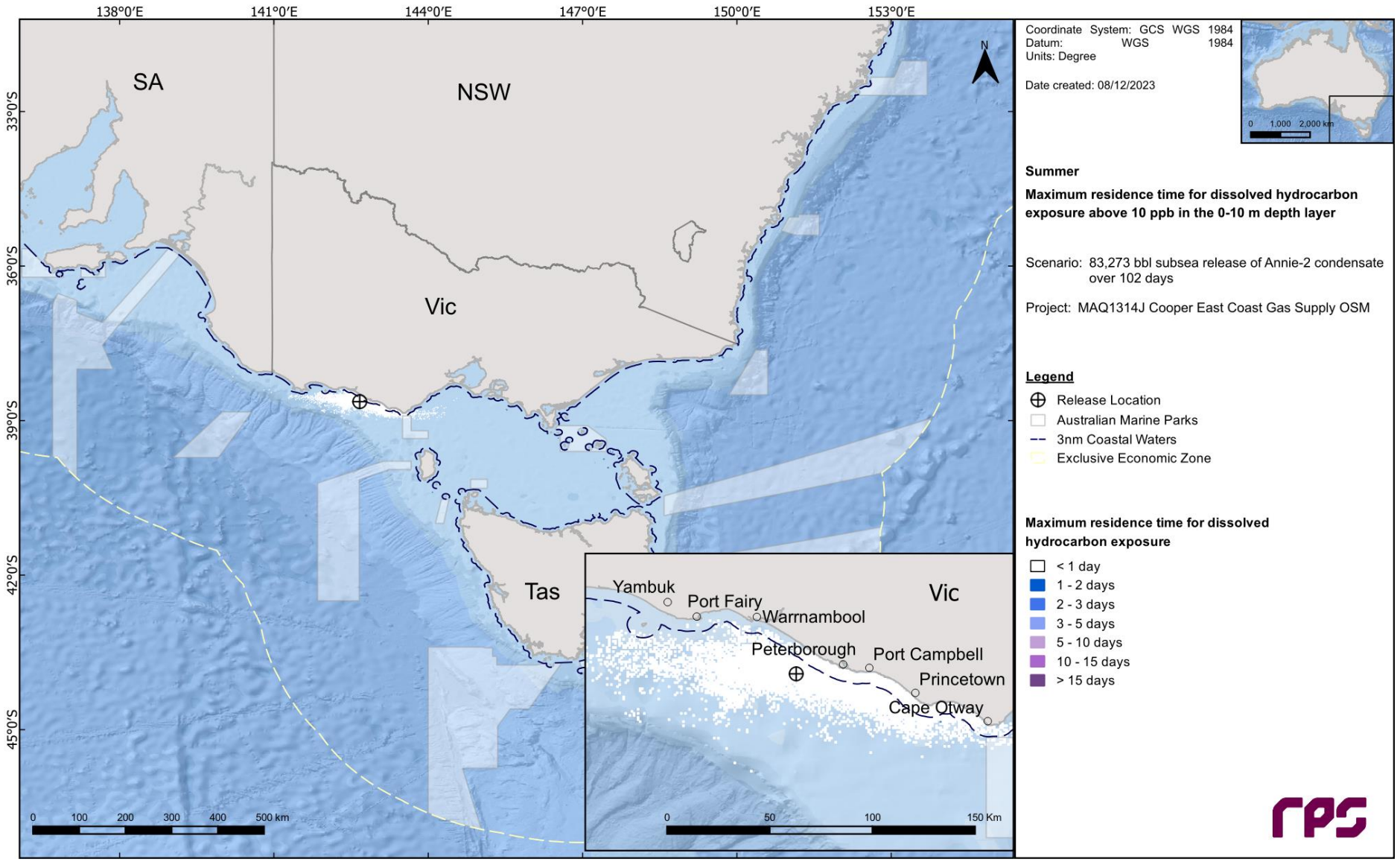

Figure 12.11 Maximum residence time for dissolved hydrocarbon exposure above 10 ppb, at 0-10 m below the sea surface in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

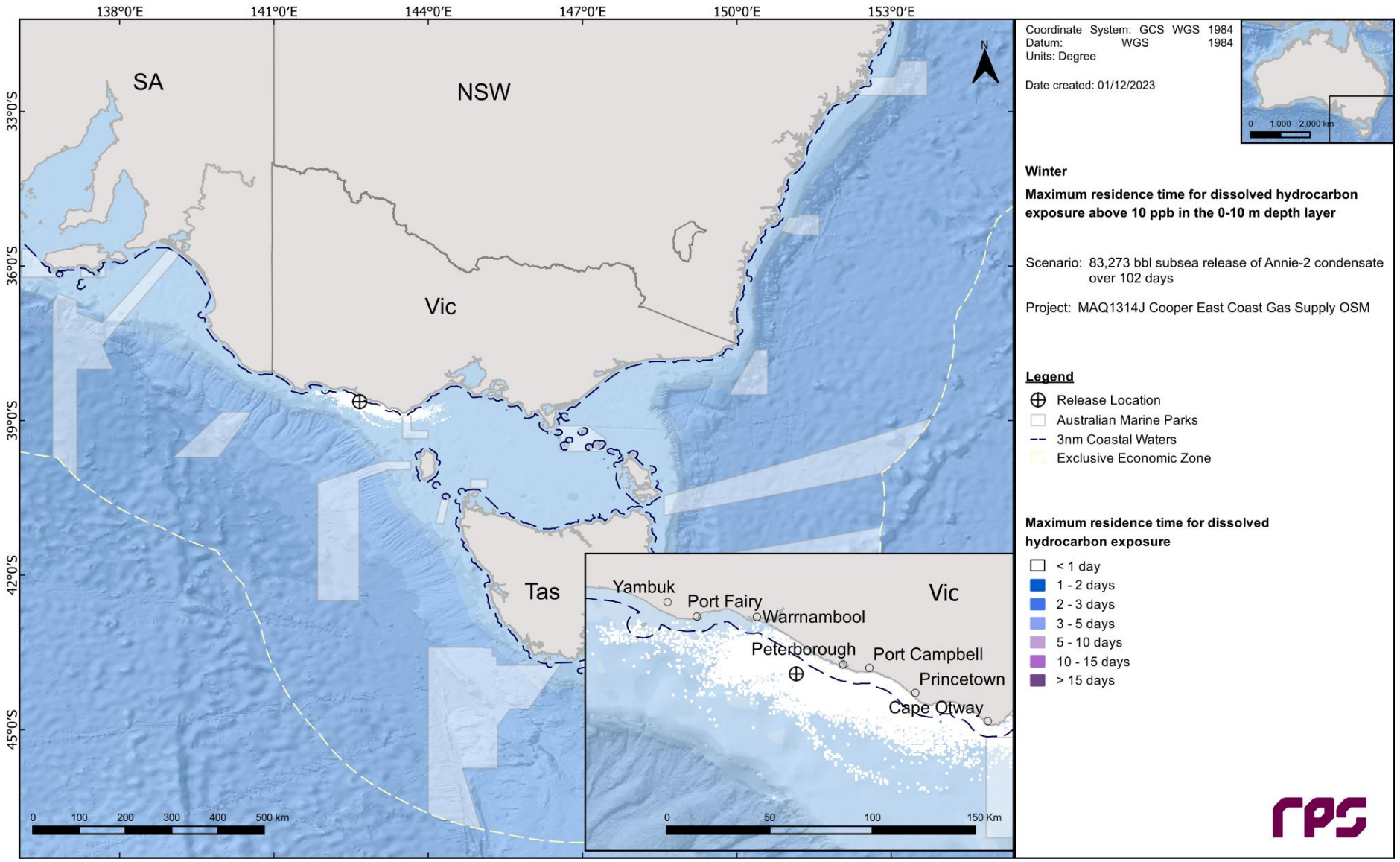

Figure 12.12 Maximum residence time for dissolved hydrocarbon exposure above 10 ppb, at 0-10 m below the sea surface in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

12.1.3.2 Entrained Hydrocarbons

Table 12.9 summarises the potential in-water exposure to individual receptors from entrained hydrocarbons in the 0-10 m depth layer.

Many receptors were exposed above the low and high thresholds, however most of these receptors (predominantly BIAs) coincided with the release location.

In summer conditions, the highest probability of low entrained hydrocarbon exposure was recorded at 100% for receptors that the release location doesn't reside within, including Southern Right Whale – Aggregation BIA and Warrnambool Plain IBRA. Additional receptors including sub-LGAs, and AMPs were predicted with entrained hydrocarbon exposure (refer to Table 11.9). Similarly, during winter several receptors that the release location doesn't reside within revealed probabilities of 100% for low entrained hydrocarbon exposure.

Table 12.10 presents the predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer, for all thresholds assessed.

Figure 12.13 and Figure 12.14 present the zones of potential entrained hydrocarbon exposure for the 0-10 m depth layer for each season whilst Figure 12.15 to Figure 12.18 present the maximum residence time of entrained hydrocarbon exposure for the NOPSEMA thresholds.

Table 12.9 Probability of entrained hydrocarbons exposure to marine based receptors in the 0–10 m depth layer. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
AMP	Apollo	165.5	82	16	216.7	93	31
	Beagle	36.8	39	-	37.1	59	-
	East Gippsland	11.0	3	-	10.3	1	-
	Franklin	11.7	3	-	9.2	-	-
	Nelson	18.9	6	-	16.1	3	-
	Zeehan	33.8	15	-	19.1	7	-
BIA	Antipodean Albatross - Foraging*	940.7	100	100	1,534.8	100	100
	Australasian Gannet - Foraging	148.6	72	19	243	77	5
	Australian Sea Lion - Foraging	17.0	20	-	11.9	1	-
	Black Petrel - Foraging	25.1	4	-	15.3	6	-
	Black-browed Albatross - Foraging*	940.7	100	100	1,534.8	100	100
	Black-faced Cormorant - Foraging	19.1	10	-	18.7	7	-
	Bullers Albatross - Foraging*	940.7	100	100	1,534.8	100	100
	Campbell Albatross - Foraging*	940.7	100	100	1,534.8	100	100
	Common Diving-petrel - Foraging*	940.7	100	100	1,534.8	100	100
	Crested Tern - Breeding	14.3	4	-	13.4	6	-
	Crested Tern - Foraging	16.0	4	-	15.3	6	-
	Flesh-footed Shearwater - Foraging	25.1	4	-	15.3	6	-
	Great-winged Petrel - Foraging	25.1	3	-	12.4	6	-
	Grey Nurse Shark - Foraging	24.6	12	-	14.7	12	-
	Grey Nurse Shark - Migration	41.4	14	-	16.3	14	-
	Humpback Whale - Foraging	42.6	14	-	18.4	14	-
	Indian Yellow-nosed Albatross - Foraging*	940.7	100	100	1,534.8	100	100
	Indo-Pacific/Spotted Bottlenose Dolphin - Breeding	16.8	11	-	13.4	6	-
	Little Penguin - Breeding	14.5	4	-	14.5	6	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Little Penguin - Foraging	33.0	47	-	45.1	73	-
	Northern Giant Petrel - Foraging	25.1	3	-	12.4	6	-
	Pygmy Blue Whale - Distribution*	940.7	100	100	1,534.8	100	100
	Pygmy Blue Whale - Foraging*	940.7	100	100	1,534.8	100	100
	Pygmy Blue Whale - Foraging annual high use area*	940.7	100	100	1,534.8	100	100
	Pygmy Blue Whale - Known Foraging Area	180.1	81	16	208.6	93	31
	Short-tailed Shearwater - Foraging	300.8	98	90	379.4	100	100
	Shy Albatross - Foraging*	940.7	100	100	1,534.8	100	100
	Soft-plumaged Petrel - Foraging	10.1	1	-	7.4	-	-
	Sooty Shearwater - Foraging	36.1	13	-	16.3	14	-
	Southern Giant Petrel - Foraging	25.1	3	-	12.4	6	-
	Southern Right Whale - Aggregation	833.2	100	100	1,262.8	100	100
	Southern Right Whale - Connecting Habitat	11.7	2	-	14.8	7	-
	Southern Right Whale - Known Core Range*	940.7	100	100	1,534.8	100	100
	Wandering Albatross - Foraging*	940.7	100	100	1,534.8	100	100
	Wedge-tailed Shearwater - Foraging*	940.7	100	100	1,534.8	100	100
	White Shark - Breeding	23.3	37	-	28.4	56	-
	White Shark - Distribution*	940.7	100	100	1,534.8	100	100
	White Shark - Foraging	218.7	87	34	243	79	24
	White-capped Albatross - Foraging	25.1	3	-	12.4	6	-
	White-faced Storm-petrel - Breeding	25.1	8	-	15.3	7	-
	White-faced Storm-petrel - Foraging	153.7	81	11	208.6	93	23
	Wilsons Storm Petrel - Migration	25.1	3	-	12.4	6	-
IBRA	Bateman	11.4	3	-	11.6	4	-
	Bridgewater	113.5	52	8	104.1	20	2
	East Gippsland Lowlands	17.4	7	-	12.3	9	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Flinders	23.7	20	-	31.4	21	-
	Gippsland Plain	65.3	41	-	77.0	66	-
	Glenelg Plain	148.6	53	11	108.5	22	2
	King Island	11.7	1	-	14.8	7	-
	Otway Plain	260	94	58	252	98	82
	Otway Ranges	209.7	97	65	259.5	100	92
	Strzelecki Ranges	30.4	40	-	35.5	65	-
	Tasmanian West	10.0	1	-	7.1	-	-
	Warrnambool Plain	513.7	100	98	626.6	100	100
	Wilsons Promontory	72.4	43	-	81.4	69	-
IMCRA	Batemans Shelf	20	7	-	15.3	7	-
	Central Bass Strait	135.9	76	11	204.1	91	17
	Central Victoria	149.6	80	13	208.6	93	25
	Coorong	10.9	1	-	9.0	-	-
	Flinders	73.3	43	-	82.9	69	-
	Franklin	10.6	1	-	8.0	-	-
	Otway*	940.7	100	100	1,534.8	100	100
	Twofold Shelf	42.6	21	-	29.2	28	-
	Victorian Embayments	31.8	27	-	30.6	50	-
KEF	Big Horseshoe Canyon	11.7	2	-	9.9	-	-
	Bonney Coast Upwelling	148.6	73	19	243	53	7
	Canyons on the Eastern Continental Slope	25.1	2	-	9.1	-	-
	Shelf rocky reefs	13.9	4	-	13.4	6	-
	Upwelling East of Eden	42.6	18	-	20.6	21	-
	West Tasmania Canyons	44.6	23	-	38.3	14	-
MNP	Bunurong	33.8	29	-	32.1	52	-
	Cape Howe	18.9	12	-	13.3	8	-
	Churchill Island	23.8	10	-	20.0	12	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Discovery Bay	51.1	47	-	41.9	13	-
	Point Addis	57.4	28	-	58.6	39	-
	Point Hicks	11.3	3	-	11.1	4	-
	Port Phillip Heads	33.0	25	-	37.0	29	-
	Twelve Apostles	455.9	99	98	572.8	100	100
	Wilsons Promontory	73.3	43	-	82.9	69	-
MP	Batemans	14.3	4	-	13.4	6	-
	Lower South East	26.5	15	-	27.3	4	-
	Upper South East	12.8	2	-	4.4	-	-
MS	Mushroom Reef	19.2	22	-	24.2	48	-
NPS4	Bunurong Marine Park	40.2	31	-	48.1	49	-
	Wilsons Promontory Marine Park	64.3	41	-	75.2	61	-
RAMSAR	Port Phillip Bay Western Shoreline and Bellarine Peninsula	23.6	17	-	23.3	10	-
	Western Port	23.8	10	-	22.3	25	-
RSB	Bell Reef	11.0	1	-	7.2	-	-
	Bravenes Rock	181.0	91	41	177.2	98	55
	Cody Bank	21.3	40	-	29.6	61	-
	Cutter Rock	26.8	24	-	33.6	18	-
	New Zealand Star Bank	20.0	11	-	14.4	13	-
Nearshore Waters	Anser Island	62.4	43	-	67.1	67	-
	Bass Coast	40.2	31	-	52.2	53	-
	Bega Valley	16.8	6	-	11.6	5	-
	Colac Otway	260.0	96	58	259.5	100	82
	Corangamite	522.4	100	97	572.8	100	100
	Curtis Island	23.7	11	-	31.4	10	-
	East Gippsland	17.4	6	-	12.2	7	-
	French Island	8.3	-	-	13.3	5	-
	Gabo Island	17.1	7	-	12.3	9	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Glenelg	146.4	53	11	108.5	22	2
	Glennie Group	66.3	43	-	73.3	69	-
	Grant	36.7	23	-	35.9	5	-
	Greater Geelong	57.8	24	-	58.3	16	-
	Hogan Island Group	22.4	20	-	28.9	21	-
	Kanowna Island	58.5	43	-	63.1	66	-
	King Island	11.7	1	-	14.8	7	-
	Lady Julia Percy Island	134.8	64	19	243.0	44	5
	Laurence Rocks	108.3	53	4	90.1	22	-
	Moncoeur Islands	35.0	39	-	27.6	52	-
	Montague Island	11.4	3	-	11.6	4	-
	Mornington Peninsula	42.6	31	-	37.5	53	-
	Moyne	508.9	100	98	626.6	100	95
	Mud Island	14.8	10	-	16.2	4	-
	Norman Island	72.4	42	-	80.8	69	-
	Phillip Island	28.9	31	-	33.6	58	-
	Robe	10.9	1	-	3.2	-	-
	Rodondo Island	45.9	41	-	44.8	60	-
	Seal Islands	8.7	-	-	13.9	15	-
	Shellback Island	52.9	41	-	66.4	60	-
	Skull Rock	54.0	42	-	60.8	66	-
	South Gippsland	69.1	43	-	79.2	68	-
	Surf Coast	56.7	31	-	56.3	55	-
	Warrnambool	257.7	95	29	310.5	62	23
	Wattle Range	14.4	4	-	14.4	3	-
	West Coast	10.0	1	-	7.1	-	-
State Waters	New South Wales	16.8	11	-	13.4	6	-
	South Australia State Waters	40.1	26	-	38.7	5	-
	Tasmania State Waters	29.2	21	-	35.0	26	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Victoria State Waters	640.5	100	100	626.6	100	100
Nearshore Waters (Sub-LGA)	Anglesea	42.6	20	-	43.0	25	-
	Apollo Bay	153.7	84	10	108.8	93	3
	Bay of Islands	508.9	100	98	626.6	100	95
	Bega Valley	16.8	6	-	11.6	5	-
	Cape Howe / Mallacoota	17.4	6	-	12.2	7	-
	Cape Liptrap – Northwest	36.9	40	-	45.9	66	-
	Cape Nelson	146.4	53	11	108.5	22	2
	Cape Otway West	260	96	59	259.5	100	84
	Cape Patton	84.3	70	-	79.2	89	-
	Childers Cove	320.9	100	60	313.1	87	31
	Croajingolong - East	10.6	1	-	10.5	1	-
	Croajingolong - West	10.2	1	-	10.0	1	-
	Discovery Bay - East	46.3	36	-	39.3	11	-
	Discovery Bay - West	28.5	28	-	28.6	5	-
	French Island - East	5.4	-	-	13.2	2	-
	French Island / Crib Point	8.1	-	-	13.6	8	-
	French Island / San Remo	23.5	21	-	25.2	35	-
	Kilcunda	39.6	29	-	52.1	53	-
	Lorne	42.0	38	-	41.6	62	-
	Moonlight Head	455.9	99	97	572.8	100	100
	Mornington Peninsula - South	30.0	31	-	27.1	50	-
	Mornington Peninsula - Southwest	42.6	30	-	37.5	52	-
	Point Hicks	10.1	1	-	10.7	4	-
	Port Campbell	522.4	100	97	482.4	100	96
	Port Fairy	187.1	67	8	200.1	41	5
	Port Phillip - Queenscliff	42.7	24	-	42.5	16	-
	Port Phillip - Sorrento Shore	36.2	26	-	37.0	41	-
	Port Phillip Heads	30.5	21	-	27.4	13	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Portland Bay - East	79.3	59	-	94.7	32	-
	Portland Bay - West	91.1	47	-	84.7	18	-
	Torquay	57.8	22	-	58.3	18	-
	Venus Bay	40.2	31	-	52.2	53	-
	Waratah Bay	30.4	40	-	35.5	65	-
	Warrnambool	213.4	82	12	197.1	57	16
	Westernport	18.0	16	-	22.3	47	-
	Wilsons Promontory - East	42.3	42	-	46.1	64	-
	Wilsons Promontory - West	69.1	43	-	79.2	68	-

*The release location resides within the receptor boundaries.

Table 12.10 Predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on an 83,273 bbl (13,239 m^3) subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
AMP	Apollo	2.88	10.67	39.33	0.42	2.63	3.5	24.21	0.58
	Beagle	16.71	-	7.58	-	16.96	-	8	-
	East Gippsland	90.33	-	0.13	-	64.08	-	0.04	-
	Franklin	64.92	-	0.08	-	-	-	-	-
	Nelson	16.63	-	1.96	-	80.13	-	1.25	-
	Zeehan	14.21	-	7.13	-	16.08	-	3.08	-
BIA	Antipodean Albatross – Foraging*	0.04	0.08	101.71	24.83	0.04	0.04	109.29	21.88
	Australasian Gannet – Foraging	2.33	7.04	89.83	6.63	5.42	9.25	99.83	3.08
	Australian Sea Lion – Foraging	10.13	-	0.63	-	75.33	-	0.08	-
	Black Petrel – Foraging	60.13	-	1.63	-	63.67	-	0.75	-
	Black-browed Albatross – Foraging*	0.04	0.08	101.88	24.83	0.04	0.04	109.29	26.29
	Black-faced Cormorant – Foraging	23.33	-	2.08	-	17.79	-	0.54	-
	Bullers Albatross – Foraging*	0.04	0.08	101.88	24.83	0.04	0.04	109.29	26.29
	Campbell Albatross – Foraging*	0.04	0.08	101.88	24.83	0.04	0.04	109.29	26.29
	Common Diving-petrel – Foraging*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	Crested Tern – Breeding	85.25	-	0.58	-	64.13	-	0.33	-
	Crested Tern – Foraging	60.63	-	1	-	63.67	-	0.75	-
	Flesh-footed Shearwater – Foraging	60.13	-	1.63	-	63.67	-	0.75	-
	Great-winged Petrel – Foraging	60.13	-	1.63	-	65.21	-	0.08	-
	Grey Nurse Shark – Foraging	57.46	-	1.42	-	33.54	-	0.33	-
	Grey Nurse Shark – Migration	29.83	-	1.79	-	33.50	-	0.75	-
	Humpback Whale – Foraging	29.50	-	1.79	-	32.75	-	0.75	-
	Indian Yellow-nosed Albatross – Foraging*	0.04	0.08	101.88	24.83	0.04	0.04	109.29	26.29

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Indo-Pacific/Spotted Bottlenose Dolphin – Breeding	57.08	-	1.92	-	33.71	-	0.33	-
	Little Penguin – Breeding	85.13	-	1	-	64.08	-	0.75	-
	Little Penguin – Foraging	15.42	-	12	-	10.96	-	25.63	-
	Northern Giant Petrel – Foraging	60.13	-	1.63	-	65.21	-	0.08	-
	Pygmy Blue Whale – Distribution*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	Pygmy Blue Whale – Foraging*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	Pygmy Blue Whale – Foraging annual high use area*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	Pygmy Blue Whale – Known Foraging Area	2.42	6.71	54.83	1.21	2.29	3.63	46.42	1.13
	Short-tailed Shearwater – Foraging	1.58	4.13	99.71	24.25	1.13	2.38	110.54	13.79
	Shy Albatross – Foraging*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	Soft-plumaged Petrel – Foraging	82.17	-	0.04	-	-	-	-	-
	Sooty Shearwater – Foraging	30.17	-	1.79	-	44.38	-	0.75	-
	Southern Giant Petrel – Foraging	60.13	-	1.63	-	65.21	-	0.08	-
	Southern Right Whale - Aggregation*	0.04	0.08	89.83	35.46	0.04	0.08	102.58	22.88
	Southern Right Whale – Connecting Habitat	48.04	-	0.08	-	19.88	-	1.08	-
	Southern Right Whale – Known Core Range*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	Wandering Albatross – Foraging*	0.04	0.08	101.88	24.83	0.04	0.04	109.29	26.29
	Wedge-tailed Shearwater – Foraging*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	White Shark – Breeding	49.42	-	9.38	-	19.38	-	30.75	-
	White Shark – Distribution*	0.04	0.08	101.88	24.83	0.04	0.04	109.29	26.29
	White Shark – Foraging	1.25	3	89.83	1.92	2.13	6.83	99.83	22.88
	White-capped Albatross – Foraging	60.13	-	1.63	-	65.21	-	0.08	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	White-faced Storm-petrel – Breeding	59.50	-	1.63	-	45.38	-	0.75	-
	White-faced Storm-petrel – Foraging	2.50	10.79	54.46	0.42	2.79	4	46.42	1.13
	Wilsons Storm Petrel – Migration	60.13	-	1.63	-	65.21	-	0.08	-
IBRA	Bateman	85.42	-	0.08	-	64.38	-	0.04	-
	Bridgewater	5.38	26.46	61.63	1.38	19.75	99.46	44.58	0.04
	East Gippsland Lowlands	53.63	-	2.42	-	40.38	-	0.17	-
	Flinders	20.63	-	4.5	-	18.54	-	3.08	-
	Gippsland Plain	15.63	-	28.92	-	11.42	-	50.67	-
	Glenelg Plain	4.63	8.71	78.42	5.88	19.38	99.04	48.58	0.13
	King Island	35.42	-	0.08	-	19.88	-	1.08	-
	Otway Plain	2.21	7.29	85.25	23.38	2.25	2.88	83.08	13.71
	Otway Ranges	1.88	6.42	99.71	12.54	1.92	5.42	101.92	9.13
	Strzelecki Ranges	15.71	-	16.38	-	19.08	-	18.42	-
	Tasmanian West	89.42	-	0.04	-	-	-	-	-
	Warrnambool Plain	0.83	1.33	99.63	35.21	0.63	1.29	111.08	41.79
	Wilsons Promontory	13.83	-	53.54	-	10.88	-	69.54	-
IMCRA	Batemans Shelf	59.58	-	1	-	45.58	-	0.75	-
	Central Bass Strait	3.38	11.79	21.54	0.38	2.92	3.71	21.75	1.13
	Central Victoria	2.88	10.79	46.54	0.42	2.79	3.63	46.42	0.54
	Coorong	23.75	-	0.04	-	-	-	-	-
	Flinders	13.08	-	53.83	-	10.29	-	69.54	-
	Franklin	82.17	-	0.04	-	-	-	-	-
	Otway*	0.04	0.08	109.38	35.46	0.04	0.04	112.54	42.17
	Twofold Shelf	17.63	-	5.17	-	17.58	-	3.67	-
	Victorian Embayments	31.58	-	10.83	-	15.04	-	16.92	-
KEF	Big Horseshoe Canyon	55.88	-	0.04	-	-	-	-	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Bonney Coast Upwelling	2.13	7.04	89.83	6.63	6.63	8.92	99.83	4.25
	Canyons on the Eastern Continental Slope	60.17	-	1.38	-	-	-	-	-
	Shelf rocky reefs	85.00	-	0.42	-	64.00	-	0.33	-
	Upwelling East of Eden	29.42	-	3	-	32.58	-	2.96	-
	West Tasmania Canyons	12.13	-	11.42	-	12.25	-	2.75	-
MNP	Bunurong	16	-	8.5	-	17.04	-	13.13	-
	Cape Howe	53.54	-	2.38	-	40.50	-	0.21	-
	Churchill Island	50.08	-	5.58	-	32.29	-	9.71	-
	Discovery Bay	5.58	-	8.88	-	28.00	-	7	-
	Point Addis	29.13	-	41.67	-	12.75	-	41.83	-
	Point Hicks	77.96	-	0.04	-	54.29	-	0.08	-
	Port Phillip Heads	31.58	-	10.79	-	20.88	-	14	-
	Twelve Apostles	1.25	1.79	109.38	31.04	0.92	1.38	112.54	42.17
	Wilsons Promontory	14	-	53.83	-	10.67	-	69.46	-
MP	Batemans	85.25	-	0.58	-	64.13	-	0.33	-
	Lower South East	15.67	-	4.29	-	56.96	-	11.54	-
	Upper South East	27.21	-	0.08	-	-	-	-	-
MS	Mushroom Reef	36.08	-	8.38	-	15.79	-	3.79	-
NPS4	Bunurong Marine Park	16.92	-	9.63	-	16.75	-	12.42	-
	Wilsons Promontory Marine Park	16.29	-	28.92	-	19.38	-	51.33	-
RAMSAR	Port Phillip Bay Western Shoreline and Bellarine Peninsula	32.67	-	8.17	-	21.42	-	9.21	-
	Western Port	50.08	-	5.58	-	17.5	-	10.63	-
RSB	Bell Reef	92.21	-	0.04	-	-	-	-	-
	Bravenes Rock	1.83	6.21	89.63	1.13	1.71	6.13	84.67	1.54
	Cody Bank	14.79	-	2.54	-	17.5	-	4.17	-
	Cutter Rock	44.08	-	1.75	-	16.96	-	2.21	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	New Zealand Star Bank	52.92	-	2.13	-	39.08	-	1.17	-
Nearshore Waters	Anser Island	16.88	-	52.83	-	16.92	-	65.25	-
	Bass Coast	16.92	-	12	-	16.13	-	21.25	-
	Bega Valley	78.88	-	1.79	-	41.42	-	0.08	-
	Colac Otway	2.17	7.29	85.25	23.38	2.13	2.88	94.04	13.71
	Corangamite	0.79	1.50	99.71	30.88	0.63	1.63	111.08	41.79
	Curtis Island	44.17	-	1	-	18.83	-	1.13	-
	East Gippsland	78.79	-	2	-	40.54	-	0.17	-
	French Island	-	-	-	-	43.21	-	0.17	-
	Gabo Island	53.63	-	2.33	-	40.42	-	0.17	-
	Glenelg	4.63	8.71	78.42	5.88	19.38	99.04	87.17	0.13
	Glennie Group	16.13	-	53.54	-	11.00	-	65.83	-
	Grant	18.42	-	5.58	-	56.33	-	12.17	-
	Greater Geelong	29.83	-	19.63	-	14.17	-	21.38	-
	Hogan Island Group	20.63	-	4.5	-	18.54	-	3.08	-
	Kanowna Island	14.04	-	52.13	-	14.83	-	62.54	-
	King Island	35.42	-	0.08	-	19.88	-	1.08	-
	Lady Julia Percy Island	3.00	15.71	65.63	1.88	8.96	9.29	97.08	3.08
	Laurence Rocks	4.33	32.63	79.58	0.38	15.29	-	27.29	-
	Moncoeur Islands	17.04	-	8.21	-	17.42	-	6.13	-
	Montague Island	85.42	-	0.08	-	64.38	-	0.04	-
	Mornington Peninsula	31.71	-	10.63	-	11.42	-	11.25	-
	Moyne	0.83	1.33	92.88	29	0.71	1.29	98.92	20.63
	Mud Island	43.04	-	0.96	-	56.50	-	1.25	-
	Norman Island	16.00	-	32.88	-	10.88	-	51.88	-
	Phillip Island	16.08	-	11.38	-	14.83	-	22.75	-
	Robe	30.17	-	0.04	-	-	-	-	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Rodondo Island	13.83	-	15.38	-	15.00	-	13	-
	Seal Islands	-	-	-	-	35.79	-	0.42	-
	Shellback Island	15.96	-	23.17	-	19.29	-	33.5	-
	Skull Rock	14.04	-	52.13	-	14.83	-	55.96	-
	South Gippsland	15.63	-	53.17	-	18.42	-	69.46	-
	Surf Coast	29.71	-	45.92	-	13.17	-	46.29	-
	Warrnambool	2.46	3.29	59.08	9.79	1.83	5.25	101.42	6.38
	Wattle Range	25.46	-	0.29	-	66.25	-	1	-
	West Coast	89.42	-	0.04	-	-	-	-	-
State Waters	New South Wales	57.13	-	1.79	-	33.71	-	0.33	-
	South Australia State Waters	15.08	-	9.38	-	55.29	-	12.58	-
	Tasmania State Waters	18.08	-	5.17	-	17.21	-	4.33	-
	Victoria State Waters	0.29	0.38	109.38	35.46	0.29	0.42	112.54	42.17
Nearshore Waters (Sub-LGA)	Anglesea	29.71	-	39.42	-	13.21	-	41.29	-
	Apollo Bay	2.46	28.25	59.04	4.33	2.33	9.63	31.88	0.17
	Bay of Islands	0.83	1.33	92.88	29	0.71	1.29	84.54	20.63
	Bega Valley	78.88	-	1.79	-	41.42	-	0.08	-
	Cape Howe / Mallacoota	78.83	-	2	-	40.38	-	0.17	-
	Cape Liptrap – Northwest	15.63	-	16.42	-	19.33	-	20.13	-
	Cape Nelson	4.58	8.71	78.42	5.88	19.38	99.04	48.58	0.13
	Cape Otway West	2.17	7.17	85.29	23.67	2.13	2.88	94.04	10.29
	Cape Patton	9.33	-	23.13	-	5.25	-	20.63	-
	Childers Cove	0.92	2.75	55.67	35.21	1.75	2.17	51.21	9.38
	Croajingolong – East	78.83	-	0.04	-	76.04	-	0.04	-
	Croajingolong – West	81.46	-	0.04	-	77.42	-	0.04	-
	Discovery Bay – East	9.42	-	14.25	-	32.46	-	18	-
	Discovery Bay – West	15.92	-	14.29	-	57	-	14.54	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	French Island – East	-	-	-	-	74.5	-	1.33	-
	French Island / Crib Point	-	-	-	-	42.21	-	0.13	-
	French Island / San Remo	35.58	-	6.83	-	16.13	-	16.92	-
	Kilcunda	16.96	-	9.17	-	16.42	-	21.25	-
	Lorne	26.79	-	20	-	13.67	-	14.29	-
	Moonlight Head	1.79	2.33	109.38	27.67	1.21	1.71	111.08	41.79
	Mornington Peninsula – South	34.00	-	10.58	-	14.83	-	6.58	-
	Mornington Peninsula – Southwest	33.79	-	10.63	-	11.42	-	10	-
	Point Hicks	114.54	-	0.04	-	55.04	-	0.04	-
	Port Campbell	0.79	1.5	90.63	30.88	0.63	1.63	87.58	24.58
	Port Fairy	2.75	12.71	80.04	1.58	8.63	12.25	98.92	13.13
	Port Phillip – Queenscliff	29.88	-	19.63	-	15.08	-	20.42	-
	Port Phillip – Sorrento Shore	31.71	-	8.96	-	20.96	-	13.79	-
	Port Phillip Heads	32.54	-	4.08	-	21	-	10.83	-
	Portland Bay – East	6.29	-	68.54	-	9.67	-	96.79	-
	Portland Bay – West	11.33	-	66.96	-	20.29	-	87.17	-
	Torquay	29.79	-	45.92	-	13.38	-	46.29	-
	Venus Bay	16.92	-	12	-	16.75	-	13.17	-
	Waratah Bay	15.71	-	16.38	-	19.08	-	18.42	-
	Warrnambool	2.50	10.67	85.21	4.13	5.08	5.25	101.42	20.17
	Westernport	45.08	-	9.46	-	16.38	-	3.5	-
	Wilsons Promontory – East	25.08	-	26.21	-	18.75	-	50.58	-
	Wilsons Promontory – West	16.21	-	53.17	-	18.42	-	69.46	-

*The release location resides within the receptor boundaries.

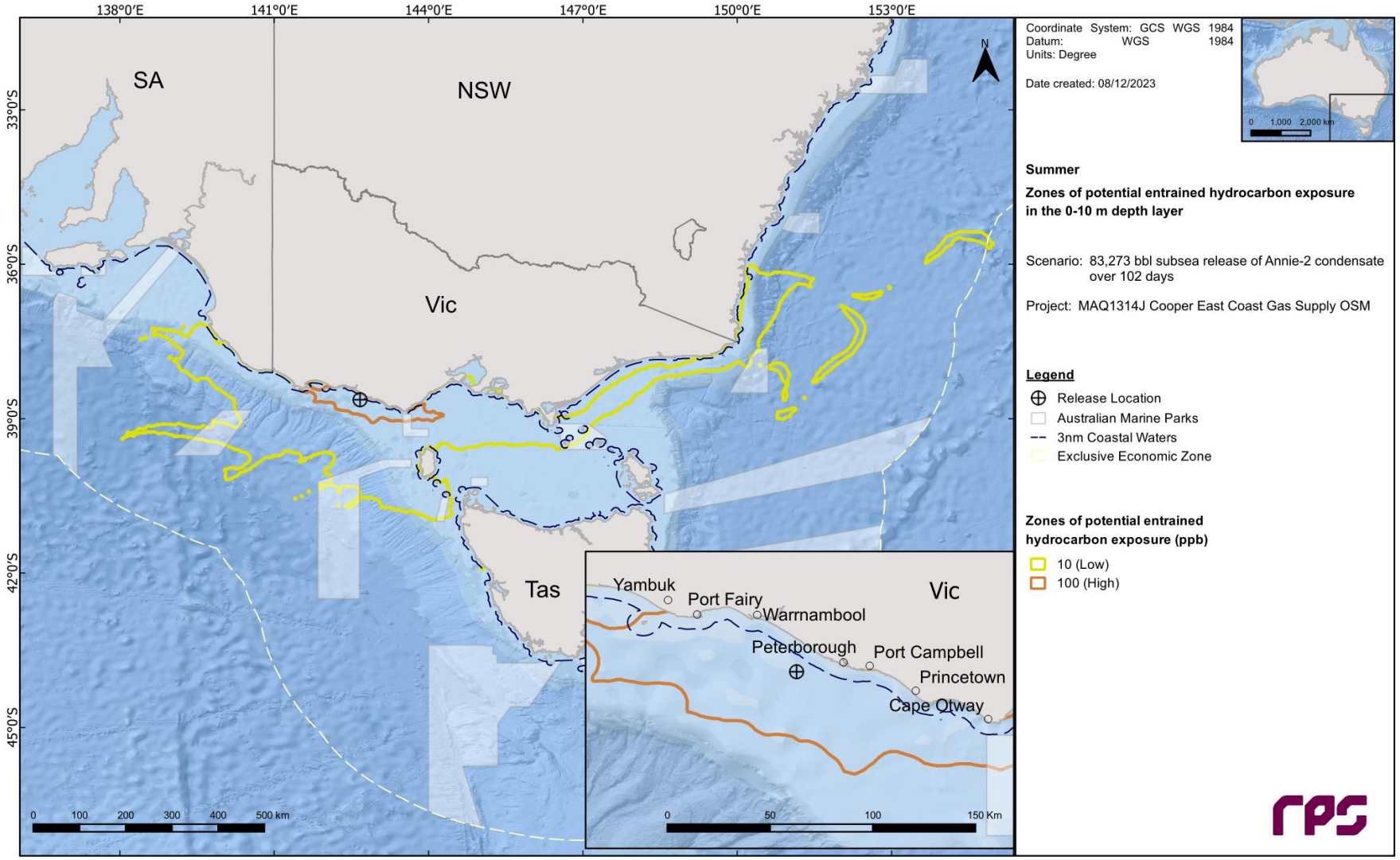

Figure 12.13 Zones of potential entrained hydrocarbon exposure at 0-10 m below the sea surface in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

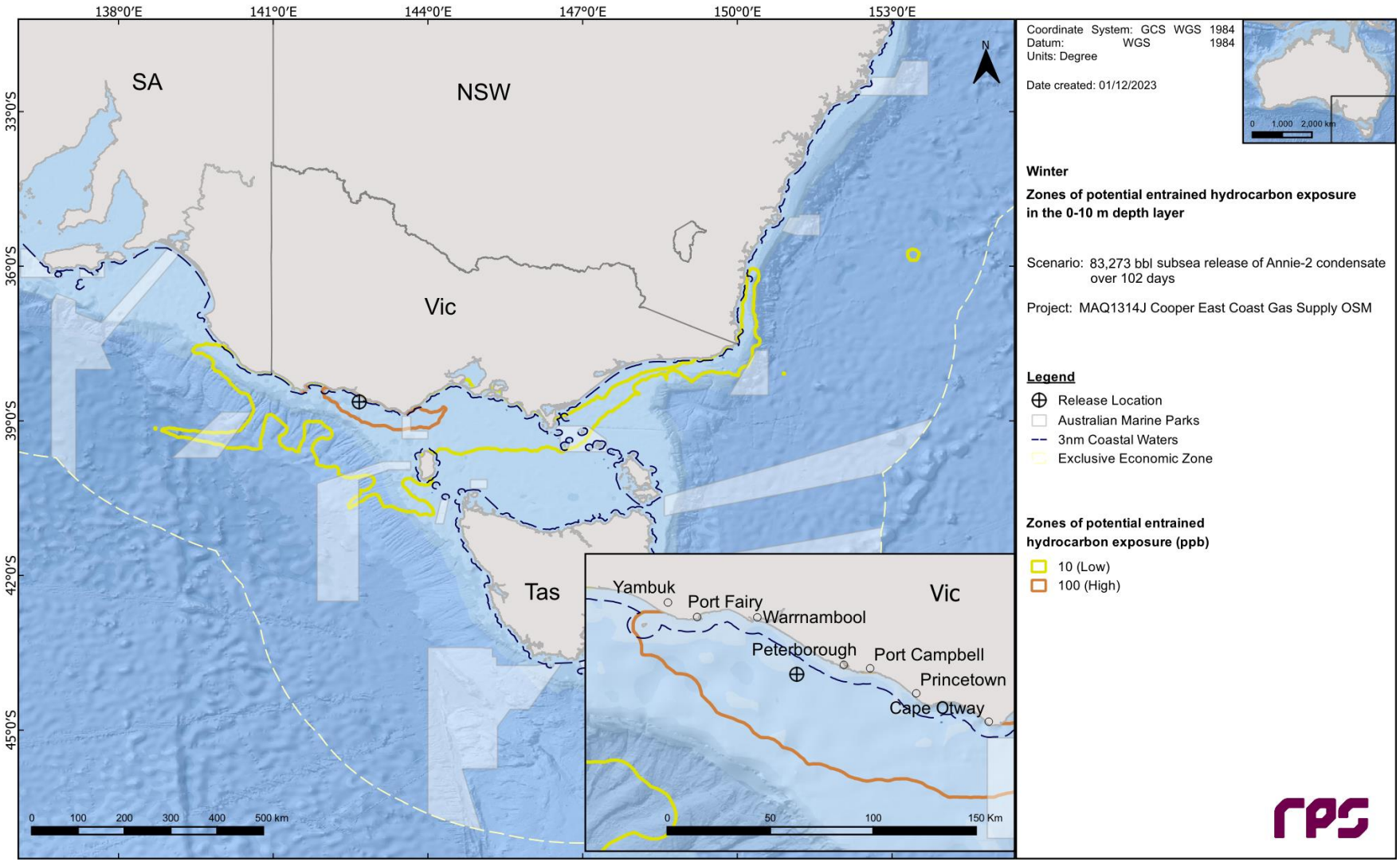

Figure 12.14 Zones of potential entrained hydrocarbon exposure at 0-10 m below the sea surface in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

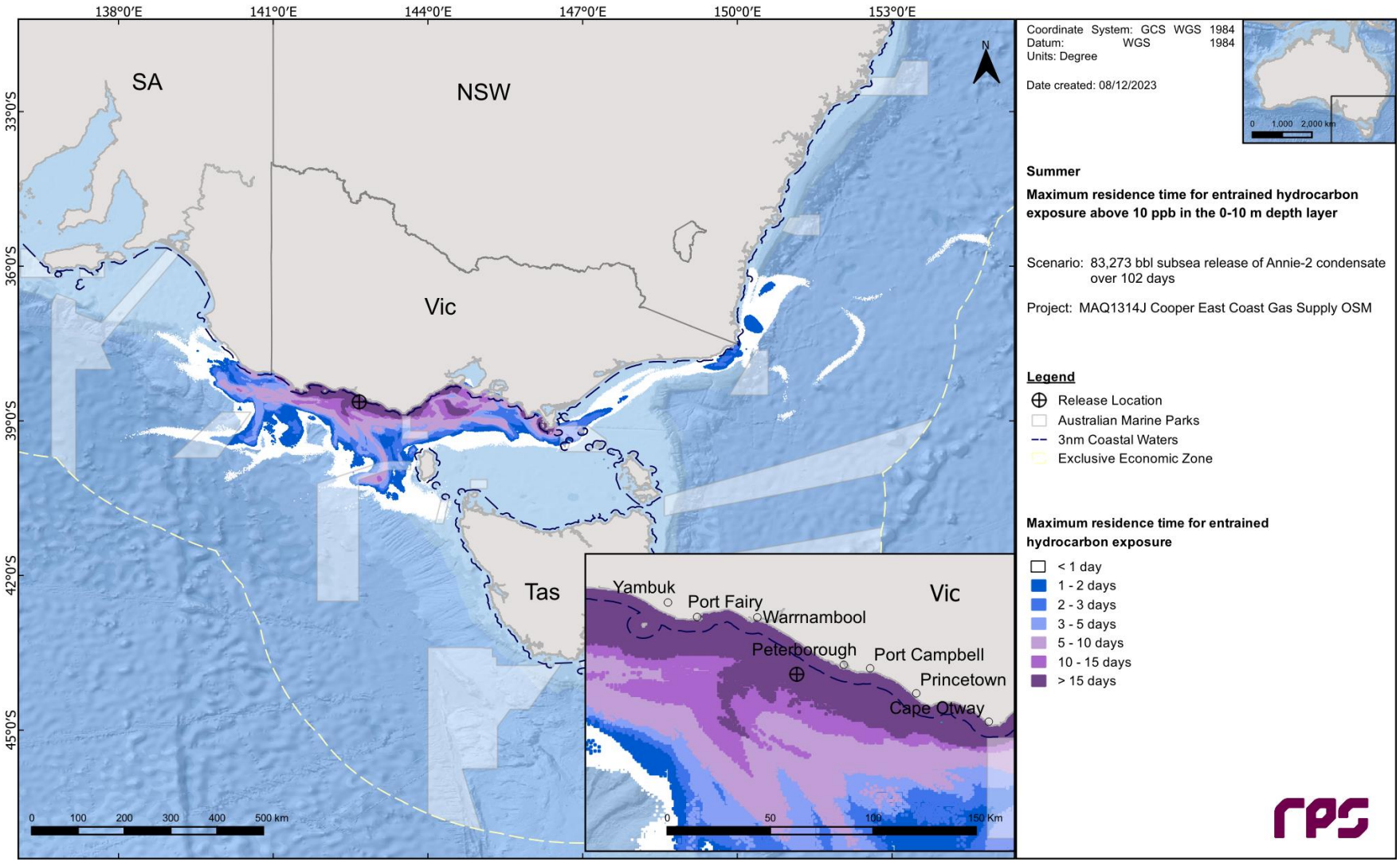

Figure 12.15 Maximum residence time for entrained hydrocarbon exposure above 10 ppb, at 0-10 m below the sea in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

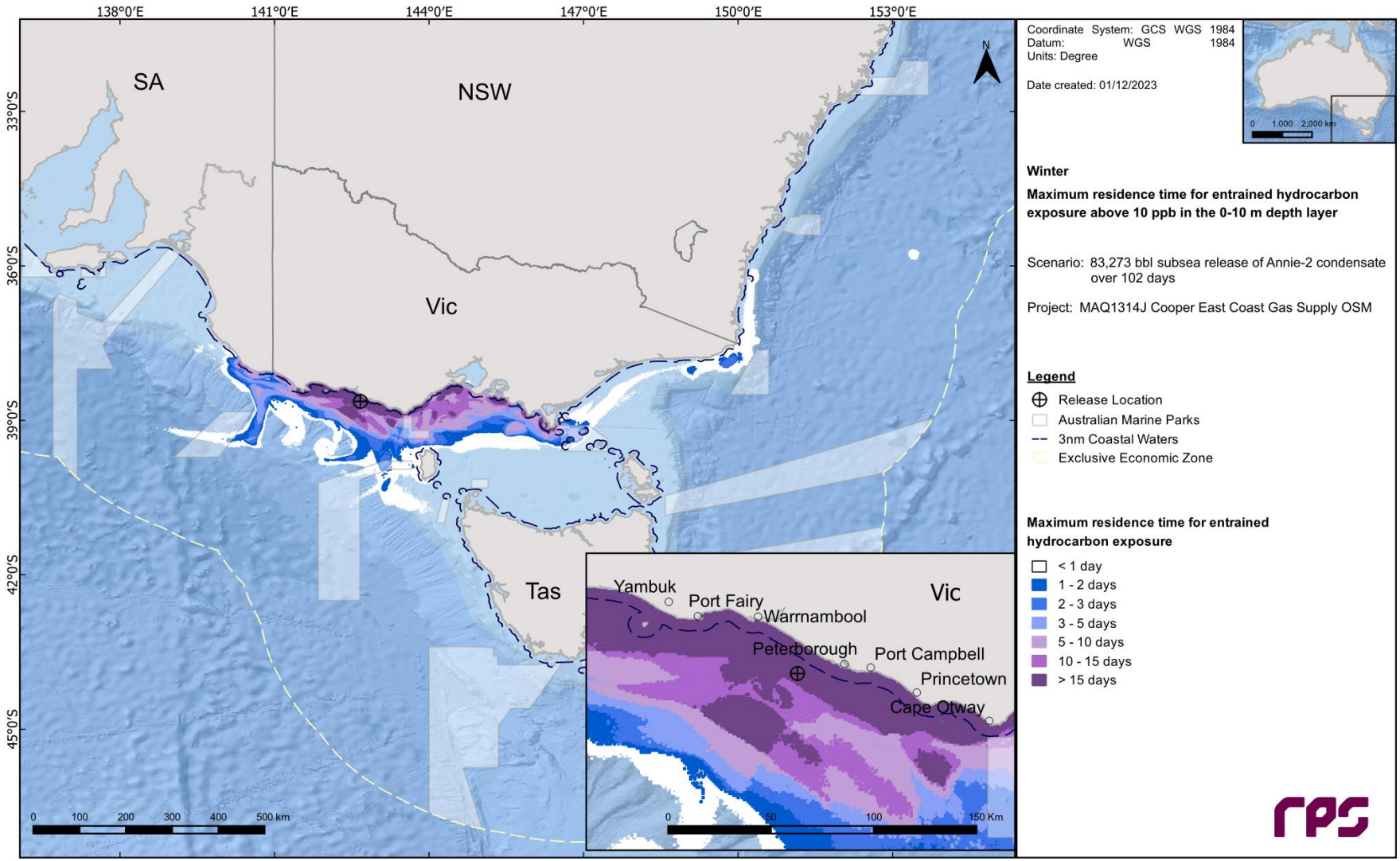

Figure 12.16 Maximum residence time for entrained hydrocarbon exposure above 10 ppb, at 0-10 m below the sea in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

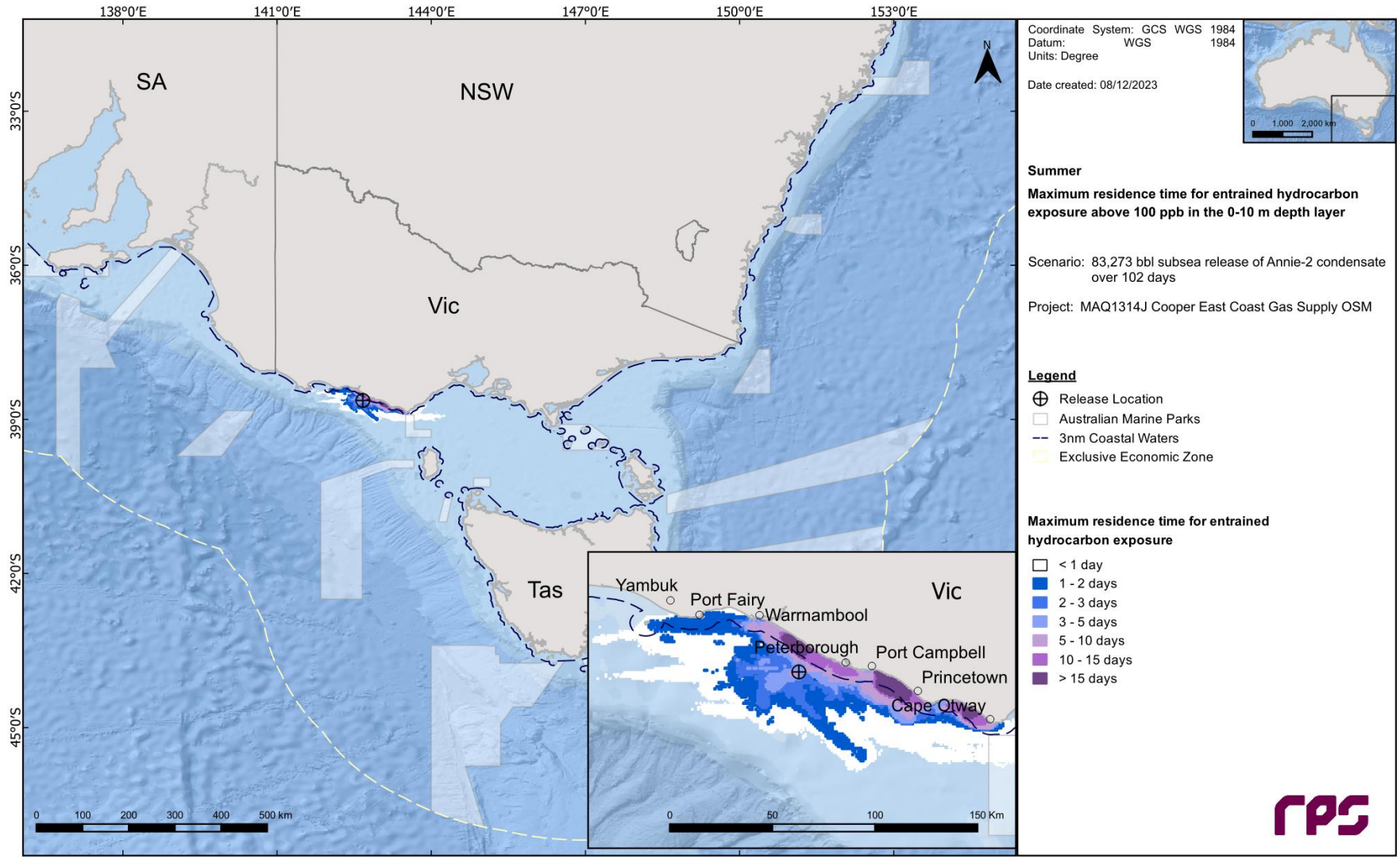

Figure 12.17 Maximum residence time for entrained hydrocarbon exposure above 100 ppb, at 0-10 m below the sea in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during summer conditions.

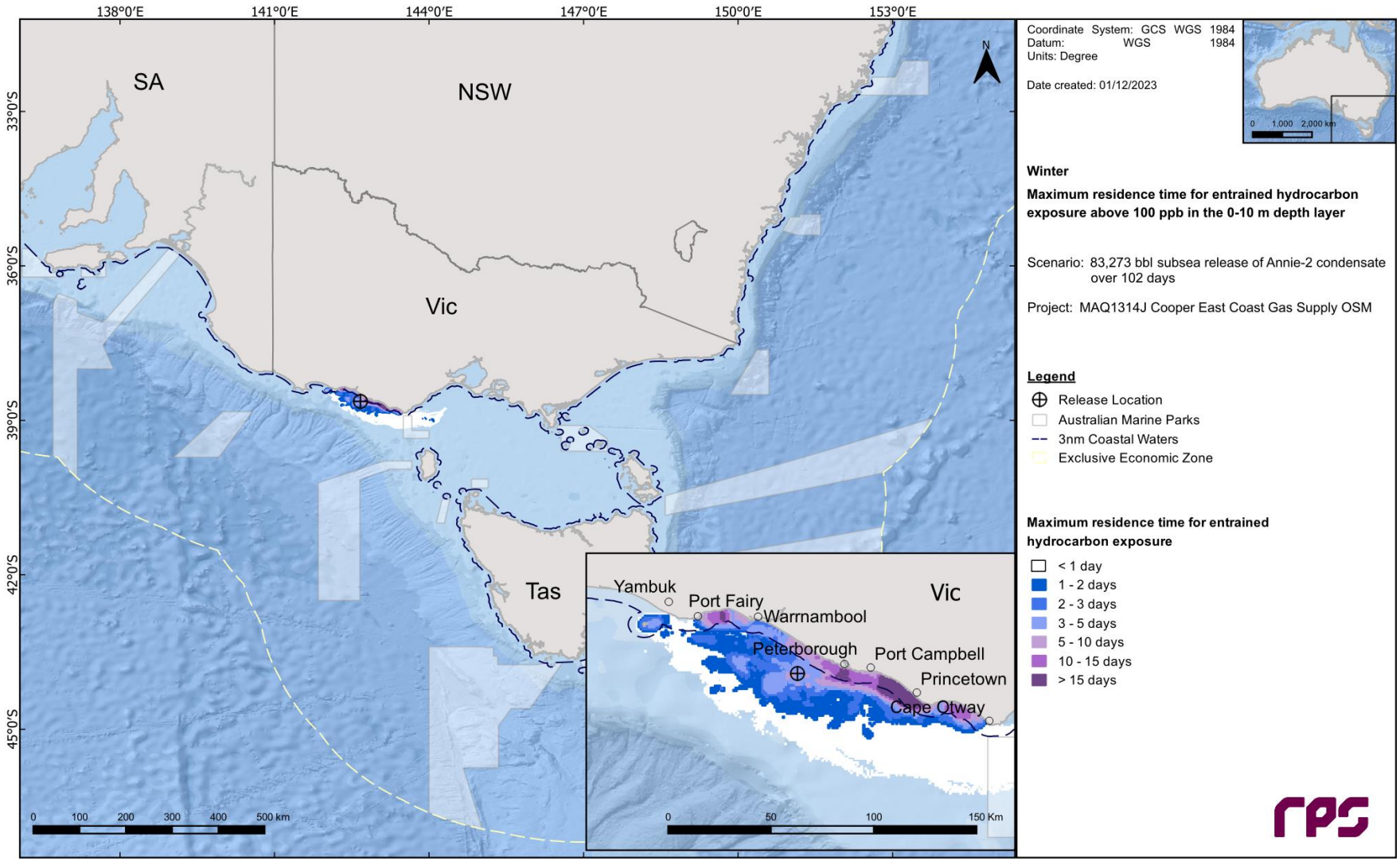

Figure 12.18 Maximum residence time for entrained hydrocarbon exposure above 100 ppb, at 0-10 m below the sea in the event of an 83,273 bbl subsurface release from a loss of well control at Pecten East-2 over 102 days. The results were calculated from 100 spill simulations during winter conditions.

12.2 Deterministic Analysis

The stochastic modelling results were assessed, and the “worst case” deterministic runs were identified and are presented below for the following criteria:

a. Largest swept area for surface oil above 10 g/m^2;
b. Largest (total) volume of oil ashore;
c. Longest length of shoreline with oil accumulation above 100 g/m^2;
d. Largest area of entrained hydrocarbon exposure above 100 ppb; and
e. Largest area of dissolved hydrocarbon exposure above 50 ppb.

Table 12.11 presents a summary of in-water exposure and shoreline accumulation at the assessed thresholds for the identified deterministic simulations.

Table 12.11 Summary of the worst-case deterministic analysis based on the scenario presented in the stochastic analysis section.

Variable	Threshold	Deterministic Analysis Criteria				
		Largest swept area of floating oil >10 g/m²	Largest volume of oil ashore	Longest length of shoreline with accumulation >100 g/m²	Largest area of entrained hydrocarbon exposure >100 ppb	Largest area of dissolved hydrocarbon exposure >50 ppb
Season		Summer	Winter	Summer	Winter	Summer
Run Number		61	13	57	58	68
Total area of floating Oil exposure (km²)	1 g/m²	740	270	575	511	329
	10 g/m²	**45**	8	10	25	8
	50 g/m²	-	-	-	-	-
Total length of shoreline accumulation (km)	10 g/m²	134	164	187	133	65
	100 g/m²	47	69	**71**	45	14
	1,000 g/m²	-	3	4	-	-
Minimum time before accumulation on any shoreline (hours)	10 g/m²	60	77	113	207	327
	100 g/m²	375	103	125	240	390
	1,000 g/m²	-	1,665	1,147	-	-
Total volume of oil ashore (m³)		196	**343**	287	184	63
Total area of entrained hydrocarbon exposure (km²)	10 ppb	25,660	15,963	26,125	22,543	35,799
	100 ppb	3,143	2,678	3,050	**5,589**	2,606
Total area of dissolved hydrocarbon exposure (km²)	10 ppb	68	216	61	125	131
	50 ppb	-	-	-	-	**1**
	400 ppb	-	-	-	-	-
Start Date		27th April 2010 3 pm	23rd July 2010 4 am	19th March 2012 11 am	3rd August 2014 2 am	29th April 2016 11 am

NC = No contact at, or above the specified shoreline accumulation threshold.

12.2.1 Deterministic Case: Largest swept area of floating oil above 10 g/m^2

The deterministic trajectory that resulted in the largest swept area of floating oil above 10 g/m^2 was identified as summer run number 61, which started on 27th April 2010.

Figure 11.19 illustrates the floating oil exposure and shoreline accumulation over the 116-day simulation.

Figure 11.20 displays the time series of the area of sea surface exposure above the low (1 g/m^2), moderate (10 g/m^2) and high (50 g/m^2) thresholds over the 116-day simulation.

Figure 11.21 presents the fates and weathering graph for the corresponding single spill trajectory and Table 11.12 summarises the mass balance peaks and at the end of the simulation.

Table 12.12 Summary of the mass balance for the trajectory with the largest swept area of floating oil above 10 g/m^2.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	382.3	20.3	0.1
Entrained (m^3)	1,925.8	78.0	1,476.6
Dissolved (m^3)	8.1	14.1	0.5
Evaporation (m^3)	7,868.8	116.0	7,868.8
Decay (m^3)	3,154.7	116.0	3,154.7
Ashore (m^3)	199.6	107.8	195.9

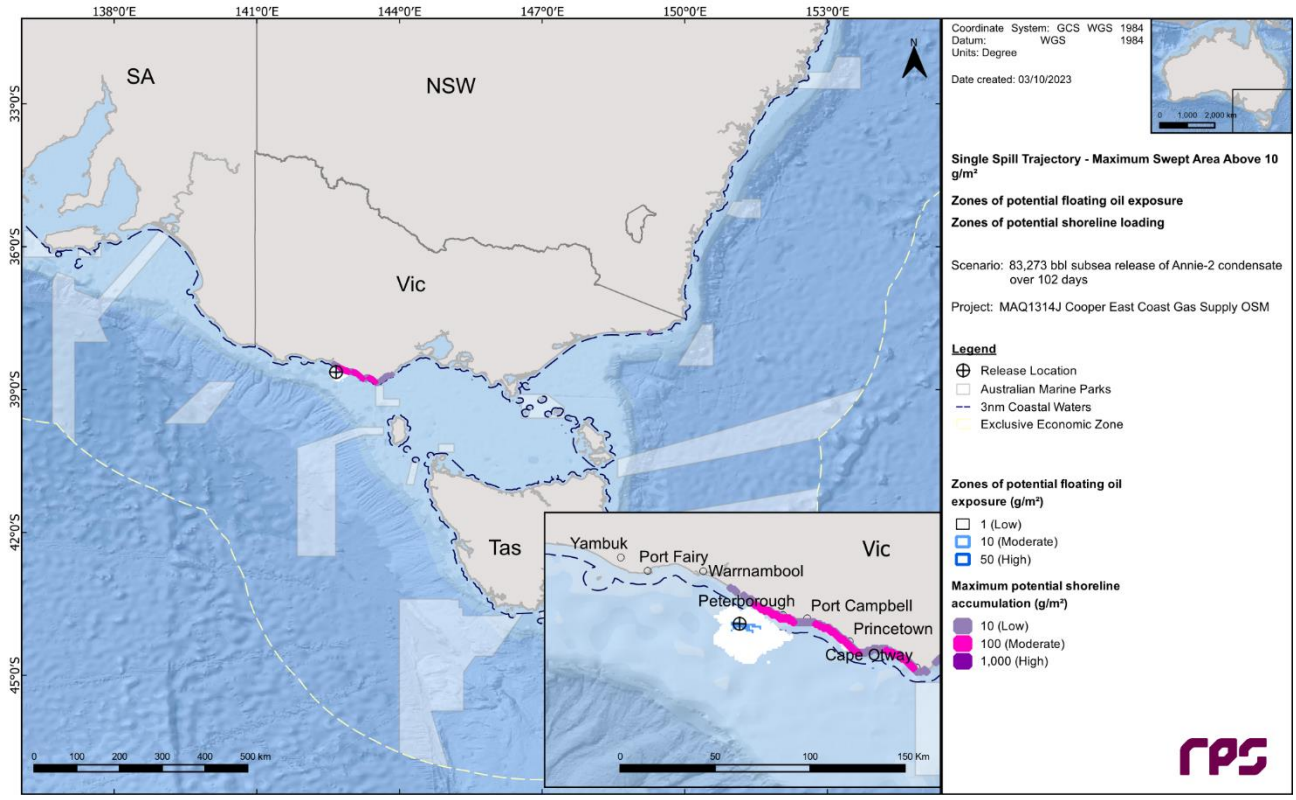

Figure 12.19 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest swept area of floating oil above 10 g/m^2.

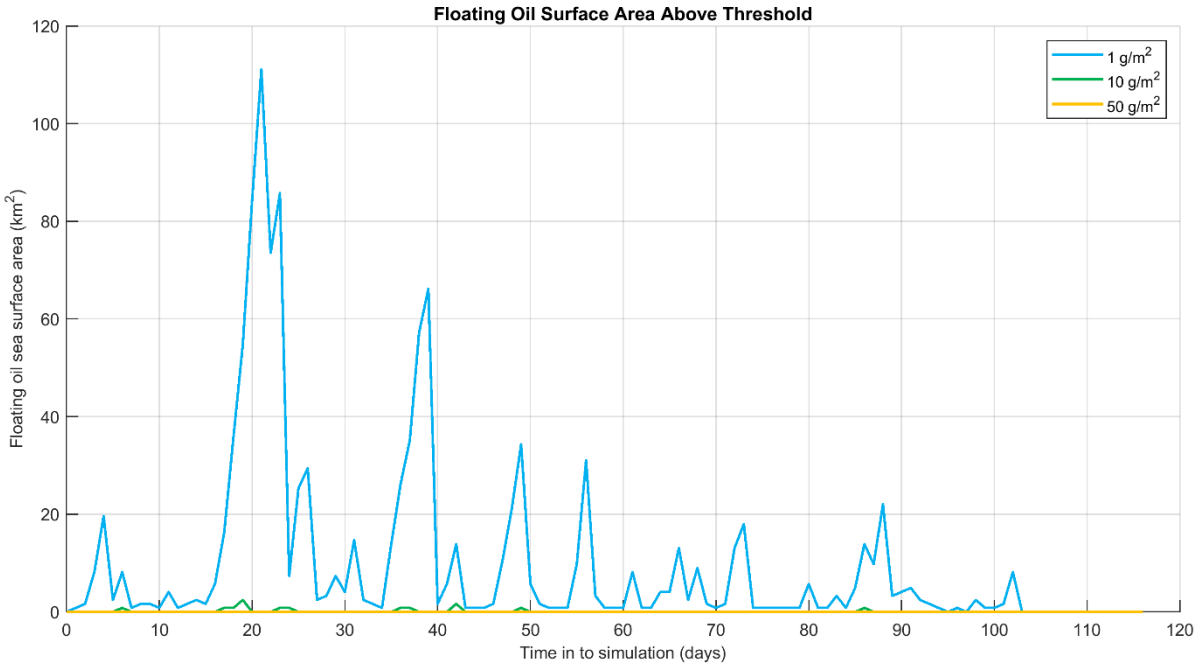

Figure 12.20 Time series of the sea surface exposure above each threshold for the trajectory with the largest swept area of floating oil above 10 g/m^2.

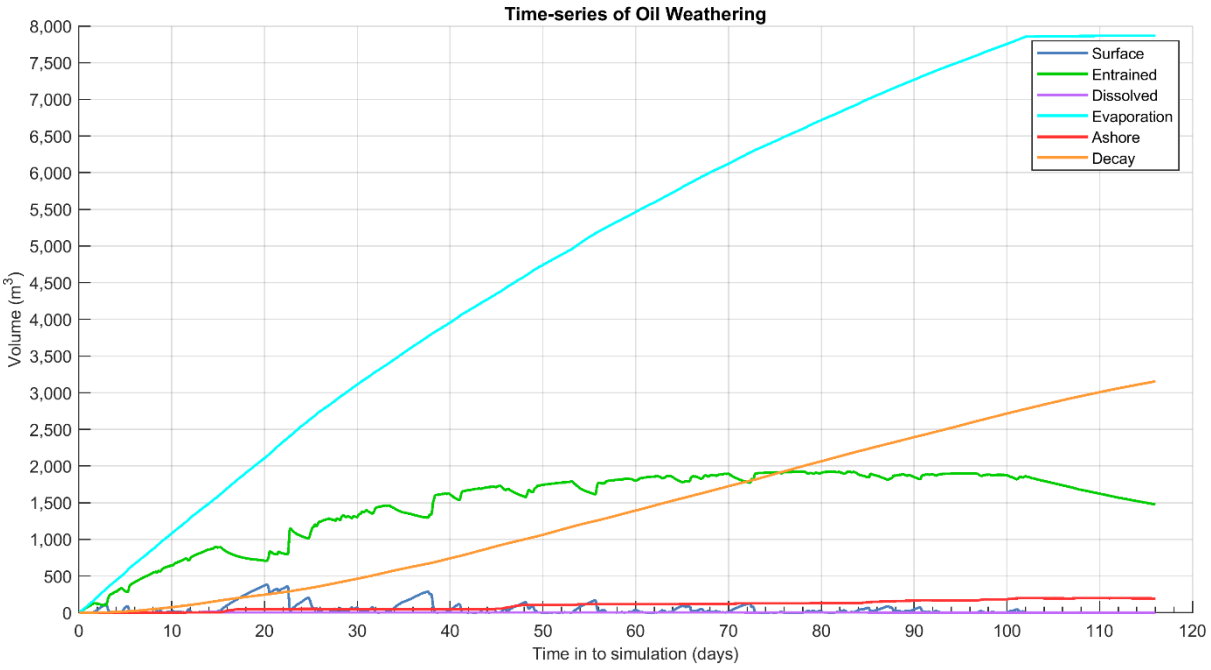

Figure 12.21 Predicted weathering and fates graph for the trajectory with the largest swept area of floating oil above 10 g/m^2.

12.2.2 Deterministic Case: Largest volume of oil ashore

The deterministic trajectory that resulted in the largest volume of oil ashore was identified as winter run number 13, which started on 23rd July 2010.

Figure 12.22 illustrates the floating oil exposure and shoreline accumulation over the 116-day simulation.

Figure 12.23 displays the time series of the volume of oil accumulating on shorelines at the low (10 g/m^2), moderate (100 g/m^2) and high (1,000 g/m^2) thresholds over the 116-day simulation.

Figure 12.24 presents the fates and weathering graph for the corresponding single spill trajectory and Table 12.13 summarises the mass balance peaks and at the end of the simulation.

Table 12.13 Summary of the mass balance for the trajectory with the largest volume ashore.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	156.7	37.3	0.2
Entrained (m^3)	1,857.0	87.0	1,433.1
Dissolved (m^3)	7.9	18.5	0.5
Evaporation (m^3)	7,697.1	116.0	7,697.1
Decay (m^3)	3,222.8	116.0	3,222.8
Ashore (m^3)	348.4	104.1	342.9

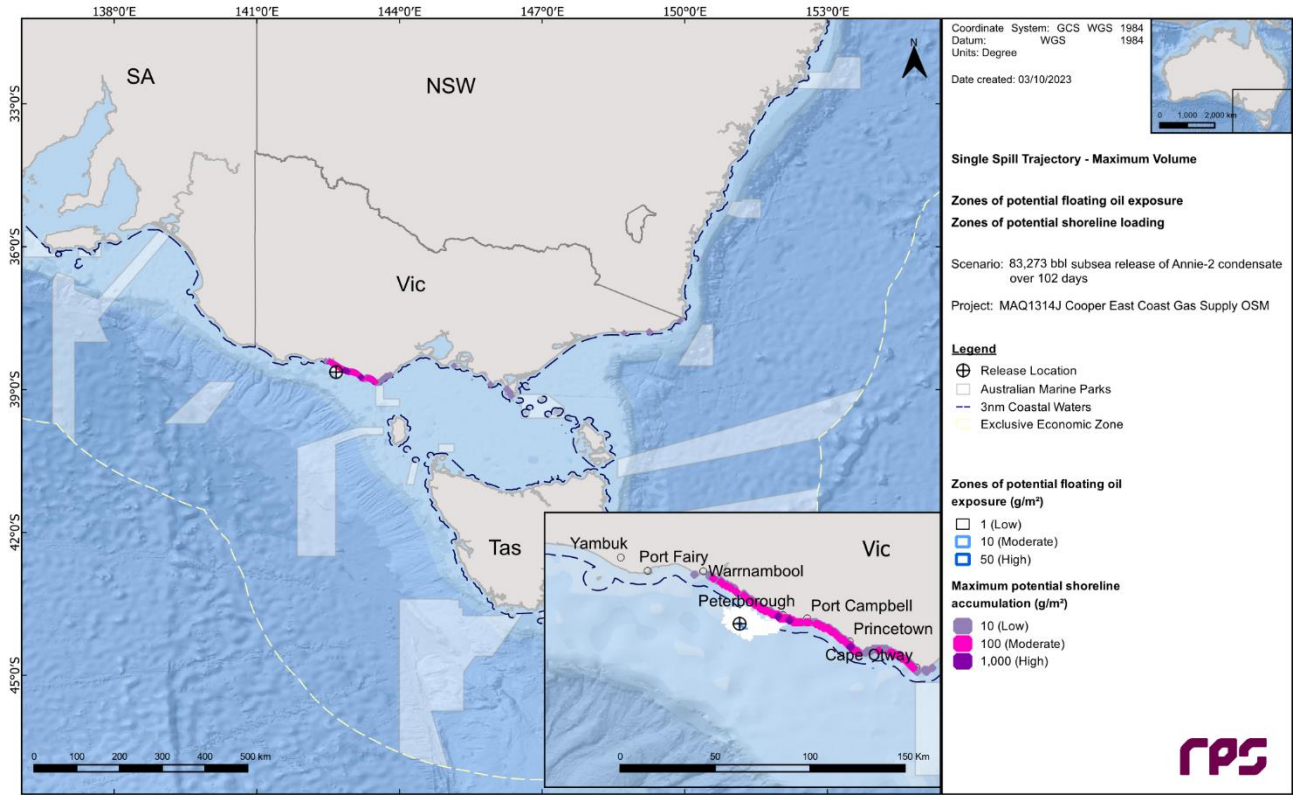

Figure 12.22 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest volume ashore.

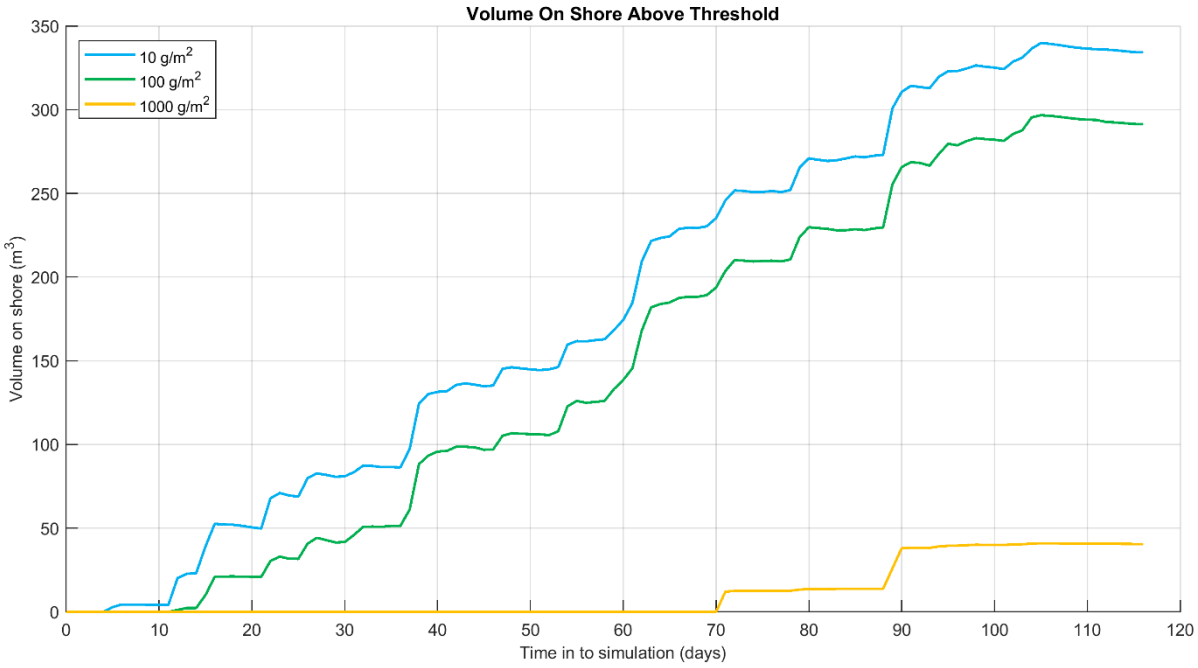

Figure 12.23 Time series of oil accumulation on the shoreline above each threshold for the trajectory with the largest volume ashore.

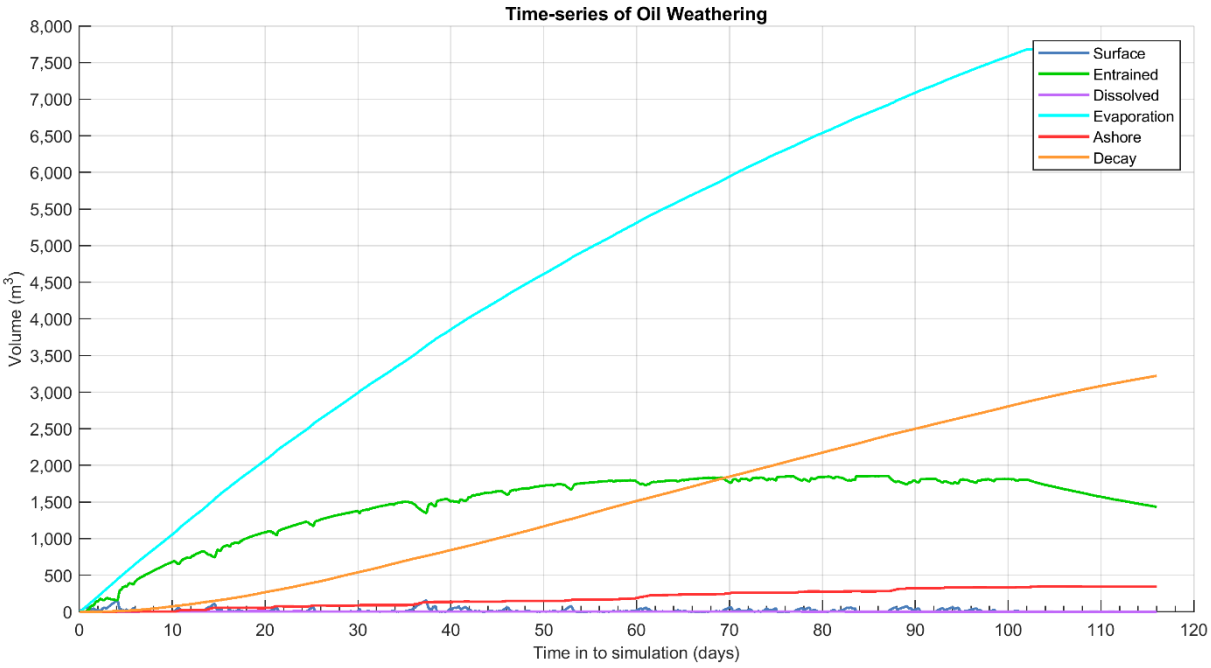

Figure 12.24 Predicted weathering and fates graph for the trajectory with the largest volume ashore.

12.2.3 Deterministic Case: Longest length of shoreline with accumulation above 100 g/m^2

The deterministic trajectory that resulted in the longest length of shoreline with accumulation above 100 g/m^2 was identified as summer run number 57, which started on 19th March 2012.

Figure 12.25 illustrates the floating oil exposure and shoreline accumulation over the 116-day simulation.

Figure 12.26 displays the time series of the length of shoreline with accumulation at the low (10 g/m^2), moderate (100 g/m^2) and high (1,000 g/m^2) thresholds over the 116-day simulation.

Figure 12.27 presents the fates and weathering graph for the corresponding single spill trajectory and Table 12.14 summarises the mass balance peaks and at the end of the simulation.

Table 12.14 Summary of the mass balance for the trajectory with the longest length of shoreline with accumulation above 100 g/m^2.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	353.5	5.3	0.7
Entrained (m^3)	1,884.2	89.0	1,458.1
Dissolved (m^3)	8.1	20.9	0.4
Evaporation (m^3)	7,765.0	116.0	7,765.0
Decay (m^3)	3,222.7	116.0	3,222.7
Ashore (m^3)	250.0	115.5	249.9

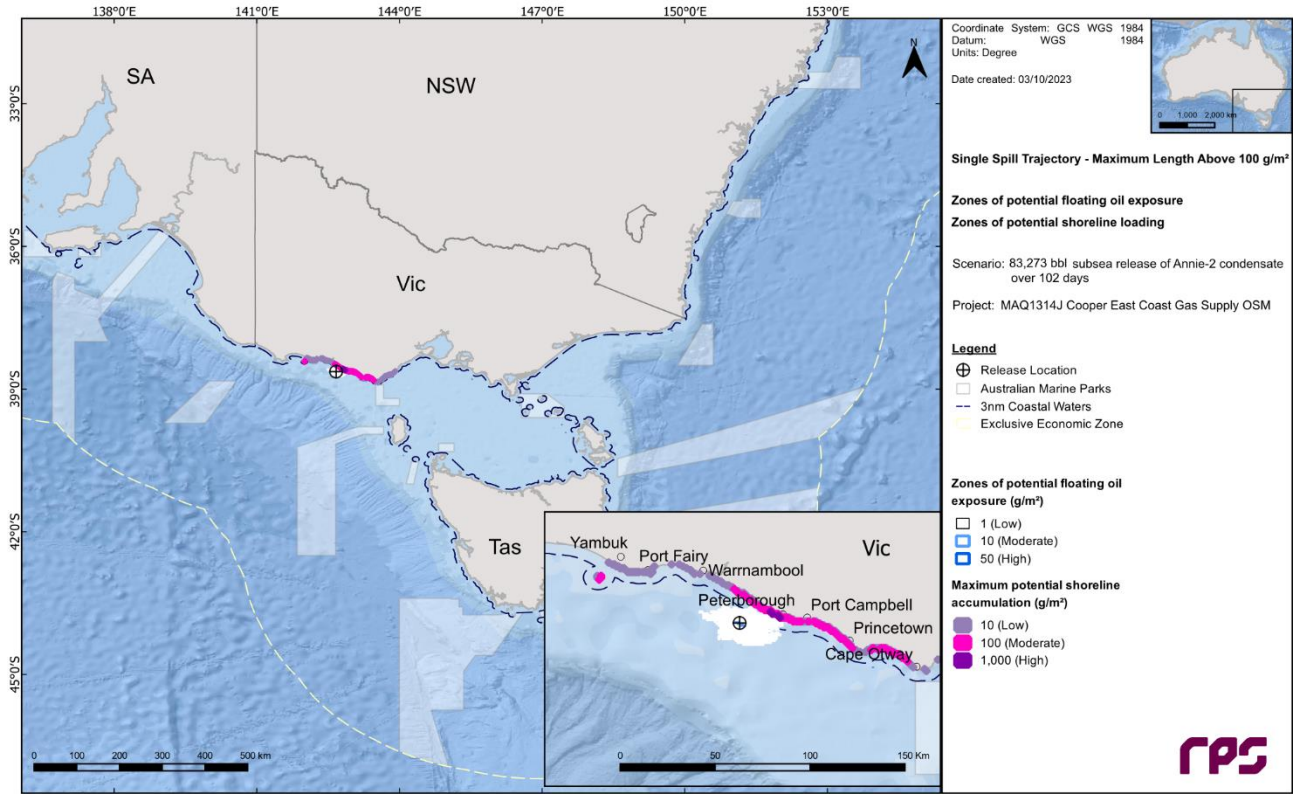

Figure 12.25 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the longest length of shoreline with accumulation above 100 g/m^2.

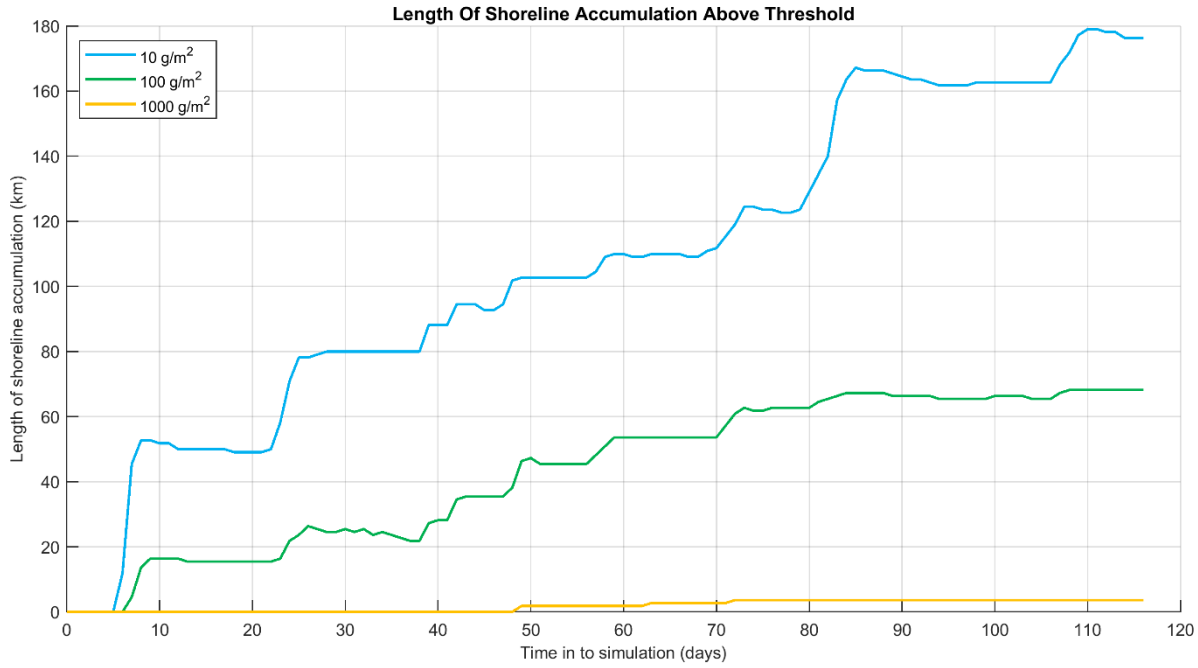

Figure 12.26 Time series of the length of shoreline with accumulation above each threshold for the trajectory with the longest length of shoreline with accumulation above 100 g/m².

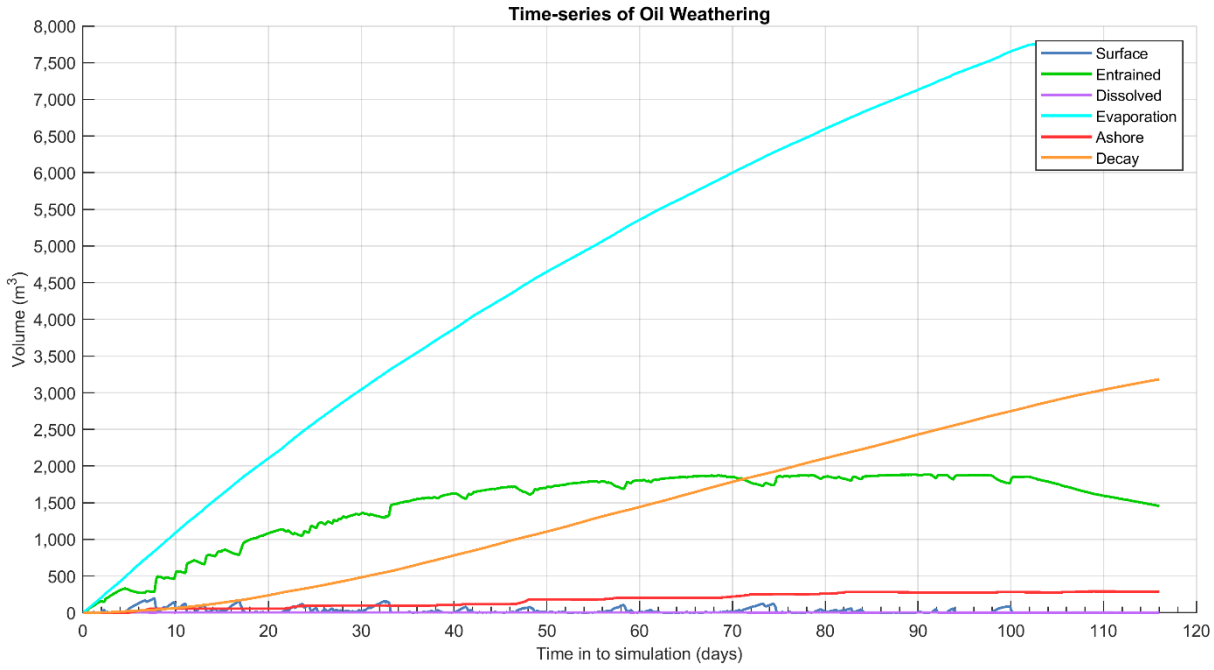

Figure 12.27 Predicted weathering and fates graph for the trajectory with the longest length of shoreline with accumulation above 100 g/m².

12.2.4 Deterministic Case: Largest area of entrained hydrocarbon exposure above 100 ppb

The deterministic trajectory that resulted in the largest area of entrained hydrocarbon exposure above 100 ppb was identified as winter run number 58, which started on 3rd August 2014.

Figure 12.28 illustrates the zones of potential entrained hydrocarbon exposure over the 116-day simulation.

Figure 12.29 displays the time series of the area of entrained hydrocarbon exposure at the low (10 ppb) and high (100 ppb) thresholds over the 116-day simulation.

Figure 12.30 presents the fates and weathering graph for the corresponding single spill trajectory and Table 12.15 summarises the mass balance peaks and at the end of the simulation.

Table 12.15 Summary of the mass balance for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	266.1	13.8	0.1
Entrained (m^3)	1,935.0	85.5	1,506.6
Dissolved (m^3)	8.1	22.0	0.5
Evaporation (m^3)	7,751.3	116.0	7,751.3
Decay (m^3)	3,254.5	116.0	3,254.5
Ashore (m^3)	184.5	113.0	183.8

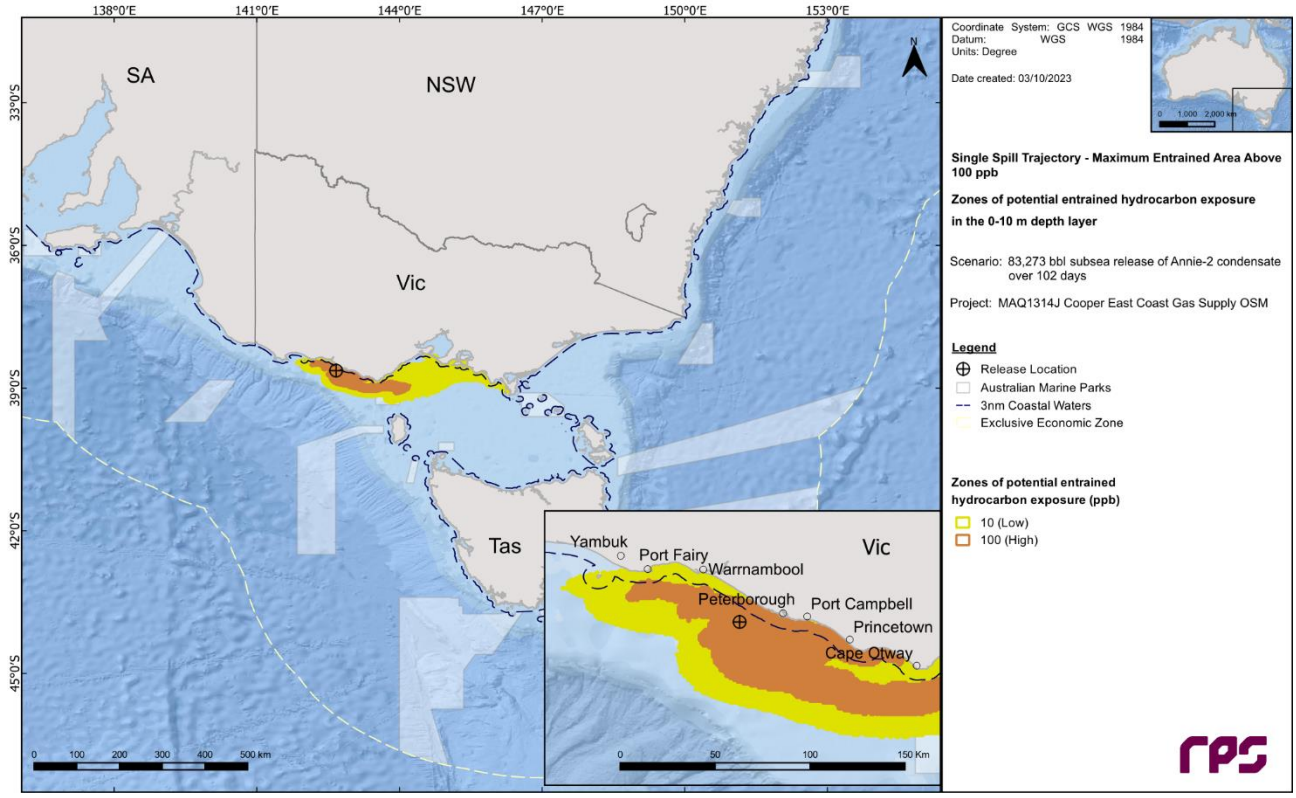

Figure 12.28 Zones of potential entrained hydrocarbon exposure, for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

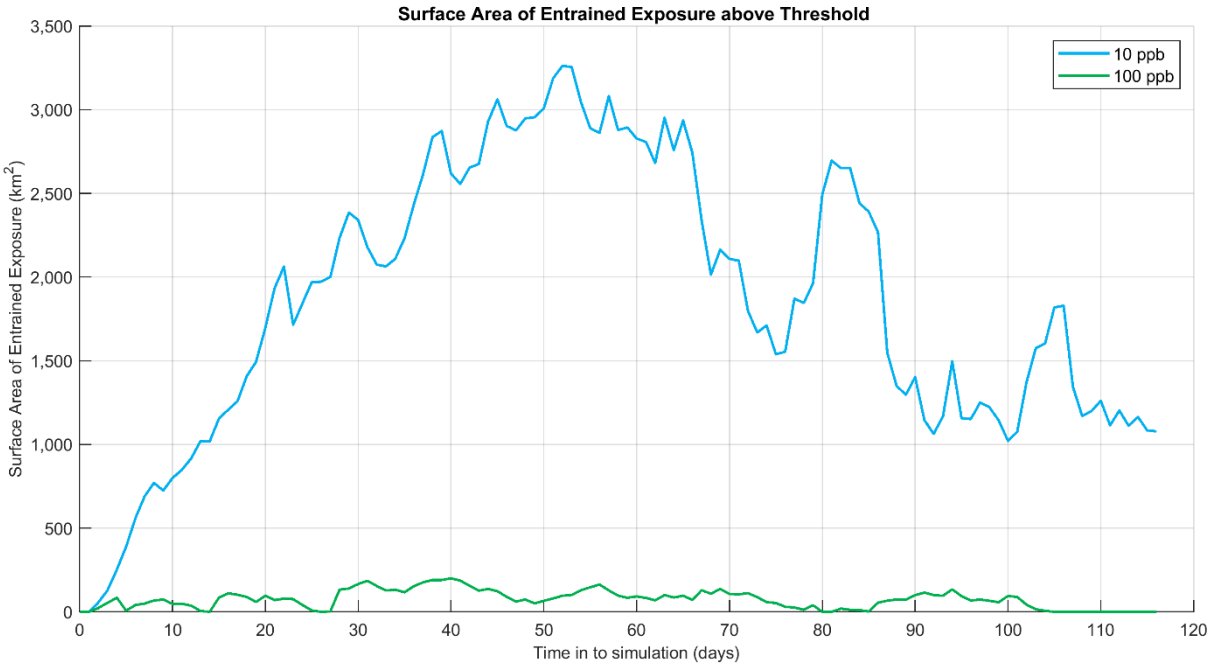

Figure 12.29 Time series of the entrained hydrocarbon exposure area above each threshold for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

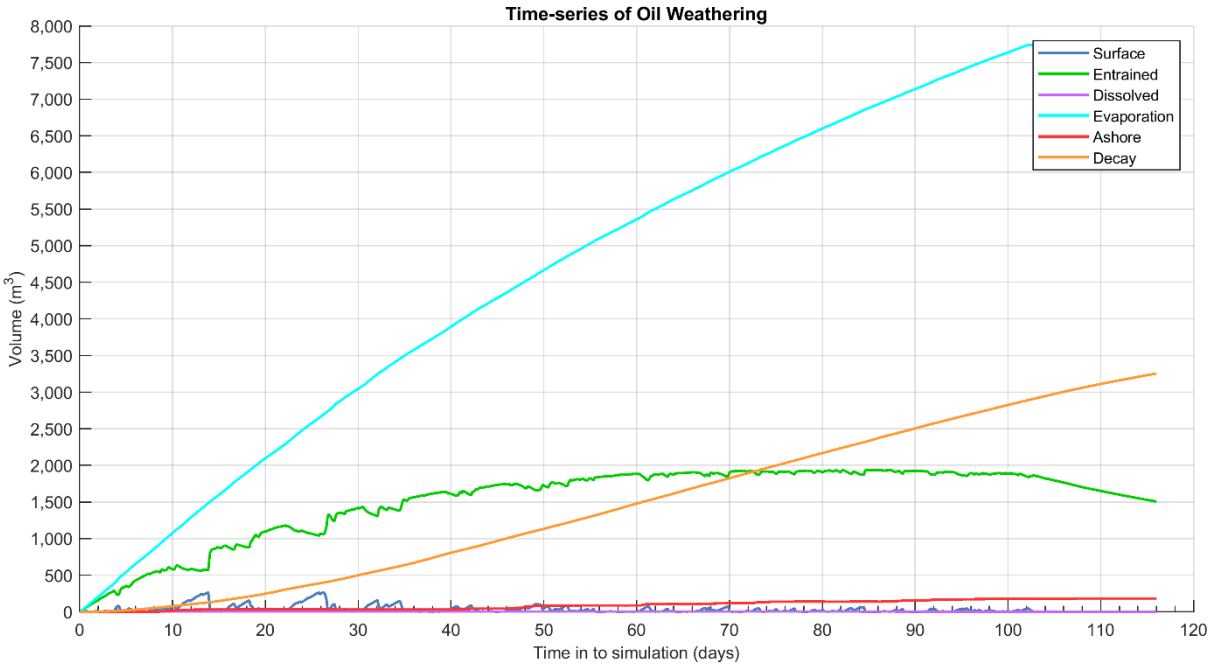

Figure 12.30 Predicted weathering and fates graph for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

12.2.5 Deterministic Case: Largest area of dissolved hydrocarbon exposure above 50 ppb

The deterministic trajectory that resulted in the largest area of dissolved hydrocarbon exposure above 50 ppb was identified as summer run number 68, which started on 29th April 2016.

Figure 12.31 illustrates the zones of potential dissolved hydrocarbon exposure over the 116-day simulation.

Figure 12.32 displays the time series of the area of dissolved hydrocarbon exposure at the low (10 ppb), moderate (50 ppb) and high (400 ppb) thresholds over the 116-day simulation.

Figure 12.33 presents the fates and weathering graph for the corresponding single spill trajectory and Table 12.16 summarises the mass balance peaks and at the end of the simulation.

Table 12.16 Summary of the mass balance for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 116
Surface (m^3)	160.9	7.8	0.7
Entrained (m^3)	1,982.5	74.3	1,550.5
Dissolved (m^3)	7.7	17.8	0.3
Evaporation (m^3)	7,670.3	116.0	7,670.3
Decay (m^3)	3,411.7	116.0	3,411.7
Ashore (m^3)	66.6	99.3	63.1

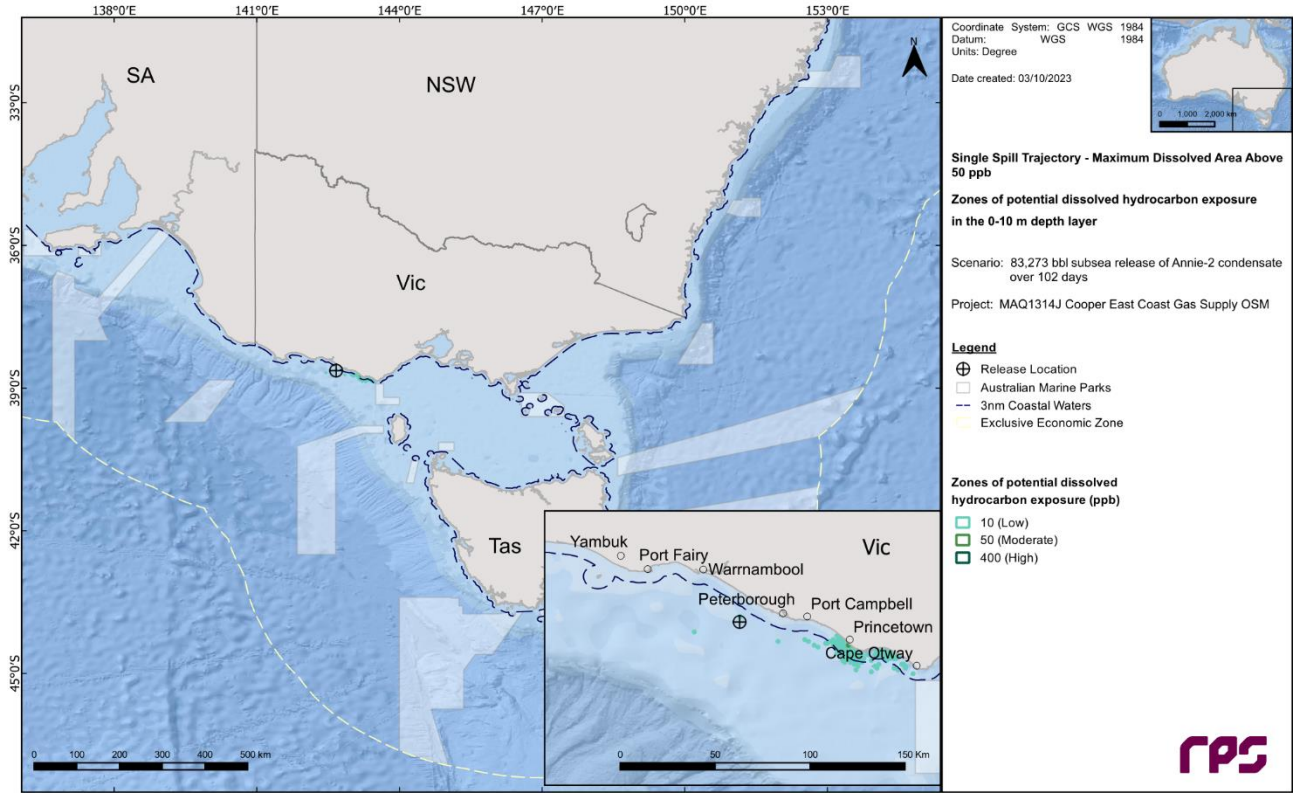

Figure 12.31 Zones of potential dissolved hydrocarbon exposure, for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

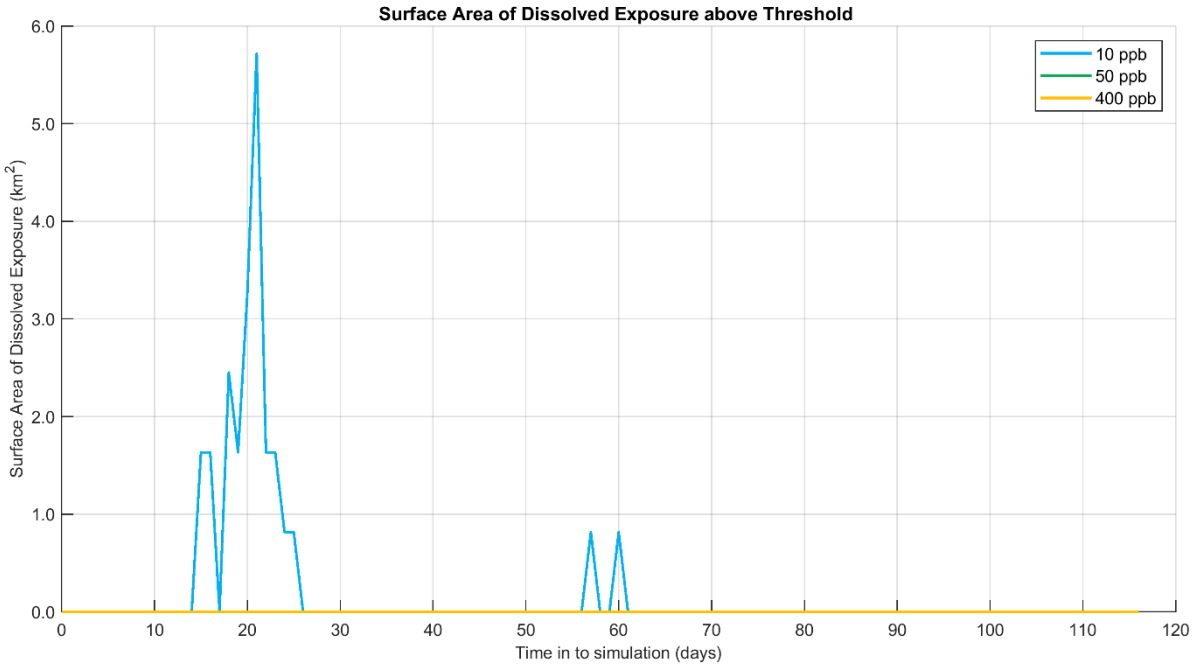

Figure 12.32 Time series of the dissolved hydrocarbon exposure area above each threshold for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

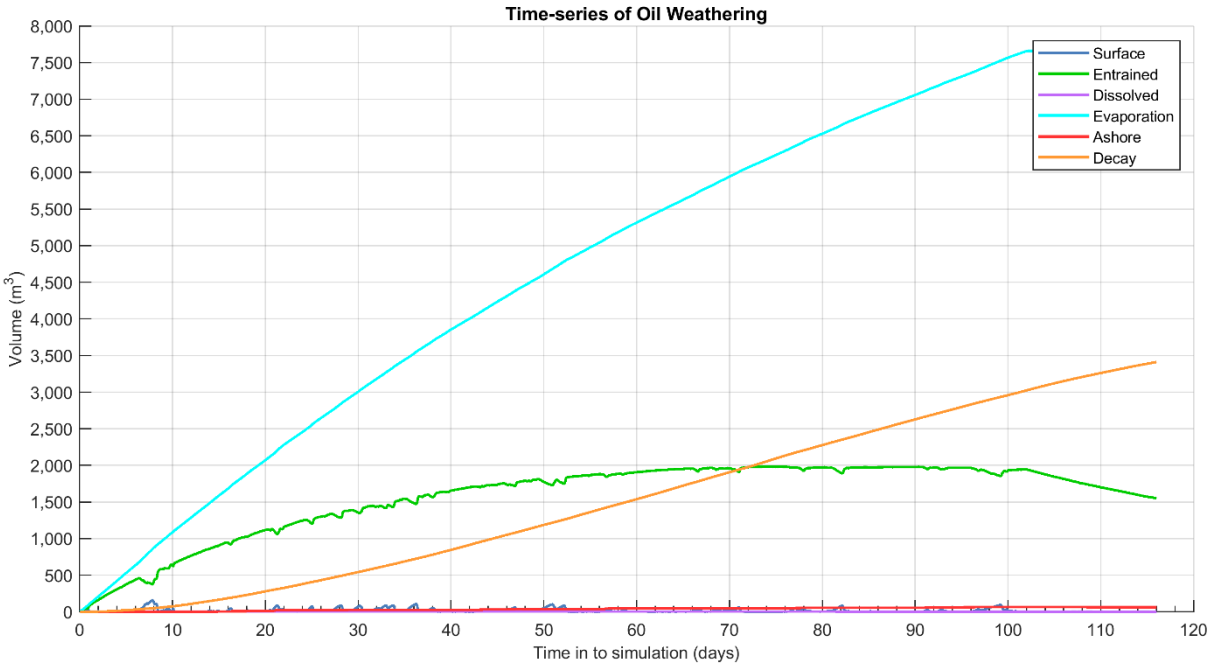

Figure 12.33 Predicted weathering and fates graph for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb.

13 RESULTS – SCENARIO 3 – 66,430 BBL (10,562 M^3) SUBSURFACE RELEASE FROM A LOSS OF WELL CONTROL AT ANNIE-2

This scenario examined a 66,430 bbl (10,562 m^3) subsurface release of condensate over 104 days to represent a LOWC scenario at Annie-2 well. A total of 100 spill simulations were run per season (summer and winter) and each simulation was tracked for 118 days. The results are presented on a seasonal basis.

Sections 13.1 and 13.2 present the seasonal stochastic analysis and deterministic analysis results, respectively.

13.1 Stochastic Analysis

13.1.1 Floating Oil Exposure

Table 13.1 summarises the maximum distance travelled by floating oil on the sea surface at each threshold. The maximum distance and corresponding direction from the release location to the low (1–10 g/m^2) and moderate (10–50 g/m^2) exposure zones was 55.7.0 km (east, winter) and 3.2 km (east, winter), respectively. No high (>50 g/m^2) exposure zones were predicted during either summer or winter conditions.

Table 13.2 summarises the potential floating oil exposure to individual receptors.

During summer, a total of 16 BIAs were predicted to be exposed to floating oil at, or above, the low threshold. Excluding the BIAs that the release location resides within (see Section 10.3), the highest probability (38%) of low exposure was predicted at the Southern Right Whale – Aggregation BIA. The minimum time before low exposure to the Southern Right Whale – Aggregation was 0.83 days.

Similarly, during winter, a total of 16 BIAs were predicted to be exposed to floating oil at, or above, the low threshold. Again, the highest probability (8%) of low exposure was predicted at the Southern Right Whale – Aggregation BIA. The minimum time before low exposure to the Southern Right Whale – Aggregation was 2.17 days.

Table 13.3 presents the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor.

Figure 13.1 and Figure 13.2 present the zones of potential floating oil exposure for each season whilst Figure 13.3 to Figure 13.6 present the maximum residence time of floating oil exposure for the NOPSEMA thresholds.

Table 13.1 Maximum distance and direction from the release location to the edge of floating oil exposure. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Distance and direction travelled	Zones of potential floating oil exposure					
	Summer			Winter		
	Low	Moderate	High	Low	Moderate	High
Maximum distance (km) from release location	53.0	1.6	-	55.7	3.2	-
Maximum distance (km) from release location (99th percentile)	30.0	1.6	-	33.1	3.2	-
Direction	E	W	-	E	E	-

Table 13.2 Summary of the potential floating oil exposure to individual receptors. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer						Winter					
		Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)			Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)		
		Low	Mod.	High	Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
BIA	Antipodean Albatross - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Black-browed Albatross - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Bullers Albatross - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Campbell Albatross - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Common Diving-petrel - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Indian Yellow-nosed Albatross - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Pygmy Blue Whale - Distribution*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Pygmy Blue Whale - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Pygmy Blue Whale - Foraging annual high use area*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Short-tailed Shearwater - Foraging	2	-	-	12.29	-	-	2	-	-	13.63	-	-
	Shy Albatross - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Southern Right Whale - Aggregation	38	-	-	0.83	-	-	8	-	-	2.17	-	-
	Southern Right Whale - Known Core Range*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Wandering Albatross - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	Wedge-tailed Shearwater - Foraging*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
	White Shark - Distribution*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
IBRA	Otway Plain	2	-	-	12.29	-	-	2	-	-	13.63	-	-
	Warrnambool Plain	65	-	-	1.63	-	-	78	-	-	1.33	-	-
IMCRA	Otway*	100	57	-	0.04	0.50	-	100	44	-	0.04	0.58	-
MNP	Twelve Apostles	36	-	-	7.42	-	-	58	-	-	4.21	-	-
Nearshore Waters	Colac Otway	2	-	-	12.29	-	-	2	-	-	13.63	-	-
	Corangamite	50	-	-	4.92	-	-	78	-	-	1.17	-	-
	Moyne	22	-	-	1.63	-	-	11	-	-	5.96	-	-

Receptor		Summer						Winter					
		Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)			Probability of floating oil exposure (%)			Minimum time before floating oil exposure (days)		
		Low	Mod.	High	Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
State Waters	Victoria State Waters	99	-	-	0.50	-	-	99	-	-	0.54	-	-
Nearshore Waters (Sub-LGA)	Bay of Islands	22	-	-	1.63	-	-	10	-	-	5.96	-	-
	Cape Otway West	2	-	-	12.29	-	-	2	-	-	13.63	-	-
	Moonlight Head	42	-	-	7.21	-	-	66	-	-	4.54	-	-
	Port Campbell	15	-	-	4.92	-	-	35	-	-	1.17	-	-

*The release location resides within the receptor boundaries.

Table 13.3 Summary of the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer			Winter		
		Maximum residence time of floating oil exposure (days)			Maximum residence time of floating oil exposure (days)		
		Low	Moderate	High	Low	Moderate	High
BIA	Antipodean Albatross - Foraging*	12.83	0.46	-	8.42	0.58	-
	Black-browed Albatross - Foraging*	12.83	0.46	-	8.42	0.58	-
	Bullers Albatross - Foraging*	12.83	0.46	-	8.42	0.58	-
	Campbell Albatross - Foraging*	12.83	0.46	-	8.42	0.58	-
	Common Diving-petrel - Foraging*	12.83	0.46	-	8.42	0.58	-
	Indian Yellow-nosed Albatross - Foraging*	12.83	0.46	-	8.42	0.58	-
	Pygmy Blue Whale - Distribution*	12.83	0.46	-	8.42	0.58	-
	Pygmy Blue Whale - Foraging*	12.83	0.46	-	8.42	0.58	-
	Pygmy Blue Whale - Foraging annual high use area*	12.83	0.46	-	8.42	0.58	-
	Short-tailed Shearwater - Foraging	0.04	-	-	0.17	-	-
	Shy Albatross - Foraging*	12.83	0.46	-	8.42	0.58	-
	Southern Right Whale - Aggregation	0.17	-	-	0.25	-	-
	Southern Right Whale - Known Core Range*	12.83	0.46	-	8.42	0.58	-
	Wandering Albatross - Foraging*	12.83	0.46	-	8.42	0.58	-
	Wedge-tailed Shearwater - Foraging*	12.83	0.46	-	8.42	0.58	-
	White Shark - Distribution*	12.83	0.46	-	8.42	0.58	-
IBRA	Otway Plain	0.04	-	-	0.17	-	-
	Warrnambool Plain	0.71	-	-	0.75	-	-
IMCRA	Otway*	12.83	0.46	-	8.42	0.58	-
MNP	Twelve Apostles	0.54	-	-	0.63	-	-
Nearshore Waters	Colac Otway	0.04	-	-	0.17	-	-
	Corangamite	0.71	-	-	0.75	-	-
	Moyne	0.38	-	-	0.33	-	-
State Waters	Victoria State Waters	1.5	-	-	1.21	-	-

Receptor		Summer			Winter		
		Maximum residence time of floating oil exposure (days)			Maximum residence time of floating oil exposure (days)		
		Low	Moderate	High	Low	Moderate	High
Nearshore Waters (Sub-LGA)	Bay of Islands	0.38	-	-	0.33	-	-
	Cape Otway West	0.04	-	-	0.17	-	-
	Moonlight Head	0.54	-	-	0.63	-	-
	Port Campbell	0.71	-	-	0.75	-	-

*The release location resides within the receptor boundaries.

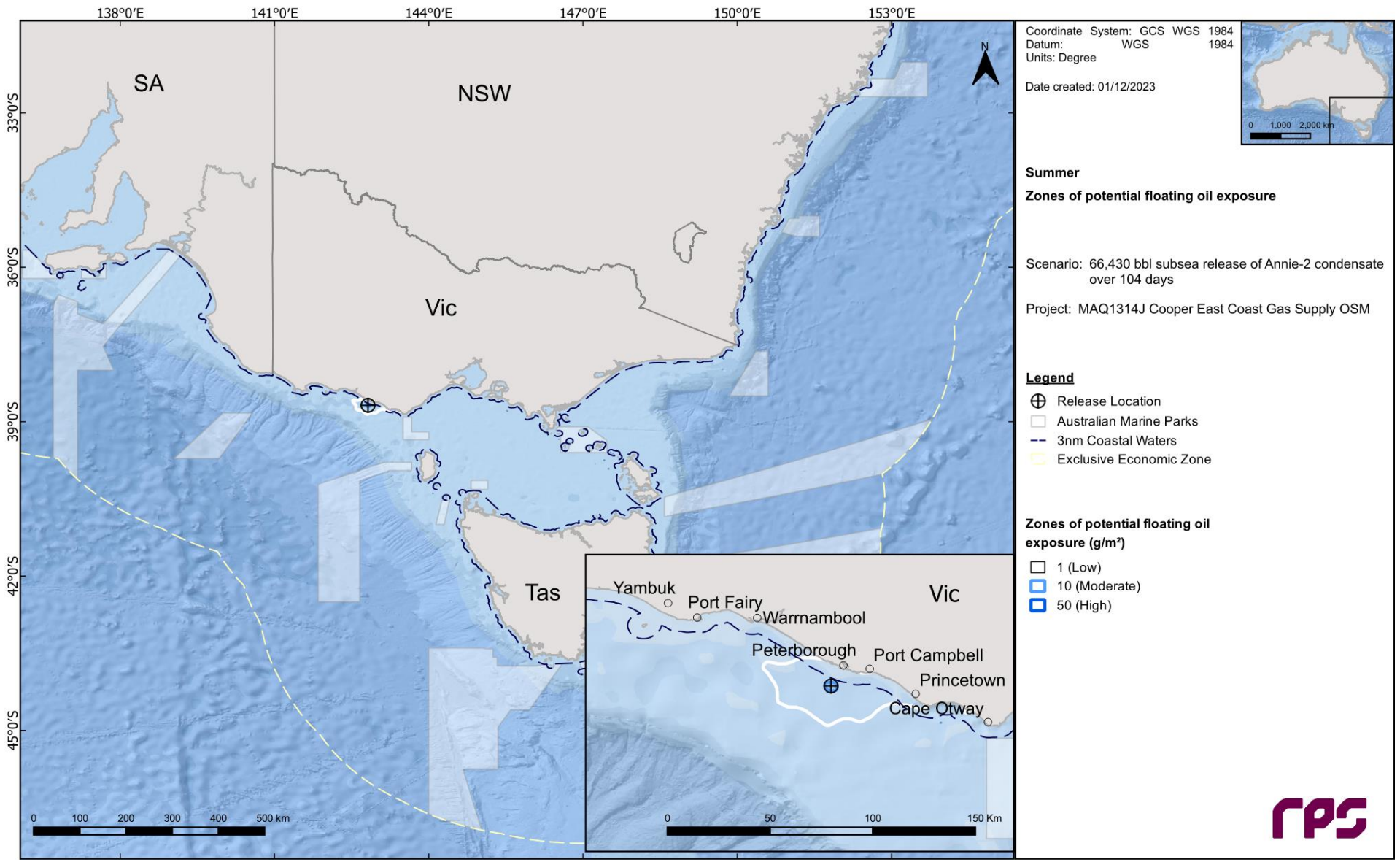

Figure 13.1 Zones of potential floating oil exposure in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

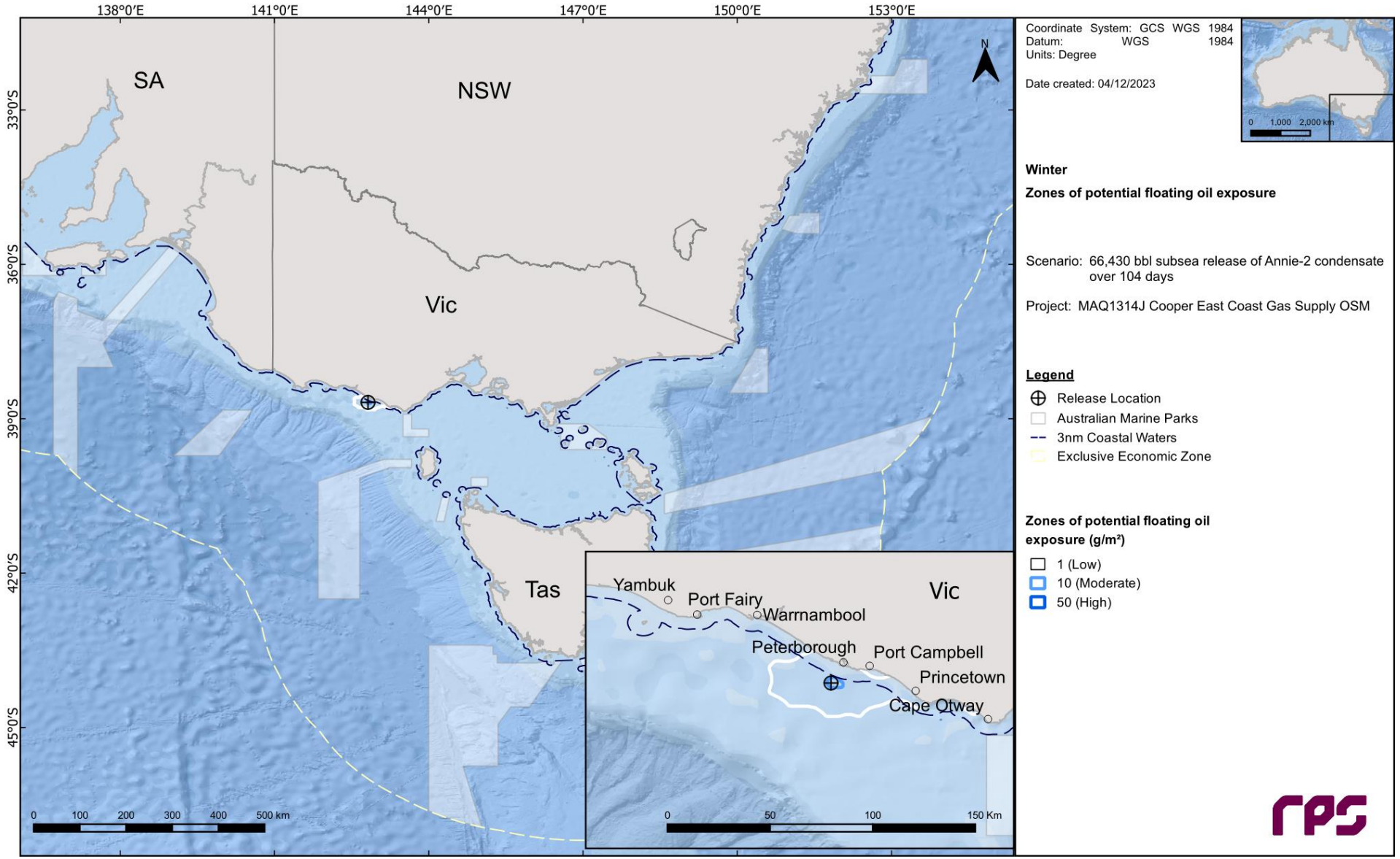

Figure 13.2 Zones of potential floating oil exposure in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

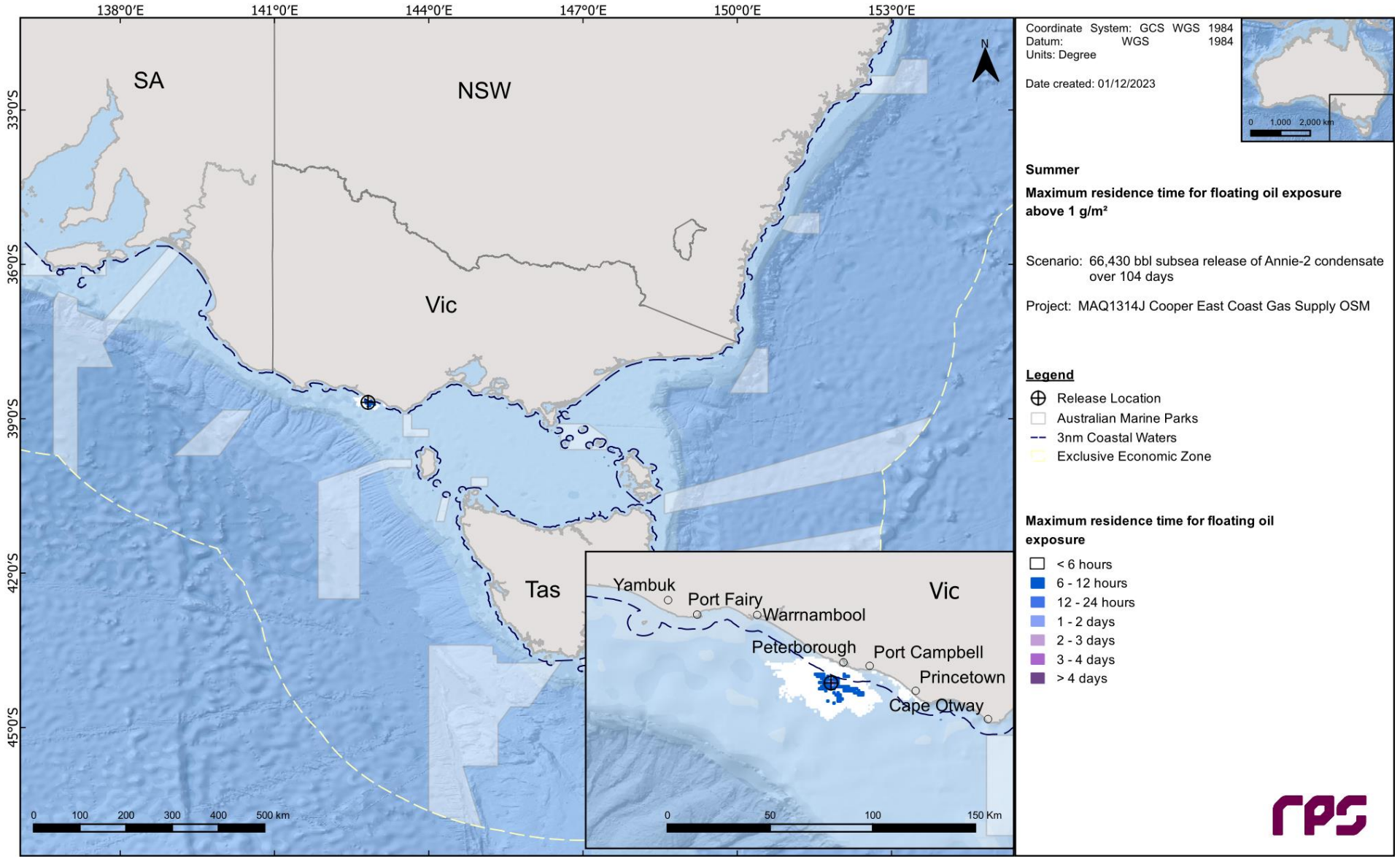

Figure 13.3 Maximum residence time of floating oil exposure above 1 g/m², in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

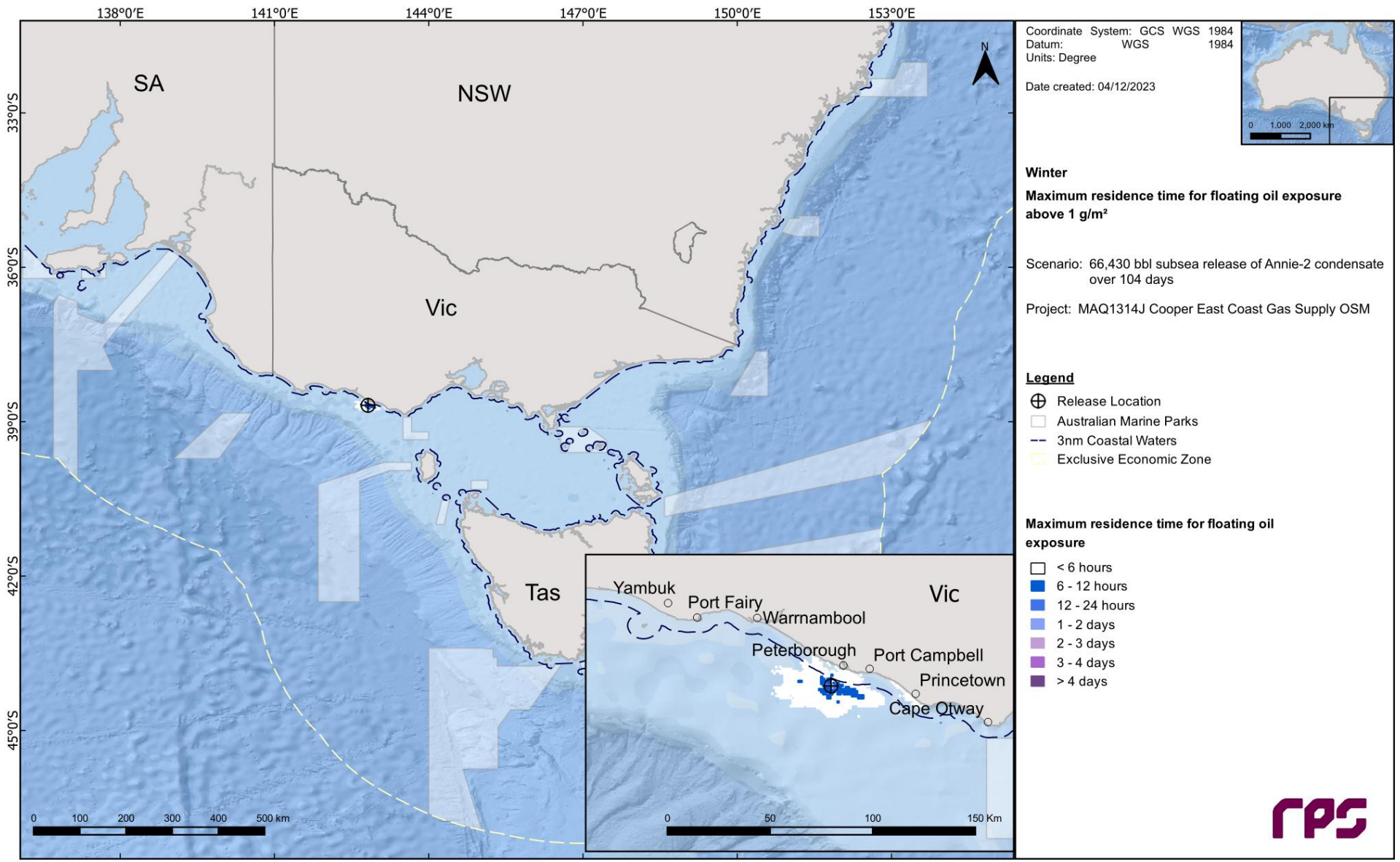

Figure 13.4 Maximum residence time of floating oil exposure above 1 g/m², in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

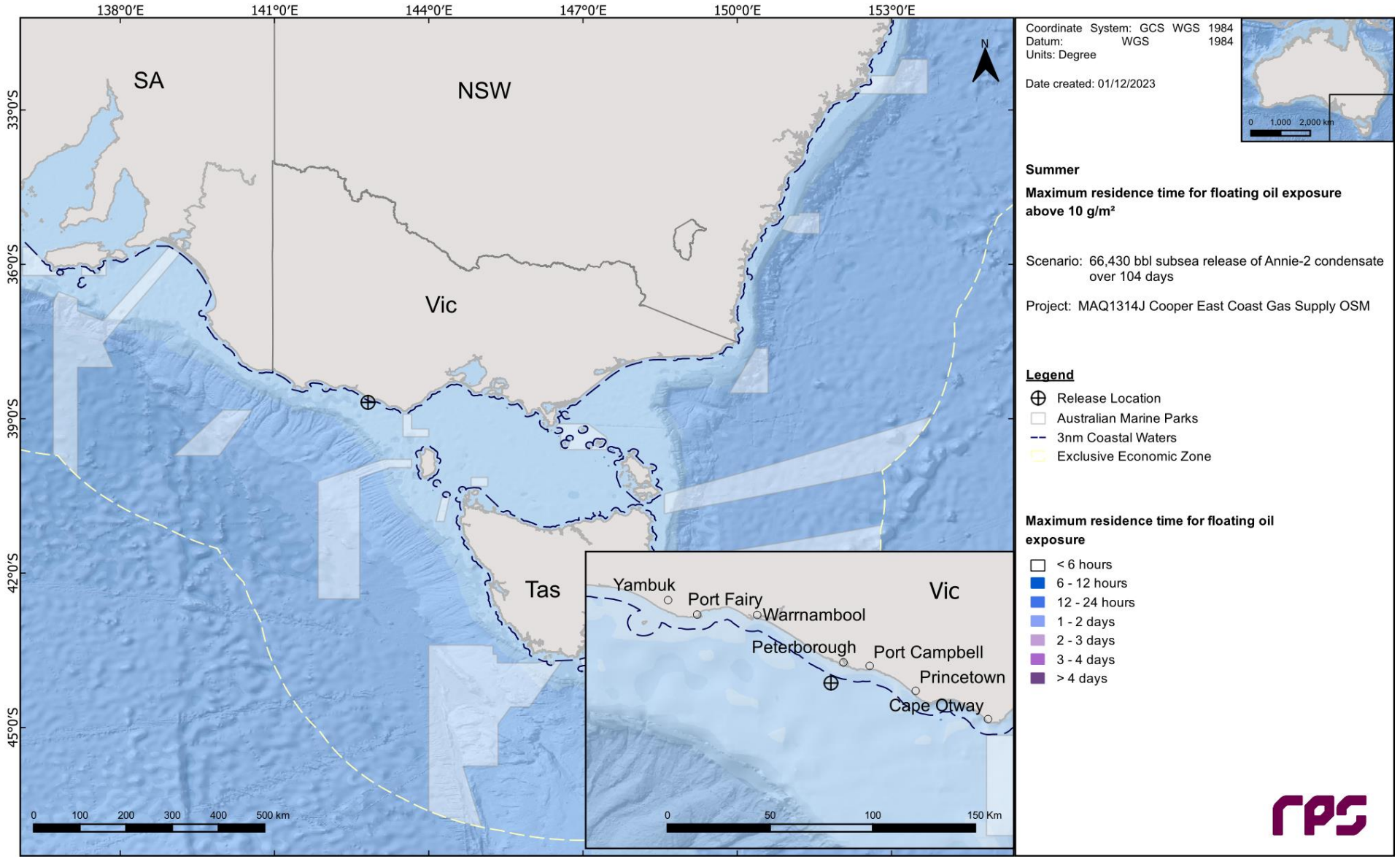

Figure 13.5 Maximum residence time of floating oil exposure above 10 g/m², in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

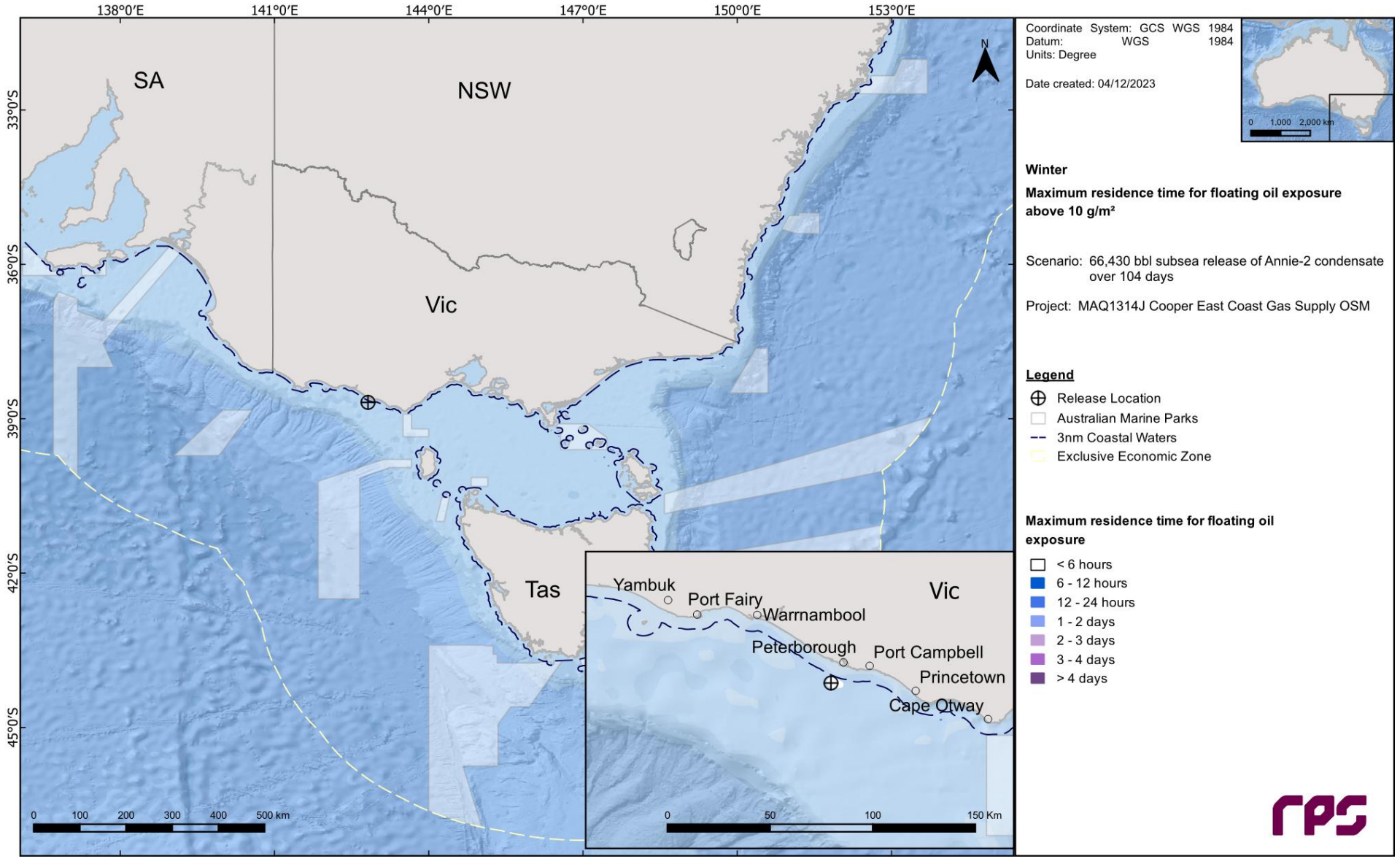

Figure 13.6 Maximum residence time of floating oil exposure above 10 g/m², in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

13.1.2 Shoreline Accumulation

Table 13.4 presents a summary of the potential shoreline accumulation. The probability of accumulation to any shoreline at, or above, the low (10 g/m^2) threshold was 100% throughout the year. The minimum time before oil accumulation at, or above, the low threshold was 0.96 day. The maximum total volume ashore for a single spill trajectory was 312.1 m^3, and the maximum length of shoreline with accumulation above the low, moderate and high thresholds were 224.0 km (winter), 62.0 km (winter) and 6.0 km (winter), respectively.

Table 13.5 and Table 13.6 summarises the shoreline accumulation on individual receptors during summer and winter, respectively.

During summer conditions, the shoreline segment of Corangamite LGA had the highest probability of accumulation above the low and moderate thresholds (100% and 99% respectively), whilst Moyne LGA and Bay of Islands sub-LGA shoreline had the highest probability of accumulation above the high threshold (5%). The minimum time for low threshold shoreline accumulation at Moyne was 0.96 days.

Alternatively, in winter the shoreline segment with the highest probability of accumulation above all three thresholds was Corangamite LGA (100%, 100% and 27% for low, moderate and high, respectively). The minimum time for low threshold shoreline accumulation at the Corangamite LGA receptor was 1 day.

The maximum potential shoreline loadings above each shoreline thresholds are presented in Figure 13.7 and Figure 13.8 for summer and winter respectively.

Table 13.4 Summary of oil accumulation across all shorelines. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Shoreline Statistics	Summer	Winter
Probability of accumulation on any shoreline (%)	100	100
Absolute minimum time for visible oil to shore (days)	0.96	1.00
Maximum total volume of hydrocarbons ashore (m^3)	206.3	312.1
Average total volume of hydrocarbons ashore (m^3)	124.1	161.7
Maximum length of the shoreline at **10 g/m^2** (km)	220.0	224.0
Average shoreline length (km) at **10 g/m^2** (km)	124.9	131.7
Maximum length of the shoreline at **100 g/m^2** (km)	58.0	62.0
Average shoreline length (km) at **100 g/m^2** (km)	28.6	33.3
Maximum length of the shoreline at **1,000 g/m^2** (km)	2.0	6.0
Average shoreline length (km) at **1,000 g/m^2** (km)	1.2	1.6

Table 13.5 Summary of oil accumulation on individual shoreline receptors. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

Shoreline Receptor		Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
		Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
LGA Shoreline	Anser Island	10	-	-	61.46	-	-	3	26	0.2	0.7	1.3	-	-	2.7	-	-
	Bass Coast	4	-	-	50.79	-	-	1	15	0.2	0.7	1.1	-	-	1.8	-	-
	Bega Valley	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Colac Otway	98	66	-	2.29	6.83	-	23	400	22.5	56.3	26.6	7.6	-	54.5	14.5	-
	Corangamite	100	99	-	1.54	2.79	-	82	811	63.5	126.8	44.8	15.3	-	55.4	31.8	-
	East Gippsland	1	-	-	103.25	-	-	1	18	0.3	1.1	0.9	-	-	0.9	-	-
	Gabo Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Glenelg	47	1	-	7.58	55.38	-	5	103	4.2	10	9.4	0.9	-	20	0.9	-
	Glennie Group	9	-	-	45.38	-	-	2	20	0.3	1.3	1.5	-	-	2.7	-	-
	Greater Geelong	12	-	-	42.75	-	-	3	94	0.9	7.4	5.2	-	-	14.5	-	-
	Hogan Island Group	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Kanowna Island	6	-	-	66.21	-	-	2	12	0.2	0.7	1.2	-	-	1.8	-	-
	Kent Island Group	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	King Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Lady Julia Percy Island	54	-	-	8.29	-	-	13	90	1.2	2.8	2.8	-	-	5.5	-	-
	Laurence Rocks	36	-	-	16.67	-	-	10	41	0.4	1	1.7	-	-	2.7	-	-
	Montague Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mornington Peninsula	10	-	-	49.33	-	-	2	21	0.6	3.1	2.7	-	-	5.5	-	-
	Moyne	99	92	5	0.96	1.33	25.38	35	1,354	29.3	78.9	28	6.3	1.1	49.1	15.4	1.8
	Norman Island	9	-	-	47.75	-	-	3	23	0.2	0.6	1.1	-	-	1.8	-	-
	Phillip Island	8	-	-	48.13	-	-	2	22	0.5	2.8	2.6	-	-	6.4	-	-
	Rodondo Island	8	-	-	82.42	-	-	3	24	0.2	0.6	1.4	-	-	1.8	-	-
	Shellback Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Skull Rock	4	-	-	66.21	-	-	2	11	< 0.1	0.3	0.9	-	-	0.9	-	-
	South Gippsland	23	-	-	42.92	-	-	2	55	1.5	8.2	7.5	-	-	20	-	-
	Surf Coast	9	-	-	45.54	-	-	2	81	0.8	7.9	8.5	-	-	20.9	-	-
	Warrnambool	62	11	-	5.25	7.63	-	9	160	2.6	12.9	7.2	1.4	-	20	2.7	-
	Wellington	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-LGA Shoreline	Anglesea	5	-	-	45.54	-	-	2	25	0.3	1.9	3.1	-	-	6.4	-	-
	Apollo Bay	64	-	-	5.17	-	-	5	80	1.6	4.9	5.4	-	-	12.7	-	-
	Bay of Islands	99	87	5	0.96	1.33	25.38	64	1,354	24.4	72.7	19.3	6.2	1.1	29.1	13.6	1.8
	Bega Valley	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cape Howe / Mallacoota	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cape Liptrap - Northwest	15	-	-	43.17	-	-	2	35	0.4	1.9	2.4	-	-	3.6	-	-
	Cape Nelson	47	1	-	7.58	55.38	-	7	103	3.8	9.4	9	0.9	-	18.2	0.9	-
	Cape Otway West	98	66	-	2.29	6.83	-	42	400	20.3	49.9	22.1	7.6	-	34.5	14.5	-
	Cape Patton	17	-	-	19.88	-	-	3	43	0.7	4.4	5.3	-	-	15.4	-	-
	Childers Cove	88	9	-	3.33	7.63	-	14	179	4.8	18.8	9.8	4	-	19.1	5.5	-
	Croajingolong - West	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Discovery Bay - East	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Discovery Bay - West	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	French Island / Crib Point	4	-	-	80.54	-	-	2	13	< 0.1	0.3	0.9	-	-	0.9	-	-
	Kilcunda	4	-	-	50.79	-	-	2	15	0.2	0.5	1.1	-	-	1.8	-	-

Shoreline Receptor	Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
	Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
Lorne	6	-	-	64.79	-	-	2	16	0.2	1.3	2	-	-	4.5	-	-
Marlo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moonlight Head	100	96	-	2.00	2.79	-	93	811	38.5	77.6	21.9	9.3	-	29.1	13.6	-
Mornington Peninsula - South	7	-	-	70.38	-	-	2	15	0.2	1	1.7	-	-	2.7	-	-
Mornington Peninsula - Southwest	6	-	-	49.33	-	-	2	21	0.3	1.8	2	-	-	4.5	-	-
Point Hicks	1	-	-	103.25	-	-	2	18	0.1	0.5	0.9	-	-	0.9	-	-
Port Campbell	100	89	-	1.54	3.08	-	70	677	24.8	61.7	22.6	7	-	26.4	20.9	-
Port Fairy	59	10	-	9.67	31.29	-	6	156	1.9	9.3	3.8	1.5	-	17.3	2.7	-
Port Phillip - Queenscliff	12	-	-	42.75	-	-	2	25	0.3	1.1	2	-	-	3.6	-	-
Portland Bay - East	2	-	-	43.00	-	-	1	12	0.2	0.7	0.9	-	-	0.9	-	-
Portland Bay - West	7	-	-	32.21	-	-	2	15	0.2	0.7	1.3	-	-	1.8	-	-
Snake Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Torquay	4	-	-	45.54	-	-	3	94	1.1	11.8	23.2	-	-	25.4	-	-
Venus Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waratah Bay	2	-	-	87.88	-	-	1	14	< 0.1	0.3	0.9	-	-	0.9	-	-
Warrnambool	46	2	-	5.79	12.5	-	5	150	1.5	7.3	4.8	0.9	-	15.4	0.9	-
Wilsons Promontory - East	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilsons Promontory - West	23	-	-	42.92	-	-	3	55	1.1	6.2	5.8	-	-	16.4	-	-

Table 13.6 Summary of oil accumulation on individual shoreline receptors. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

Shoreline Receptor		Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
		Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
LGA Shoreline	Anser Island	36	-	-	21.08	-	-	5	33	0.3	0.9	1.5	-	-	2.7	-	-
	Bass Coast	5	-	-	30.42	-	-	2	15	0.4	1.6	1.3	-	-	1.8	-	-
	Bega Valley	4	-	-	54.13	-	-	2	17	0.3	1	1.4	-	-	1.8	-	-
	Colac Otway	100	93	-	2.88	7	-	28	406	31.8	61.2	36.4	8.2	-	61.8	17.3	-
	Corangamite	100	100	27	1.00	1.25	49.21	128	1,845	99.2	225	48.9	18.6	1.4	58.2	34.5	5.5
	East Gippsland	36	-	-	27.92	-	-	2	65	1.2	3.8	2.8	-	-	6.4	-	-
	Gabo Island	4	-	-	90.25	-	-	2	21	0.1	0.6	1.8	-	-	1.8	-	-
	Glenelg	8	-	-	37.67	-	-	2	40	1.4	7.1	5.6	-	-	16.4	-	-
	Glennie Group	39	-	-	21.67	-	-	4	48	0.6	3	2.8	-	-	8.2	-	-
	Greater Geelong	4	-	-	12.04	-	-	2	75	0.3	6.5	5.9	-	-	13.6	-	-
	Hogan Island Group	1	-	-	44.63	-	-	1	11	0.1	0.4	0.9	-	-	0.9	-	-
	Kanowna Island	19	-	-	34.38	-	-	3	22	0.3	0.8	1.7	-	-	2.7	-	-
	Kent Island Group	1	-	-	32.29	-	-	1	16	< 0.1	0.4	0.9	-	-	0.9	-	-
	King Island	11	-	-	39.92	-	-	1	25	0.5	1.7	1.2	-	-	1.8	-	-
	Lady Julia Percy Island	13	-	-	23.29	-	-	4	68	0.3	2.2	2	-	-	3.6	-	-
	Laurence Rocks	4	-	-	66.96	-	-	5	17	0.2	0.4	1.1	-	-	1.8	-	-
	Montague Island	2	-	-	102.21	-	-	2	11	< 0.1	0.4	0.9	-	-	0.9	-	-
	Mornington Peninsula	21	-	-	13.83	-	-	2	28	0.8	3.8	2.8	-	-	10	-	-
	Moyne	100	78	-	1.21	1.71	-	34	718	20	90.6	19.8	5.3	-	75.4	20.9	-
	Norman Island	8	-	-	31.38	-	-	3	22	0.2	0.7	1.4	-	-	1.8	-	-
	Phillip Island	29	-	-	18.79	-	-	2	47	0.8	3.3	2.8	-	-	7.3	-	-
	Rodondo Island	18	-	-	29.67	-	-	4	40	0.2	1	1.7	-	-	2.7	-	-
	Shellback Island	1	-	-	45.38	-	-	3	11	< 0.1	0.2	0.9	-	-	0.9	-	-
	Skull Rock	14	-	-	42.63	-	-	4	20	0.1	0.5	1.2	-	-	1.8	-	-
	South Gippsland	59	-	-	20.75	-	-	4	83	2.7	8.3	7.1	-	-	19.1	-	-
	Surf Coast	12	-	-	10.75	-	-	2	86	0.8	9.5	4.2	-	-	20	-	-
	Warrnambool	50	15	-	5.00	13.54	-	12	260	3.1	19	8.4	1.4	-	20.9	3.6	-
	Wellington	1	-	-	78.33	-	-	1	10	0.3	2.2	0.9	-	-	0.9	-	-
Sub-LGA Shoreline	Anglesea	4	-	-	14.08	-	-	2	23	0.3	2	2.5	-	-	5.5	-	-
	Apollo Bay	91	-	-	2.96	-	-	8	96	2.6	7.2	6.8	-	-	19.1	-	-
	Bay of Islands	100	74	-	1.21	1.71	-	48	718	16.9	62.6	14.5	5.2	-	25.4	16.4	-
	Bega Valley	4	-	-	54.13	-	-	2	17	0.3	1	1.4	-	-	1.8	-	-
	Cape Howe / Mallacoota	2	-	-	93.75	-	-	2	11	0.1	0.6	0.9	-	-	0.9	-	-
	Cape Liptrap - Northwest	31	-	-	20.75	-	-	3	45	0.6	2.1	2.4	-	-	5.5	-	-
	Cape Nelson	6	-	-	66.54	-	-	2	40	1	4.4	5.8	-	-	12.7	-	-
	Cape Otway West	100	93	-	2.88	7	-	56	406	27.7	51.1	26.7	8.2	-	33.6	17.3	-
	Cape Patton	61	-	-	5.25	-	-	5	45	1.5	4.8	5.6	-	-	16.4	-	-
	Childers Cove	59	15	-	2.50	22.67	-	12	187	3.9	22	9.6	2	-	18.2	6.4	-
	Croajingolong - West	16	-	-	44.79	-	-	2	21	0.2	0.8	0.9	-	-	0.9	-	-
	Discovery Bay - East	1	-	-	104.79	-	-	1	10	0.3	1	0.9	-	-	0.9	-	-
	Discovery Bay - West	1	-	-	104.25	-	-	1	12	0.2	1.1	0.9	-	-	0.9	-	-
	French Island / Crib Point	6	-	-	30.25	-	-	2	20	< 0.1	0.4	0.9	-	-	0.9	-	-
	Kilcunda	2	-	-	67.79	-	-	2	12	0.2	0.5	0.9	-	-	0.9	-	-

Shoreline Receptor	Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
	Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
Lorne	12	-	-	10.42	-	-	2	20	0.4	1.5	2.1	-	-	4.5	-	-
Marlo	4	-	-	89.00	-	-	1	19	0.1	0.5	0.9	-	-	0.9	-	-
Moonlight Head	100	100	24	1.96	4.33	49.21	166	1,845	68.8	161	26.3	11.4	1.3	30.9	16.4	5.5
Mornington Peninsula - South	10	-	-	13.83	-	-	2	24	0.3	1.4	2.4	-	-	5.5	-	-
Mornington Peninsula - Southwest	15	-	-	17.63	-	-	2	28	0.3	2.2	2	-	-	6.4	-	-
Point Hicks	36	-	-	27.92	-	-	4	65	0.6	2.3	2.2	-	-	3.6	-	-
Port Campbell	99	89	5	1.00	1.25	66.96	86	1,202	30.3	87.5	22.3	8.1	1.3	26.4	20	1.8
Port Fairy	36	6	-	11.96	13.38	-	5	185	1.7	13.2	4.3	2	-	26.4	2.7	-
Port Phillip - Queenscliff	2	-	-	17.54	-	-	1	16	0.1	1	2.7	-	-	3.6	-	-
Portland Bay - East	2	-	-	25.42	-	-	2	16	0.3	1.5	1.8	-	-	2.7	-	-
Portland Bay - West	3	-	-	37.67	-	-	2	21	0.6	2.7	2.7	-	-	5.5	-	-
Snake Island	1	-	-	78.33	-	-	1	10	< 0.1	0.4	0.9	-	-	0.9	-	-
Torquay	3	-	-	12.04	-	-	2	86	0.5	12.6	16.1	-	-	24.5	-	-
Venus Bay	4	-	-	30.42	-	-	2	15	0.2	1.3	1.1	-	-	1.8	-	-
Waratah Bay	5	-	-	39.17	-	-	1	23	0.1	0.7	0.9	-	-	0.9	-	-
Warrnambool	38	4	-	6.08	13.54	-	7	260	1.9	16.6	6	1.6	-	23.6	1.8	-
Wilsons Promontory - East	1	-	-	38.79	-	-	1	14	0.1	0.7	0.9	-	-	0.9	-	-
Wilsons Promontory - West	58	-	-	29.88	-	-	5	83	1.9	6.1	5.9	-	-	14.5	-	-

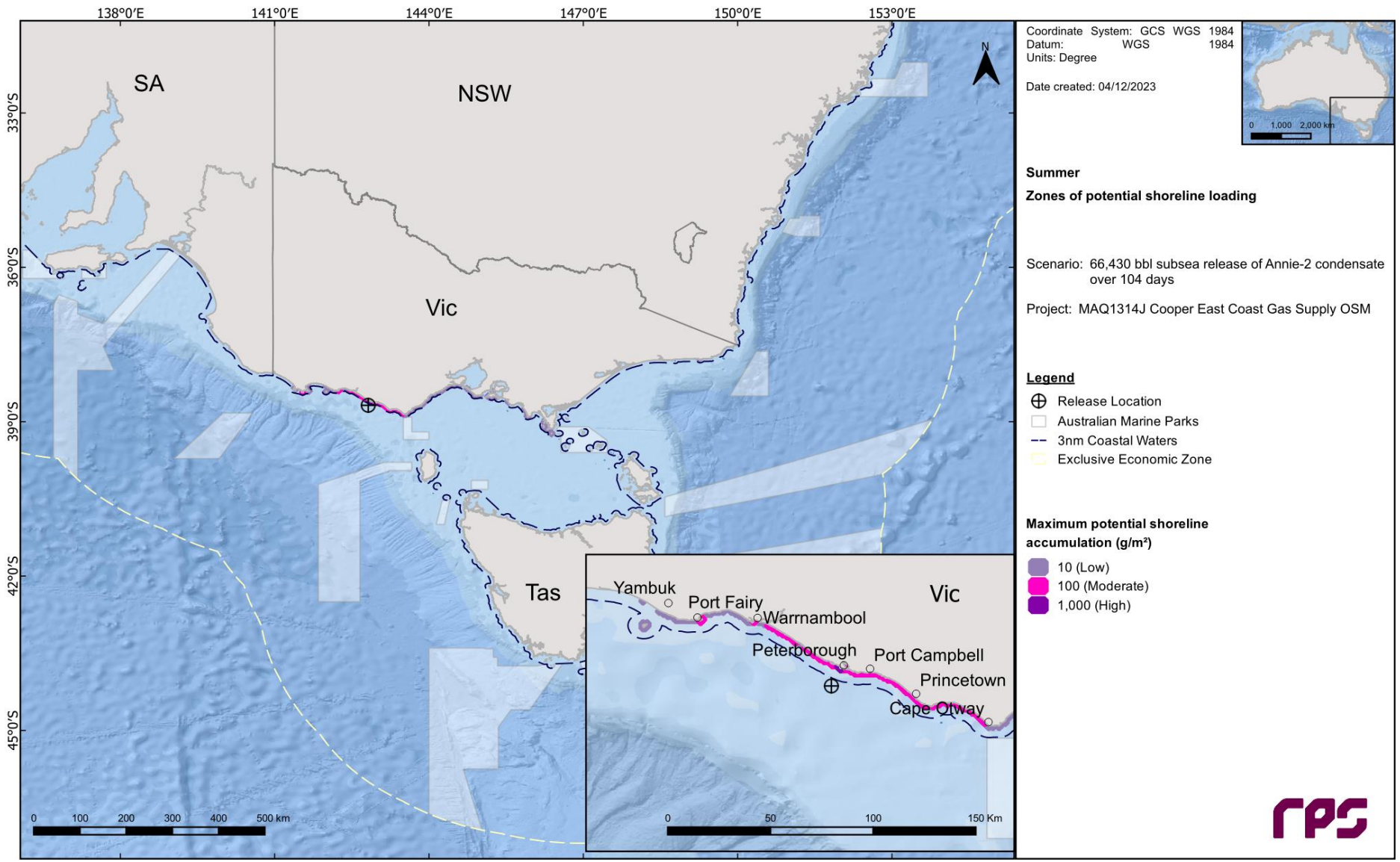

Figure 13.7 Maximum potential shoreline accumulation in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

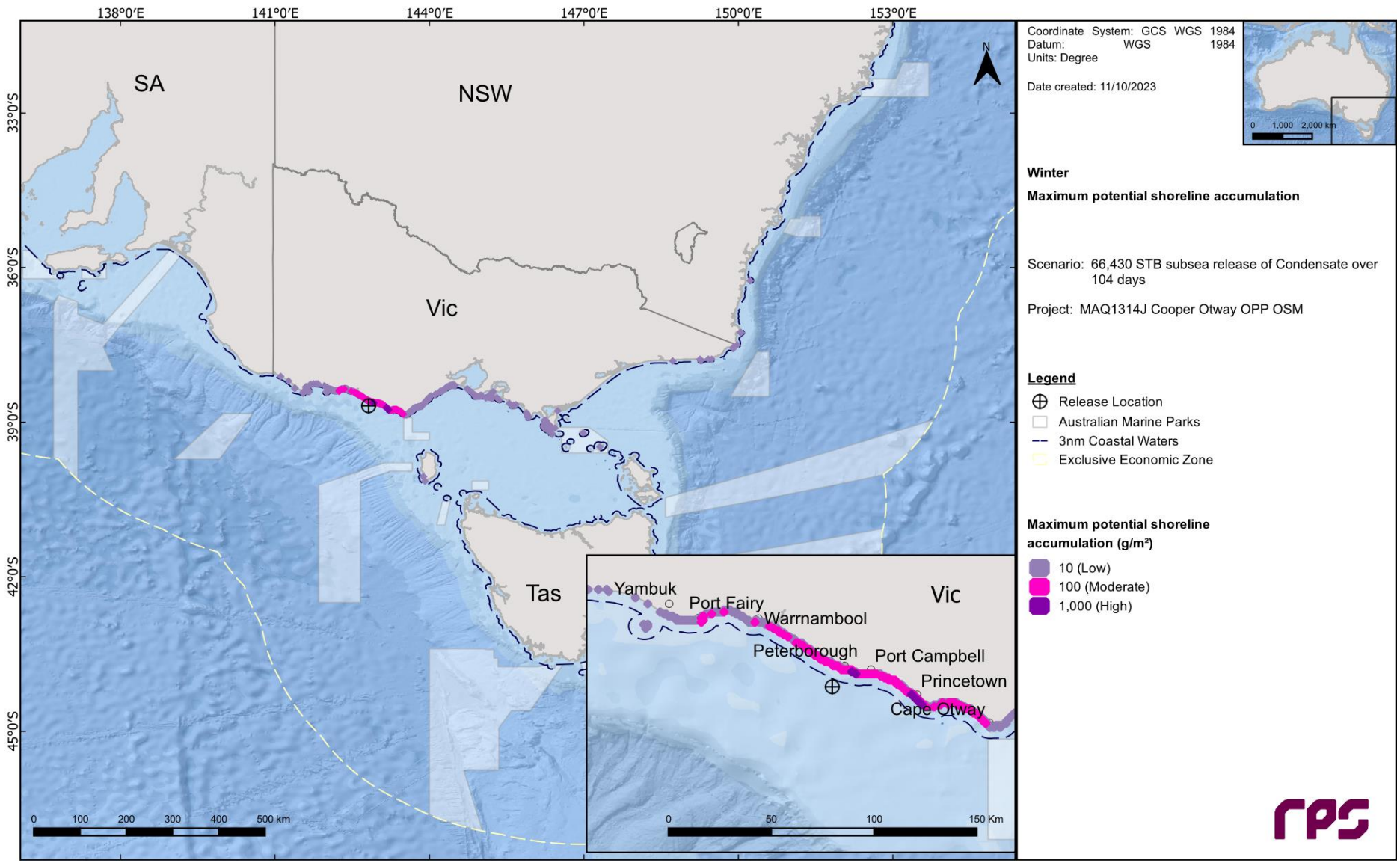

Figure 13.8 Maximum potential shoreline accumulation in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

13.1.3 In-water exposure

13.1.3.1 Dissolved Hydrocarbons

Table 13.7 summarises the potential in-water exposure to individual receptors from dissolved hydrocarbons in the 0-10 m layer.

A total of 20 BIAs were predicted to be exposed to dissolved hydrocarbon at, or above, the low threshold. Excluding the BIAs that the release location resides within (see Section 10.3), the highest probability of low exposure was 10% during summer and 33% during winter at the Short-tailed Shearwater - Foraging BIA receptor.

The maximum dissolved hydrocarbon concentration at any given receptor(s) was shown to be 35.3 ppb and 41.0 ppb during summer and winter respectively.

Table 13.8 presents the predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors, in the 0-10 m depth layer, for all thresholds assessed.

Figure 13.9 and Figure 13.10 present the zones of potential dissolved hydrocarbon exposure for the 0-10 m depth layer for each season whilst Figure 13.11 and Figure 13.12 present the maximum residence time of dissolved hydrocarbon exposure for the NOPSEMA thresholds.

Table 13.7 Probability of dissolved hydrocarbons exposure to marine based receptors in the 0–10 m depth. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer				Winter			
		Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)			Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)		
			Low	Moderate	High		Low	Moderate	High
AMP	Apollo	14.5	1	-	-	14.8	1	-	-
BIA	Antipodean Albatross - Foraging*	30.4	13	-	-	23.8	11	-	-
	Australasian Gannet - Foraging	14.5	1	-	-	6.9	-	-	-
	Black-browed Albatross - Foraging*	30.4	13	-	-	23.8	11	-	-
	Bullers Albatross - Foraging*	30.4	13	-	-	23.8	11	-	-
	Campbell Albatross - Foraging*	30.4	13	-	-	23.8	11	-	-
	Common Diving-petrel - Foraging*	35.3	24	-	-	41	50	-	-
	Indian Yellow-nosed Albatross - Foraging*	30.4	13	-	-	23.8	11	-	-
	Pygmy Blue Whale - Distribution*	35.3	24	-	-	41.0	50	-	-
	Pygmy Blue Whale - Foraging*	35.3	24	-	-	41.0	50	-	-
	Pygmy Blue Whale - Foraging annual high use area*	35.3	24	-	-	41.0	50	-	-
	Pygmy Blue Whale - Known Foraging Area	16.6	1	-	-	21.6	3	-	-
	Short-tailed Shearwater - Foraging	21.9	10	-	-	41.0	33	-	-
	Shy Albatross - Foraging*	35.3	24	-	-	41.0	50	-	-
	Southern Right Whale - Aggregation	20.1	2	-	-	19.4	2	-	-
	Southern Right Whale - Known Core Range*	35.3	24	-	-	41.0	50	-	-
	Wandering Albatross - Foraging*	30.4	13	-	-	23.8	11	-	-
	Wedge-tailed Shearwater - Foraging*	35.3	24	-	-	41.0	50	-	-
	White Shark - Distribution*	30.4	13	-	-	23.8	11	-	-
	White Shark - Foraging	17.7	1	-	-	8.9	-	-	-
	White-faced Storm-petrel - Foraging	16.6	1	-	-	21.6	3	-	-
IBRA	Otway Plain	17.3	3	-	-	17.1	9	-	-
	Otway Ranges	15.5	4	-	-	23.2	9	-	-

Receptor		Summer				Winter			
		Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)			Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure (%)		
			Low	Moderate	High		Low	Moderate	High
	Warrnambool Plain	29.6	23	-	-	35.1	50	-	-
IMCRA	Central Bass Strait	16.6	1	-	-	21.6	3	-	-
	Central Victoria	16.1	1	-	-	17.2	2	-	-
	Otway*	35.3	24	-	-	41.0	50	-	-
KEF	Bonney Coast Upwelling	11.1	1	-	-	5.9	-	-	-
MNP	Twelve Apostles	27.7	20	-	-	33.8	40	-	-
RSB	Bravenes Rock	11.2	2	-	-	10.8	1	-	-
Nearshore Waters	Colac Otway	17.3	3	-	-	18.2	9	-	-
	Corangamite	29.6	23	-	-	35.1	48	-	-
	Moyne	11.5	1	-	-	13.2	1	-	-
State Waters	Victoria State Waters	35.3	24	-	-	41.0	50	-	-
Nearshore Waters (Sub-LGA)	Apollo Bay	9.6	-	-	-	13.0	2	-	-
	Bay of Islands	11.5	1	-	-	13.2	1	-	-
	Cape Otway West	17.3	3	-	-	18.2	9	-	-
	Moonlight Head	29.6	23	-	-	35.1	50	-	-
	Port Campbell	20.6	6	-	-	15.3	2	-	-

*The release location resides within the receptor boundaries.

Table 13.8 Predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer						Winter					
		Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)			Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
AMP	Apollo	9.71	-	-	0.04	-	-	6.29	-	-	0.04	-	-
BIA	Antipodean Albatross - Foraging*	2.46	-	-	0.13	-	-	1.63	-	-	0.21	-	-
	Australasian Gannet - Foraging	5.38	-	-	0.04	-	-	-	-	-	-	-	-
	Black-browed Albatross - Foraging*	2.46	-	-	0.13	-	-	1.63	-	-	0.21	-	-
	Bullers Albatross - Foraging*	2.46	-	-	0.13	-	-	1.63	-	-	0.21	-	-
	Campbell Albatross - Foraging*	2.46	-	-	0.13	-	-	1.63	-	-	0.21	-	-
	Common Diving-petrel - Foraging*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
	Indian Yellow-nosed Albatross - Foraging*	2.46	-	-	0.13	-	-	1.63	-	-	0.21	-	-
	Pygmy Blue Whale - Distribution*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
	Pygmy Blue Whale - Foraging*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
	Pygmy Blue Whale - Foraging annual high use area*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
	Pygmy Blue Whale - Known Foraging Area	9.96	-	-	0.04	-	-	6.38	-	-	0.08	-	-
	Short-tailed Shearwater - Foraging	4.63	-	-	0.08	-	-	3.42	-	-	0.13	-	-
	Shy Albatross - Foraging*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
	Southern Right Whale - Aggregation	3.33	-	-	0.08	-	-	3.79	-	-	0.13	-	-
	Southern Right Whale - Known Core Range*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
	Wandering Albatross - Foraging*	2.46	-	-	0.13	-	-	1.63	-	-	0.21	-	-
	Wedge-tailed Shearwater - Foraging*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
	White Shark - Distribution*	2.46	-	-	0.13	-	-	1.63	-	-	0.21	-	-
	White Shark - Foraging	5.38	-	-	0.04	-	-	78.46	-	-	0.04	-	-
	White-faced Storm-petrel - Foraging	9.96	-	-	0.04	-	-	6.42	-	-	0.08	-	-
IBRA	Otway Plain	11.42	-	-	0.08	-	-	4.75	-	-	0.08	-	-

Receptor		Summer						Winter					
		Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)			Minimum time before dissolved hydrocarbon exposure (days)			Maximum residence time for dissolved hydrocarbon exposure (days)		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
	Otway Ranges	11.46	-	-	0.08	-	-	4.29	-	-	0.08	-	-
	Warrnambool Plain	4.63	-	-	0.17	-	-	2.96	-	-	0.21	-	-
IMCRA	Central Bass Strait	10.29	-	-	0.04	-	-	7.33	-	-	0.08	-	-
	Central Victoria	9.96	-	-	0.04	-	-	7	-	-	0.08	-	-
	Otway*	2.46	-	-	0.25	-	-	1.63	-	-	0.21	-	-
KEF	Bonney Coast Upwelling	11.67	-	-	0.04	-	-	-	-	-	-	-	-
MNP	Twelve Apostles	3.54	-	-	0.17	-	-	2.96	-	-	0.21	-	-
RSB	Bravenes Rock	30.88	-	-	0.04	-	-	23.79	-	-	0.04	-	-
Nearshore Waters	Colac Otway	11.42	-	-	0.08	-	-	4.29	-	-	0.08	-	-
	Corangamite	4.63	-	-	0.17	-	-	2.96	-	-	0.21	-	-
	Moyne	11.33	-	-	0.04	-	-	4.5	-	-	0.13	-	-
State Waters	Victoria State Waters	3.54	-	-	0.25	-	-	2.96	-	-	0.21	-	-
Nearshore Waters (Sub-LGA)	Apollo Bay	-	-	-	-	-	-	10.21	-	-	0.08	-	-
	Bay of Islands	11.33	-	-	0.04	-	-	4.5	-	-	0.13	-	-
	Cape Otway West	11.42	-	-	0.08	-	-	4.29	-	-	0.08	-	-
	Moonlight Head	4.54	-	-	0.17	-	-	2.96	-	-	0.21	-	-
	Port Campbell	5.17	-	-	0.08	-	-	3.88	-	-	0.08	-	-

*The release location resides within the receptor boundaries.

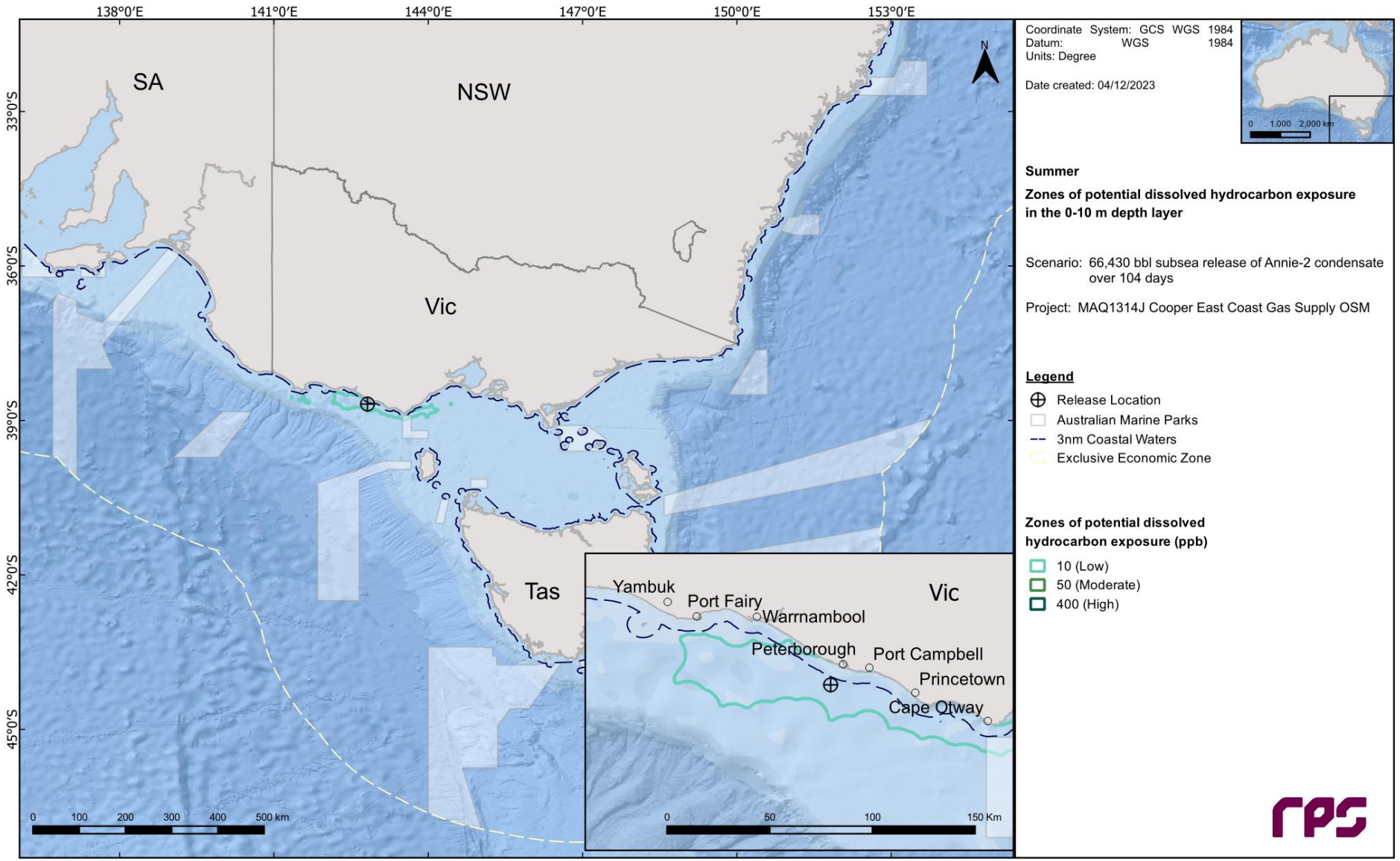

Figure 13.9 Zones of potential dissolved hydrocarbon exposure at 0-10 m below the sea in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

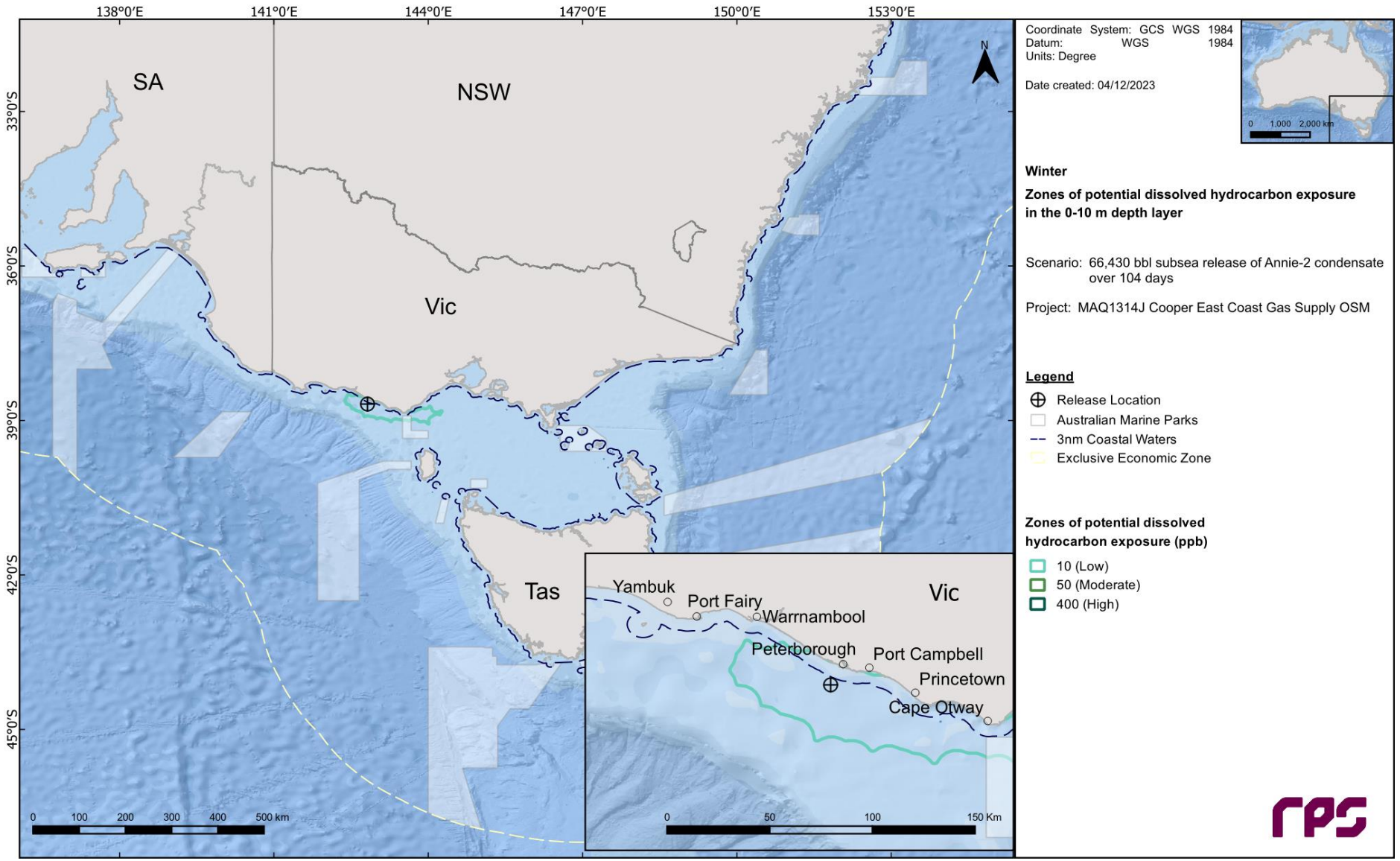

Figure 13.10 Zones of potential dissolved hydrocarbon exposure at 0-10 m below the sea in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

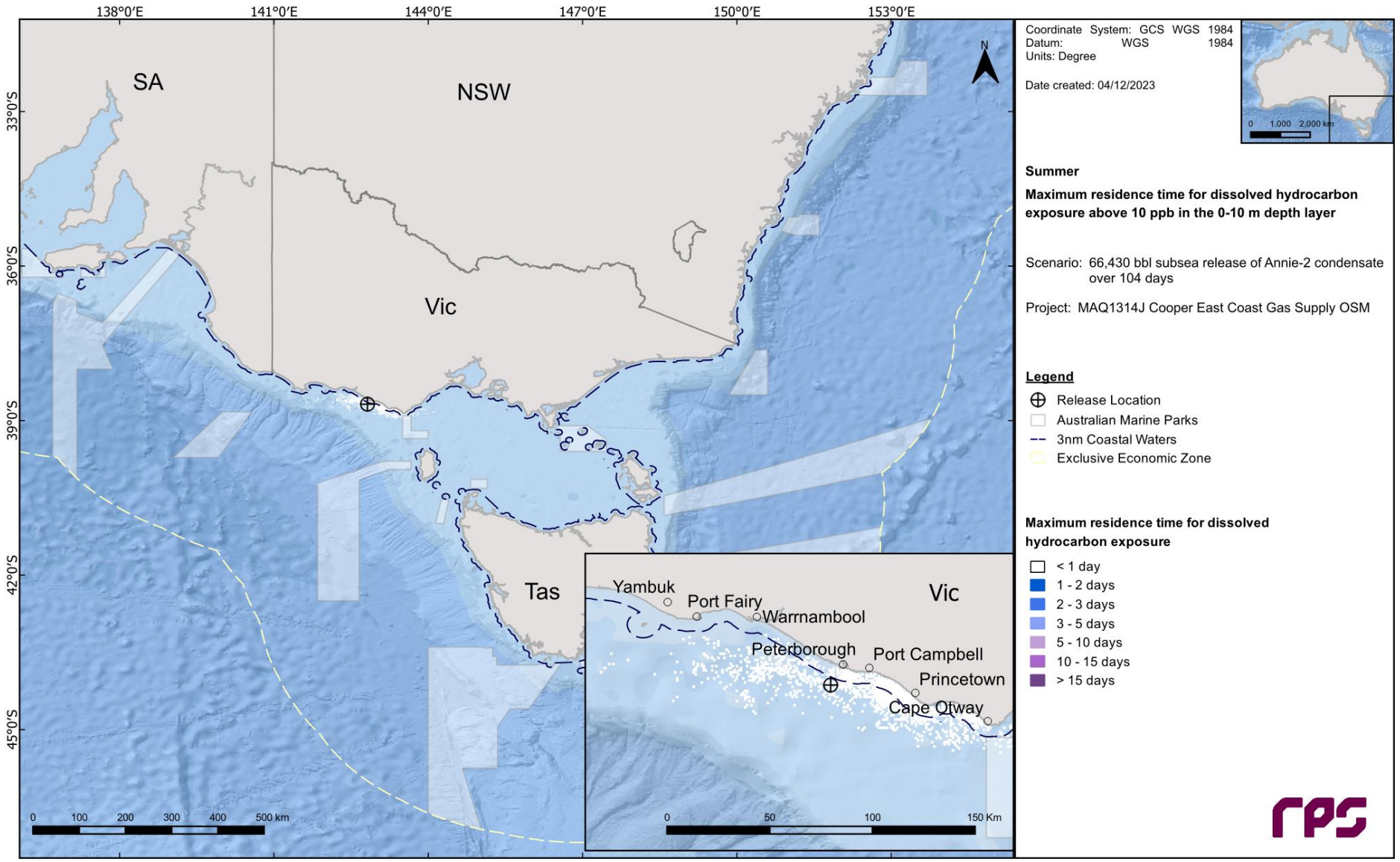

Figure 13.11 Maximum residence time for dissolved hydrocarbon exposure above 10 ppb, at 0-10 m below the sea surface in the event of a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

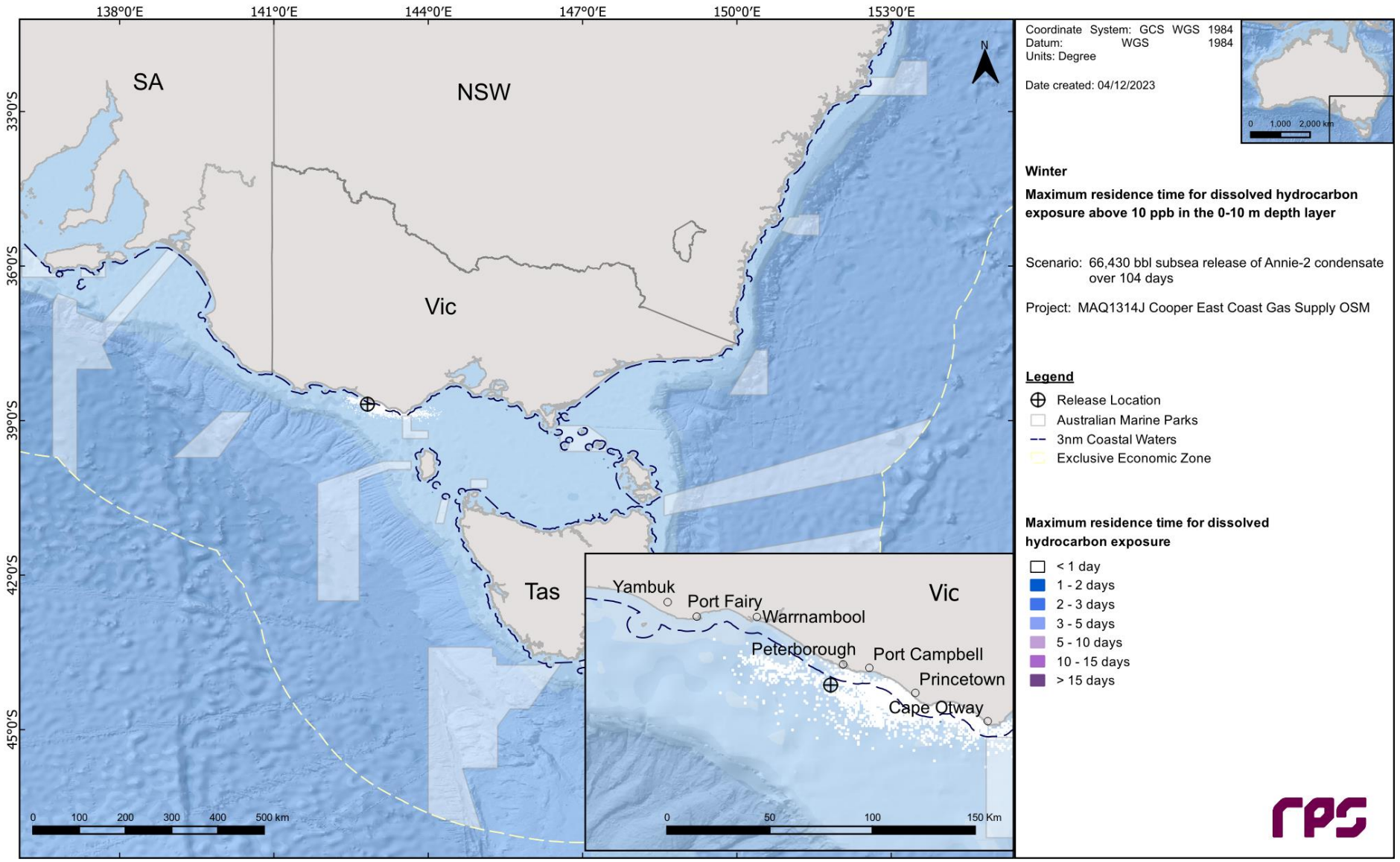

Figure 13.12 Maximum residence time for dissolved hydrocarbon exposure above 10 ppb, at 0-10 m below the sea surface in the event of a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

13.1.3.2 Entrained Hydrocarbons

Table 13.9 summarises the potential in-water exposure to individual receptors from entrained hydrocarbons in the 0-10 m depth layer.

Many receptors were exposed above the low and high thresholds, however most of these receptors (predominantly BIAs) coincided with the release location.

In summer conditions, the highest probability of low entrained hydrocarbon exposure was recorded at 100% for receptors that the release location doesn't reside within, including Short-tailed Shearwater – Foraging, Southern Right Whale – Aggregation BIAs and Warrnambool Plain IBRA. Additional receptors including near-shore sub-LGA waters, and AMPs were predicted with entrained hydrocarbon exposure (refer to Table 13.9). Similarly, during winter several receptors that the release location doesn't reside within revealed probabilities of 100% for low entrained hydrocarbon exposure.

Table 13.10 presents the predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer, for all thresholds assessed.

Figure 13.13 and Figure 13.14 present the zones of potential entrained hydrocarbon exposure for the 0-10 m depth layer for each season whilst Figure 13.15 to Figure 13.18 present the maximum residence time of entrained hydrocarbon exposure for the NOPSEMA thresholds.

Table 13.9 Probability of entrained hydrocarbons exposure to marine based receptors in the 0–10 m depth layer. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
AMP	Apollo	119.1	86	6	124.6	97	5
	Beagle	25.0	36	-	26.9	34	-
	Nelson	15.5	7	-	14.3	1	-
	Zeehan	17.0	9	-	15.6	8	-
BIA	Antipodean Albatross - Foraging*	647.2	100	100	663.8	100	100
	Australasian Gannet - Foraging	87.5	71	-	74.5	66	-
	Australian Sea Lion - Foraging	13.0	7	-	6.9	-	-
	Black Petrel - Foraging	15.4	6	-	11.7	2	-
	Black-browed Albatross - Foraging*	647.2	100	100	663.8	100	100
	Black-faced Cormorant - Foraging	16.0	3	-	14	8	-
	Bullers Albatross - Foraging*	647.2	100	100	663.8	100	100
	Campbell Albatross - Foraging*	647.2	100	100	663.8	100	100
	Common Diving-petrel - Foraging*	647.2	100	100	663.8	100	100
	Crested Tern - Breeding	8.1	-	-	10.5	1	-
	Crested Tern - Foraging	9.3	-	-	11.7	2	-
	Flesh-footed Shearwater - Foraging	15.4	6	-	11.7	2	-
	Great-winged Petrel - Foraging	15.4	6	-	9.2	-	-
	Grey Nurse Shark - Foraging	16	6	-	13.3	4	-
	Grey Nurse Shark - Migration	26.5	7	-	12.9	4	-
	Humpback Whale - Foraging	26.8	7	-	13.3	5	-
	Indian Yellow-nosed Albatross - Foraging*	647.2	100	100	663.8	100	100
	Indo-Pacific/Spotted Bottlenose Dolphin - Breeding	10.6	1	-	12.5	2	-
	Little Penguin - Breeding	8.4	-	-	11.7	2	-
	Little Penguin - Foraging	24.9	43	-	28.8	61	-
	Northern Giant Petrel - Foraging	15.4	6	-	9.2	-	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Pygmy Blue Whale - Distribution*	647.2	100	100	663.8	100	100
	Pygmy Blue Whale - Foraging*	647.2	100	100	663.8	100	100
	Pygmy Blue Whale - Foraging annual high use area*	647.2	100	100	663.8	100	100
	Pygmy Blue Whale - Known Foraging Area	125.8	86	4	113.1	97	6
	Short-tailed Shearwater - Foraging	254.5	100	95	256.5	100	99
	Shy Albatross - Foraging*	647.2	100	100	663.8	100	100
	Sooty Shearwater - Foraging	24.3	7	-	13.3	4	-
	Southern Giant Petrel - Foraging	15.4	6	-	9.2	-	-
	Southern Right Whale - Aggregation	347.5	100	83	287.9	98	76
	Southern Right Whale - Connecting Habitat	10.3	1	-	9.8	-	-
	Southern Right Whale - Known Core Range*	647.2	100	100	663.8	100	100
	Wandering Albatross - Foraging*	647.2	100	100	663.8	100	100
	Wedge-tailed Shearwater - Foraging*	647.2	100	100	663.8	100	100
	White Shark - Breeding	17.9	18	-	18.0	27	-
	White Shark - Distribution*	647.2	100	100	663.8	100	100
	White Shark - Foraging	99.1	84	-	111.7	73	2
	White-capped Albatross - Foraging	15.4	6	-	9.2	-	-
	White-faced Storm-petrel - Breeding	16.0	6	-	11.7	2	-
	White-faced Storm-petrel - Foraging	110.8	86	4	103.4	97	2
	Wilsons Storm Petrel - Migration	15.4	6	-	9.2	-	-
IBRA	Bridgewater	80.0	42	-	71.0	9	-
	East Gippsland Lowlands	8.0	-	-	13.0	2	-
	Flinders	19.1	11	-	23.0	13	-
	Gippsland Plain	48.7	31	-	54.4	52	-
	Glenelg Plain	87.5	52	-	74.0	10	-
	Otway Plain	243.6	99	59	183.1	100	67

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Otway Ranges	202.1	99	67	206.6	100	76
	Strzelecki Ranges	19.6	26	-	26.8	50	-
	Warrnambool Plain	475.1	100	99	441.0	100	100
	Wilsons Promontory	59.4	42	-	60.4	60	-
IMCRA	Batemans Shelf	13.0	5	-	11.7	2	-
	Central Bass Strait	110.8	85	3	103.4	95	2
	Central Victoria	112.7	86	4	107.6	97	2
	Flinders	60.8	43	-	61.0	61	-
	Otway*	647.2	100	100	663.8	100	100
	Twofold Shelf	26.8	12	-	21.1	16	-
	Victorian Embayments	27.4	24	-	20.5	40	-
KEF	Bonney Coast Upwelling	87.5	71	-	85.5	50	-
	Canyons on the Eastern Continental Slope	15.4	6	-	5.8	-	-
	Shelf rocky reefs	8.5	-	-	10.8	1	-
	Upwelling East of Eden	26.8	10	-	15.1	8	-
	West Tasmania Canyons	29.6	27	-	38.2	22	-
MNP	Bunurong	22.9	15	-	21.4	28	-
	Cape Howe	10.1	1	-	13.8	2	-
	Churchill Island	15.2	12	-	18.9	12	-
	Discovery Bay	36.6	30	-	29	2	-
	Point Addis	43.0	23	-	41.7	21	-
	Port Phillip Heads	27.4	25	-	21.5	16	-
	Twelve Apostles	483.8	100	99	445.8	100	100
	Wilsons Promontory	58.8	43	-	60.3	60	-
MP	Batemans	8.1	-	-	10.5	1	-
	Lower South East	16.1	3	-	11.4	1	-
MS	Mushroom Reef	16.1	18	-	18.0	25	-
NPS4	Bunurong Marine Park	26.6	21	-	30	36	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Wilsons Promontory Marine Park	47.3	32	-	50.9	52	-
RAMSAR	Port Phillip Bay Western Shoreline and Bellarine Peninsula	19.7	6	-	15.5	4	-
	Western Port	15.2	12	-	18.9	12	-
RSB	Bravenes Rock	205.4	95	24	123.0	99	12
	Cody Bank	16.0	20	-	19.0	40	-
	Cutter Rock	22.3	17	-	25.5	15	-
	New Zealand Star Bank	13.7	5	-	12.0	2	-
Nearshore Waters	Anser Island	53.1	41	-	52.3	59	-
	Bass Coast	29.5	23	-	33.1	44	-
	Bega Valley	8.1	-	-	12.1	2	-
	Colac Otway	243.6	99	59	183.1	100	67
	Corangamite	475.1	100	99	441.0	100	100
	Curtis Island	19.1	11	-	23.0	7	-
	East Gippsland	8.0	-	-	13.0	2	-
	French Island	9.7	-	-	11.8	2	-
	Gabo Island	8.3	-	-	12.6	2	-
	Glenelg	87.5	52	-	74.0	10	-
	Glennie Group	57.9	43	-	57.6	60	-
	Grant	12.4	4	-	9.0	-	-
	Greater Geelong	48.6	25	-	40.0	12	-
	Hogan Island Group	16.1	11	-	20.2	13	-
	Kanowna Island	49.7	41	-	47.5	59	-
	Lady Julia Percy Island	76.5	62	-	71.1	25	-
	Laurence Rocks	69.7	47	-	62.4	9	-
	Moncoeur Islands	22.4	33	-	26.7	36	-
	Mornington Peninsula	28.9	30	-	31.5	42	-
	Moyne	308.3	100	79	377.8	100	75
	Mud Island	12.5	4	-	11.2	3	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Norman Island	59.4	39	-	60.4	57	-
	Phillip Island	21.6	28	-	22.3	44	-
	Rodondo Island	33.9	39	-	33.8	49	-
	Seal Islands	7.4	-	-	10.8	1	-
	Shellback Island	38.0	29	-	41.8	44	-
	Skull Rock	46.9	41	-	44.6	59	-
	South Gippsland	58.3	41	-	58.0	60	-
	Surf Coast	44.3	23	-	40.3	40	-
	Warrnambool	199.1	84	4	159.7	56	12
State Waters	New South Wales	9.7	-	-	12.5	2	-
	South Australia State Waters	17.4	10	-	12.1	2	-
	Tasmania State Waters	23.4	15	-	25.5	15	-
	Victoria State Waters	499.5	100	100	462.8	100	100
Nearshore Waters (Sub-LGA)	Anglesea	34.6	18	-	30.9	11	-
	Apollo Bay	133.7	86	7	101.4	97	1
	Bay of Islands	308.3	100	79	377.8	100	75
	Bega Valley	8.1	-	-	12.1	2	-
	Cape Howe / Mallacoota	7.7	-	-	13.0	2	-
	Cape Liptrap - Northwest	25.5	28	-	29.0	52	-
	Cape Nelson	87.5	52	-	74.0	10	-
	Cape Otway West	249.8	99	59	183.1	100	67
	Cape Patton	49.9	76	-	60.2	94	-
	Childers Cove	210.6	93	12	176.2	75	14
	Discovery Bay - East	33.3	18	-	27.2	1	-
	Discovery Bay - West	19.2	15	-	19.6	1	-
	French Island / Crib Point	8.0	-	-	11.5	2	-
	French Island / San Remo	14.1	20	-	19.2	18	-
	Kilcunda	29.5	23	-	33.1	44	-

Receptor		Summer			Winter		
		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High		Low	High
	Lorne	30.8	23	-	26.6	46	-
	Moonlight Head	483.8	100	99	445.8	100	100
	Mornington Peninsula - South	21.1	23	-	21.2	40	-
	Mornington Peninsula - Southwest	28.9	30	-	31.7	42	-
	Port Campbell	426.8	100	86	346.1	100	88
	Port Fairy	68.3	62	-	104.6	31	1
	Port Phillip - Queenscliff	34.4	25	-	29.3	12	-
	Port Phillip - Sorrento Shore	26.4	25	-	24.4	27	-
	Port Phillip Heads	25.1	15	-	20.5	9	-
	Portland Bay - East	38.3	46	-	38.8	10	-
	Portland Bay - West	63.6	31	-	57.4	7	-
	Torquay	48.6	16	-	40.3	10	-
	Venus Bay	27.6	23	-	32.2	40	-
	Waratah Bay	19.6	26	-	26.8	50	-
	Warrnambool	103.3	66	2	121	45	3
	Westernport	15.2	16	-	15.6	18	-
	Wilsons Promontory - East	37.0	38	-	34.1	53	-
	Wilsons Promontory - West	58.3	41	-	58.0	60	-

*The release location resides within the receptor boundaries.

Table 13.10 Predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations per season.

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
AMP	Apollo	3.13	24.42	30.29	0.21	2.00	8.25	11.54	0.21
	Beagle	26.46	-	6.63	-	25.63	-	4	-
	Nelson	20.04	-	1.38	-	84.88	-	1	-
	Zeehan	26.17	-	2.21	-	18.58	-	0.71	-
BIA	Antipodean Albatross - Foraging*	0.04	0.08	93.08	14.96	0.04	0.08	104.75	15.08
	Australasian Gannet - Foraging	2.29	-	84.17	-	6.25	-	55.04	-
	Australian Sea Lion - Foraging	11.38	-	0.67	-	-	-	-	-
	Black Petrel - Foraging	42.83	-	0.54	-	54.83	-	0.08	-
	Black-browed Albatross - Foraging*	0.04	0.08	93.08	15.46	0.04	0.08	104.75	15.08
	Black-faced Cormorant - Foraging	29.71	-	0.29	-	17.92	-	0.38	-
	Bullers Albatross - Foraging*	0.04	0.08	93.08	15.46	0.04	0.08	104.75	15.08
	Campbell Albatross - Foraging*	0.04	0.08	93.08	15.46	0.04	0.08	104.75	15.08
	Common Diving-petrel - Foraging*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	Crested Tern - Breeding	-	-	-	-	55.08	-	0.04	-
	Crested Tern - Foraging	-	-	-	-	54.83	-	0.08	-
	Flesh-footed Shearwater - Foraging	42.83	-	0.54	-	54.83	-	0.08	-
	Great-winged Petrel - Foraging	42.83	-	0.54	-	-	-	-	-
	Grey Nurse Shark - Foraging	40.33	-	0.92	-	49.33	-	0.13	-
	Grey Nurse Shark - Migration	40.04	-	1.67	-	49.08	-	0.17	-
	Humpback Whale - Foraging	39.71	-	1.67	-	36.88	-	0.25	-
	Indian Yellow-nosed Albatross - Foraging*	0.04	0.08	93.08	15.46	0.04	0.08	104.75	15.08
	Indo-Pacific/Spotted Bottlenose Dolphin - Breeding	73.33	-	0.04	-	48.63	-	0.25	-
	Little Penguin –– Breeding	-	-	-	-	54.83	-	0.08	-
	Little Penguin - Foraging	26.42	-	14.88	-	10.08	-	20.42	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Northern Giant Petrel - Foraging	42.83	-	0.54	-	-	-	-	-
	Pygmy Blue Whale - Distribution*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	Pygmy Blue Whale - Foraging*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	Pygmy Blue Whale - Foraging annual high use area*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	Pygmy Blue Whale - Known Foraging Area	3.17	24.54	31.42	0.25	2.00	8.33	30.5	0.08
	Short-tailed Shearwater - Foraging	0.79	2.00	93.08	20.29	0.92	3.21	104.92	11.04
	Shy Albatross - Foraging*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	Sooty Shearwater - Foraging	40.33	-	1.67	-	49.08	-	0.17	-
	Southern Giant Petrel - Foraging	42.83	-	0.54	-	-	-	-	-
	Southern Right Whale - Aggregation	0.5	0.96	84.17	2.96	0.46	1.00	96.63	2.25
	Southern Right Whale - Connecting Habitat	32.21	-	0.04	-	-	-	-	-
	Southern Right Whale - Known Core Range*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	Wandering Albatross - Foraging*	0.04	0.08	93.08	15.46	0.04	0.08	104.75	15.08
	Wedge-tailed Shearwater - Foraging*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	White Shark - Breeding	67.63	-	5.17	-	30.25	-	8.58	-
	White Shark - Distribution*	0.04	0.08	93.08	15.46	0.04	0.08	104.75	15.08
	White Shark - Foraging	1.54	-	84.17	-	3.88	21.5	96.63	0.21
	White-capped Albatross - Foraging	42.83	-	0.54	-	-	-	-	-
	White-faced Storm-petrel - Breeding	42.54	-	0.54	-	54.83	-	0.08	-
	White-faced Storm-petrel - Foraging	3.71	24.67	28.46	0.17	2.13	18.33	30.5	0.04
	Wilsons Storm Petrel - Migration	42.83	-	0.54	-	-	-	-	-
IBRA	Bridgewater	7.63	-	52.5	-	24.04	-	43.75	-
	East Gippsland Lowlands	-	-	-	-	48.71	-	0.33	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Flinders	26.58	-	1.17	-	27.96	-	1.54	-
	Gippsland Plain	32.08	-	17.25	-	13.29	-	28.79	-
	Glenelg Plain	6.21	-	60.29	-	22.83	-	43.75	-
	Otway Plain	1.38	5.13	92.04	18.79	1.88	4.13	94.5	7.42
	Otway Ranges	0.83	4.67	68.67	6.63	1.92	4.58	102.29	7.42
	Strzelecki Ranges	39.21	-	10.92	-	24.71	-	12.54	-
	Warrnambool Plain	0.71	1.50	90.67	21	0.71	1.25	108.17	32.42
	Wilsons Promontory	26.75	-	32.54	-	15.04	-	40.13	-
IMCRA	Batemans Shelf	48.54	-	0.17	-	54.83	-	0.08	-
	Central Bass Strait	4.46	24.79	17.33	0.13	2.33	15.75	16.67	0.04
	Central Victoria	3.67	24.58	24.88	0.21	2.13	18.25	30.5	0.04
	Flinders	26.00	-	35.79	-	14.96	-	40.13	-
	Otway*	0.04	0.08	93.08	22.25	0.04	0.08	109.71	32.5
	Twofold Shelf	27.08	-	1.67	-	27.88	-	2.54	-
	Victorian Embayments	35.00	-	10.13	-	15.33	-	12.33	-
KEF	Bonney Coast Upwelling	2.92	-	84.17	-	7.79	-	55.04	-
	Canyons on the Eastern Continental Slope	42.83	-	0.46	-	-	-	-	-
	Shelf rocky reefs	-	-	-	-	54.88	-	0.04	-
	Upwelling East of Eden	36.50	-	1.67	-	36.79	-	1	-
	West Tasmania Canyons	18.58	-	4.88	-	11.04	-	2.67	-
MNP	Bunurong	38.42	-	4.96	-	20.71	-	7.08	-
	Cape Howe	73.25	-	0.04	-	48.67	-	0.71	-
	Churchill Island	51.38	-	2.58	-	24.92	-	12.33	-
	Discovery Bay	7.83	-	6.46	-	63.29	-	5.88	-
	Point Addis	24.29	-	10.75	-	12.17	-	23.17	-
	Port Phillip Heads	33.13	-	3.63	-	14.50	-	8.58	-
	Twelve Apostles	0.58	1.83	91.33	22.25	0.46	1.29	108.33	32.5

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Wilsons Promontory	26.88	-	35.79	-	15.04	-	40.13	-
MP	Batemans	-	-	-	-	55.08	-	0.04	-
	Lower South East	37.67	-	2.38	-	96.54	-	0.08	-
MS	Mushroom Reef	39.08	-	4.5	-	20.25	-	5.38	-
NPS4	Bunurong Marine Park	39.71	-	8	-	21.79	-	9.92	-
	Wilsons Promontory Marine Park	38.79	-	18.04	-	20.79	-	33.58	-
RAMSAR	Port Phillip Bay Western Shoreline and Bellarine Peninsula	47.42	-	3.63	-	35.54	-	1.92	-
	Western Port	51.38	-	2.58	-	24.92	-	12.33	-
RSB	Bravenes Rock	2.21	11.33	56.96	0.96	1.13	13.96	89	0.63
	Cody Bank	35.17	-	4.5	-	15.42	-	2	-
	Cutter Rock	26.5	-	2.04	-	26.63	-	1.21	-
	New Zealand Star Bank	42.25	-	0.33	-	47.88	-	0.13	-
Nearshore Waters	Anser Island	36.29	-	16.63	-	15.08	-	37.42	-
	Bass Coast	39.58	-	8.5	-	21.25	-	10.04	-
	Bega Valley	-	-	-	-	49.17	-	0.33	-
	Colac Otway	1.21	5.13	92.04	18.79	1.88	4.13	94.5	7.46
	Corangamite	0.71	1.50	90.79	21	0.79	1.58	108.17	32.42
	Curtis Island	26.58	-	0.67	-	42.75	-	0.92	-
	East Gippsland	-	-	-	-	49.13	-	0.25	-
	French Island	-	-	-	-	100.25	-	0.25	-
	Gabo Island	-	-	-	-	48.83	-	0.25	-
	Glenelg	6.21	-	60.29	-	22.83	-	43.75	-
	Glennie Group	35.58	-	31.92	-	17.83	-	36.67	-
	Grant	26.38	-	0.33	-	-	-	-	-
	Greater Geelong	33.13	-	10.08	-	13.75	-	12.38	-
	Hogan Island Group	27.25	-	1.17	-	27.96	-	1.54	-
	Kanowna Island	28.92	-	16.63	-	15.04	-	37.04	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Lady Julia Percy Island	5.17	-	38.88	-	15.54	-	38.25	-
	Laurence Rocks	6.92	-	60.58	-	21.46	-	33.67	-
	Moncoeur Islands	27	-	6.96	-	25.5	-	2.67	-
	Mornington Peninsula	32.08	-	7.25	-	13.29	-	9.38	-
	Moyne	0.75	1.88	57.5	8.04	0.79	1.25	95.04	5
	Mud Island	56.38	-	0.42	-	66.33	-	0.25	-
	Norman Island	38.42	-	27.25	-	20.75	-	36.25	-
	Phillip Island	34.67	-	14.88	-	19.25	-	20.42	-
	Rodondo Island	26.75	-	12.04	-	24.46	-	8.08	-
	Seal Islands	-	-	-	-	62.04	-	0.04	-
	Shellback Island	38.67	-	14.75	-	20.38	-	14.63	-
	Skull Rock	28.92	-	16.46	-	15.04	-	36.71	-
	South Gippsland	36.38	-	32.54	-	19.04	-	40.13	-
	Surf Coast	24.33	-	10.79	-	9.38	-	17.17	-
	Warrnambool	3.13	6.00	37.46	1.67	4.33	20.83	85.5	1.33
State Waters	New South Wales	-	-	-	-	48.79	-	0.25	-
	South Australia State Waters	25.38	-	2.46	-	96.42	-	0.17	-
	Tasmania State Waters	26.50	-	2.79	-	27.46	-	2.67	-
	Victoria State Waters	0.21	0.42	93.04	22.25	0.21	0.42	109.71	32.5
Nearshore Waters (Sub-LGA)	Anglesea	28.67	-	10.29	-	12.67	-	15.13	-
	Apollo Bay	3.25	31.71	33.71	0.71	2.00	34.04	22.71	0.04
	Bay of Islands	0.75	1.88	57.5	8.04	0.79	1.29	59.58	5
	Bega Valley	-	-	-	-	49.17	-	0.33	-
	Cape Howe / Mallacoota	-	-	-	-	49.13	-	0.25	-
	Cape Liptrap - Northwest	39.04	-	10.42	-	24.75	-	13.46	-
	Cape Nelson	6.21	-	60.29	-	22.83	-	43.75	-
	Cape Otway West	1.21	5.17	92.04	20.29	1.88	5.25	94.5	7.42
	Cape Patton	16.42	-	22.13	-	4.54	-	19.08	-

Receptor		Summer				Winter			
		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)		Minimum time before entrained hydrocarbon exposure (days)		Maximum residence time for entrained hydrocarbon exposure (days)	
		Low	High	Low	High	Low	High	Low	High
	Childers Cove	3.00	5.67	38.21	2.75	0.83	3.83	38.63	1.79
	Discovery Bay - East	10.58	-	7.21	-	64.21	-	4.71	-
	Discovery Bay - West	21.75	-	2.88	-	69.42	-	5.54	-
	French Island / Crib Point	-	-	-	-	104.96	-	0.13	-
	French Island / San Remo	44.25	-	1.25	-	24.21	-	10.04	-
	Kilcunda	40.13	-	8.5	-	21.71	-	9.96	-
	Lorne	24.17	-	19.58	-	9.38	-	10.67	-
	Moonlight Head	0.79	2.92	82	21.67	0.88	1.58	108.17	32.42
	Mornington Peninsula - South	32.33	-	6.58	-	13.50	-	7.96	-
	Mornington Peninsula - Southwest	32.04	-	7.25	-	13.29	-	9.29	-
	Port Campbell	0.75	1.50	90.79	14.54	0.79	1.83	87	13.17
	Port Fairy	7.46	-	50.38	-	11.29	36.92	56.13	0.08
	Port Phillip - Queenscliff	33.13	-	10.08	-	14.58	-	12.38	-
	Port Phillip - Sorrento Shore	32.63	-	7.21	-	14.33	-	8.63	-
	Port Phillip Heads	41.04	-	3.29	-	15.33	-	3.71	-
	Portland Bay - East	8.50	-	38.58	-	22.96	-	51.75	-
	Portland Bay - West	16.46	-	53.33	-	30.79	-	40.5	-
	Torquay	29.50	-	9.88	-	12.79	-	17.17	-
	Venus Bay	39.58	-	8.5	-	21.25	-	9.92	-
	Waratah Bay	39.21	-	10.92	-	24.71	-	12.54	-
	Warrnambool	3.71	13.88	30.75	0.04	8.58	33.96	95.04	1.13
	Westernport	40.13	-	5.38	-	27.38	-	5.33	-
	Wilsons Promontory - East	47.04	-	15	-	25.50	-	31.71	-
	Wilsons Promontory - West	36.38	-	32.54	-	19.04	-	40.13	-

*The release location resides within the receptor boundaries.

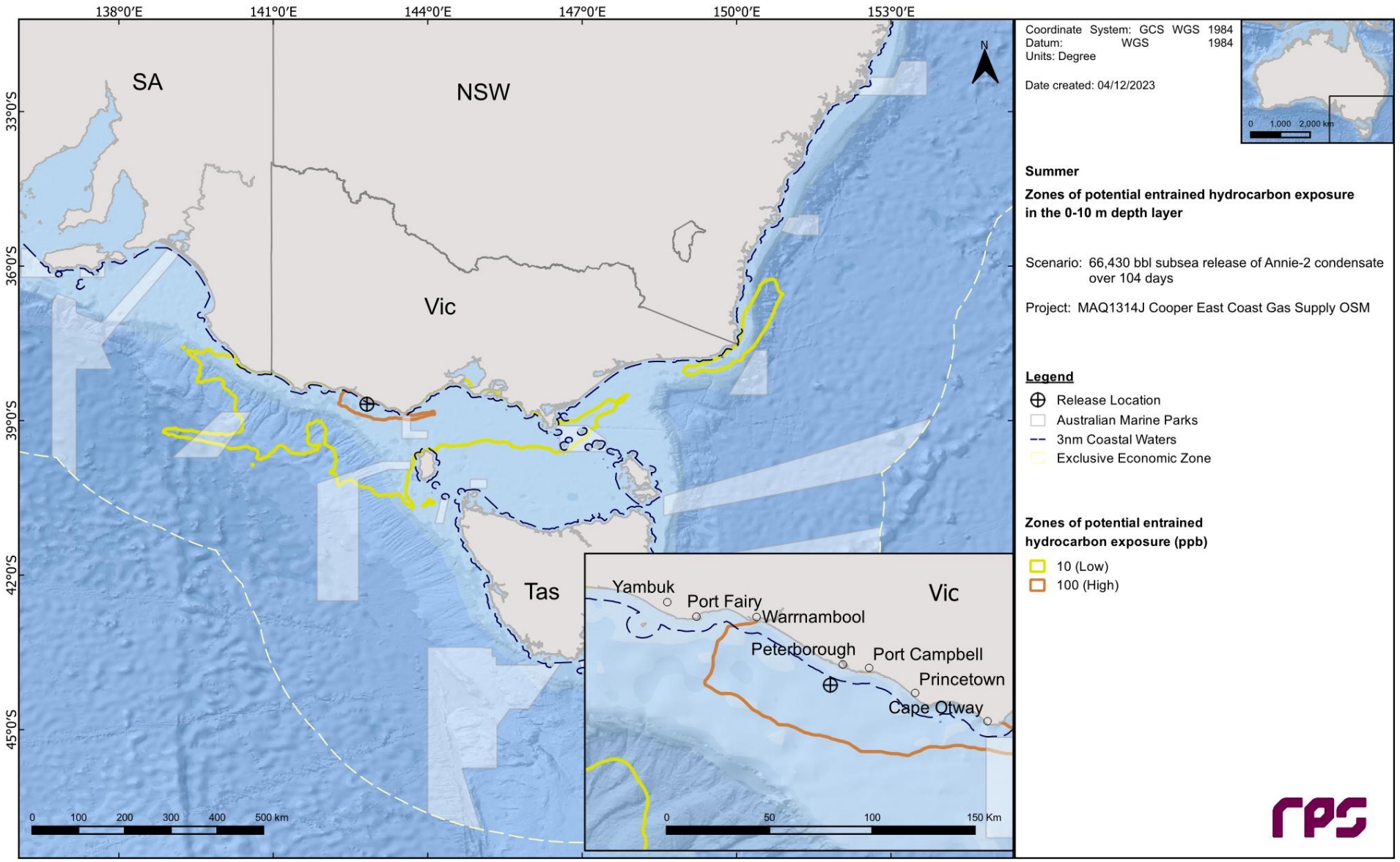

Figure 13.13 Zones of potential entrained hydrocarbon exposure at 0-10 m below the sea surface in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

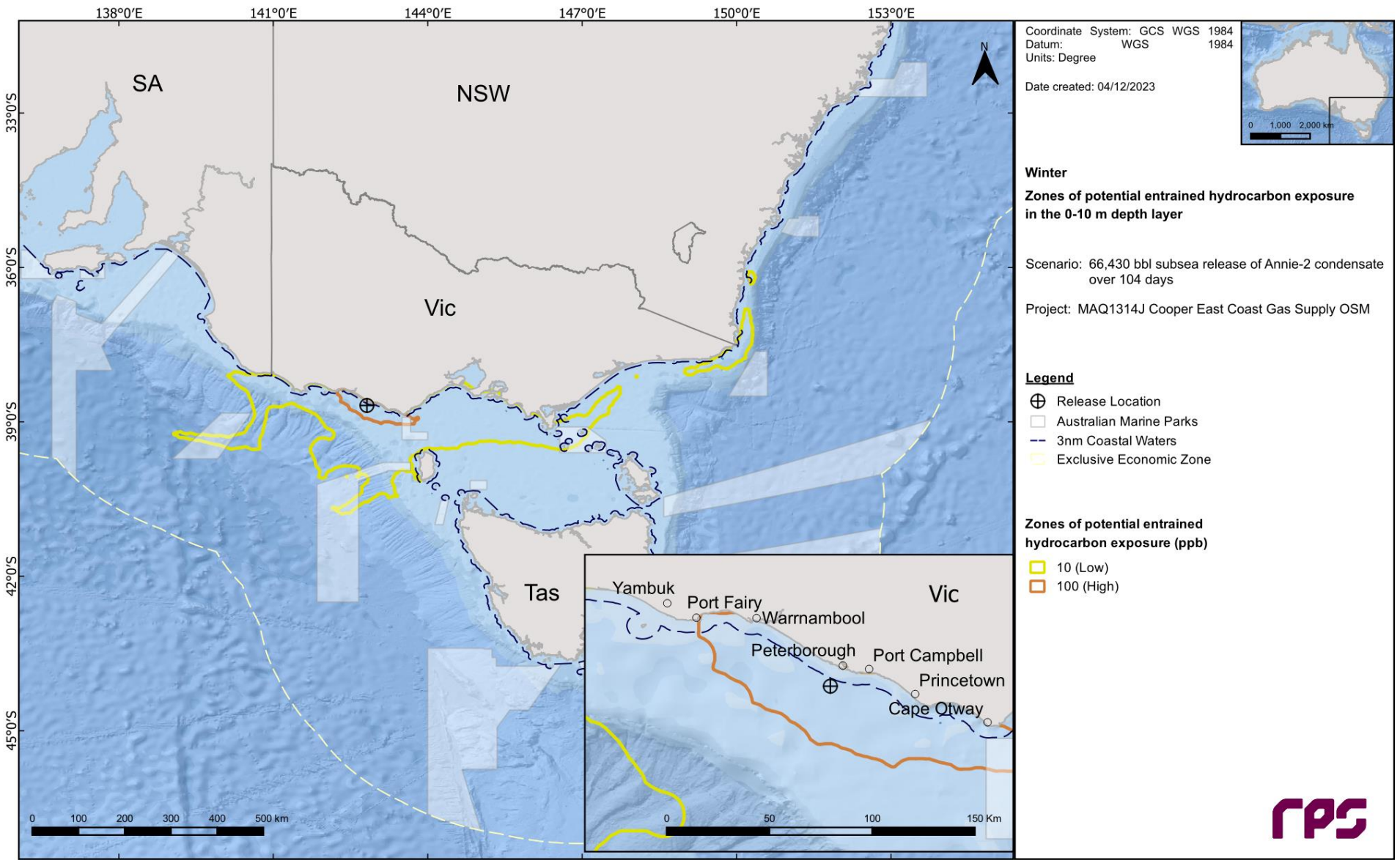

Figure 13.14 Zones of potential entrained hydrocarbon exposure at 0-10 m below the sea surface in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

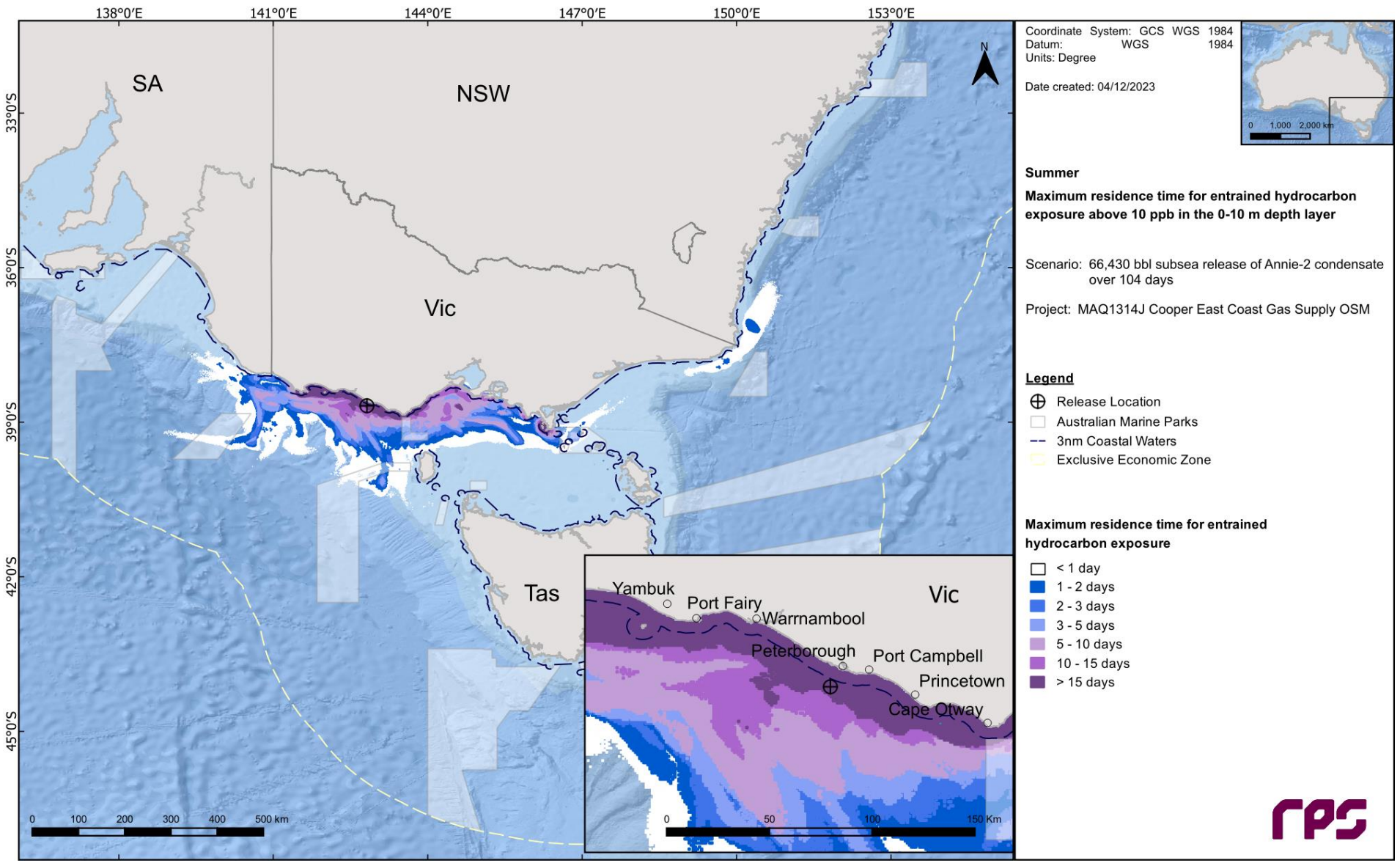

Figure 13.15 Maximum residence time for entrained hydrocarbon exposure above 10 ppb, at 0-10 m below the sea in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

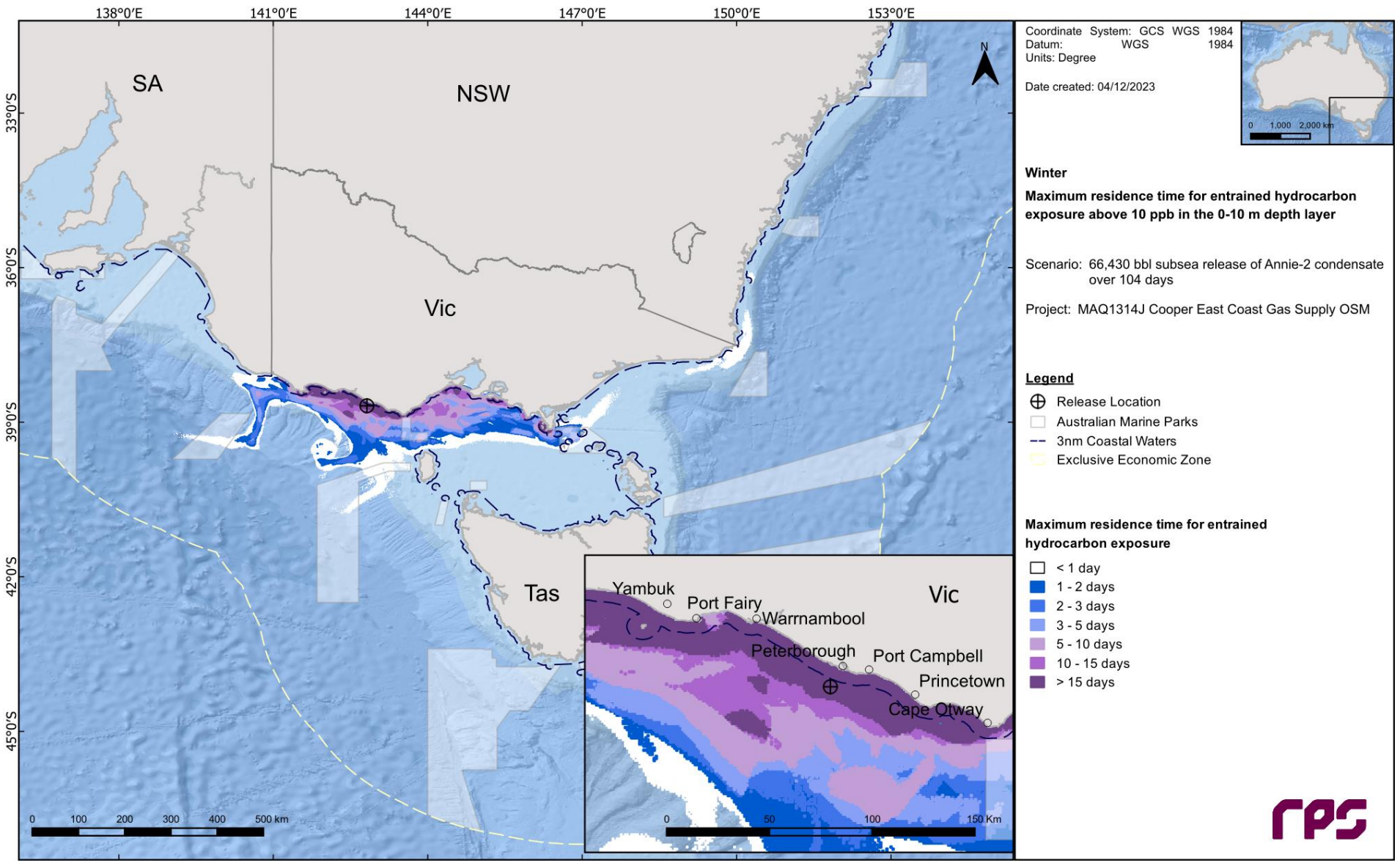

Figure 13.16 Maximum residence time for entrained hydrocarbon exposure above 10 ppb, at 0-10 m below the sea in the event of a 66,430 bbl subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

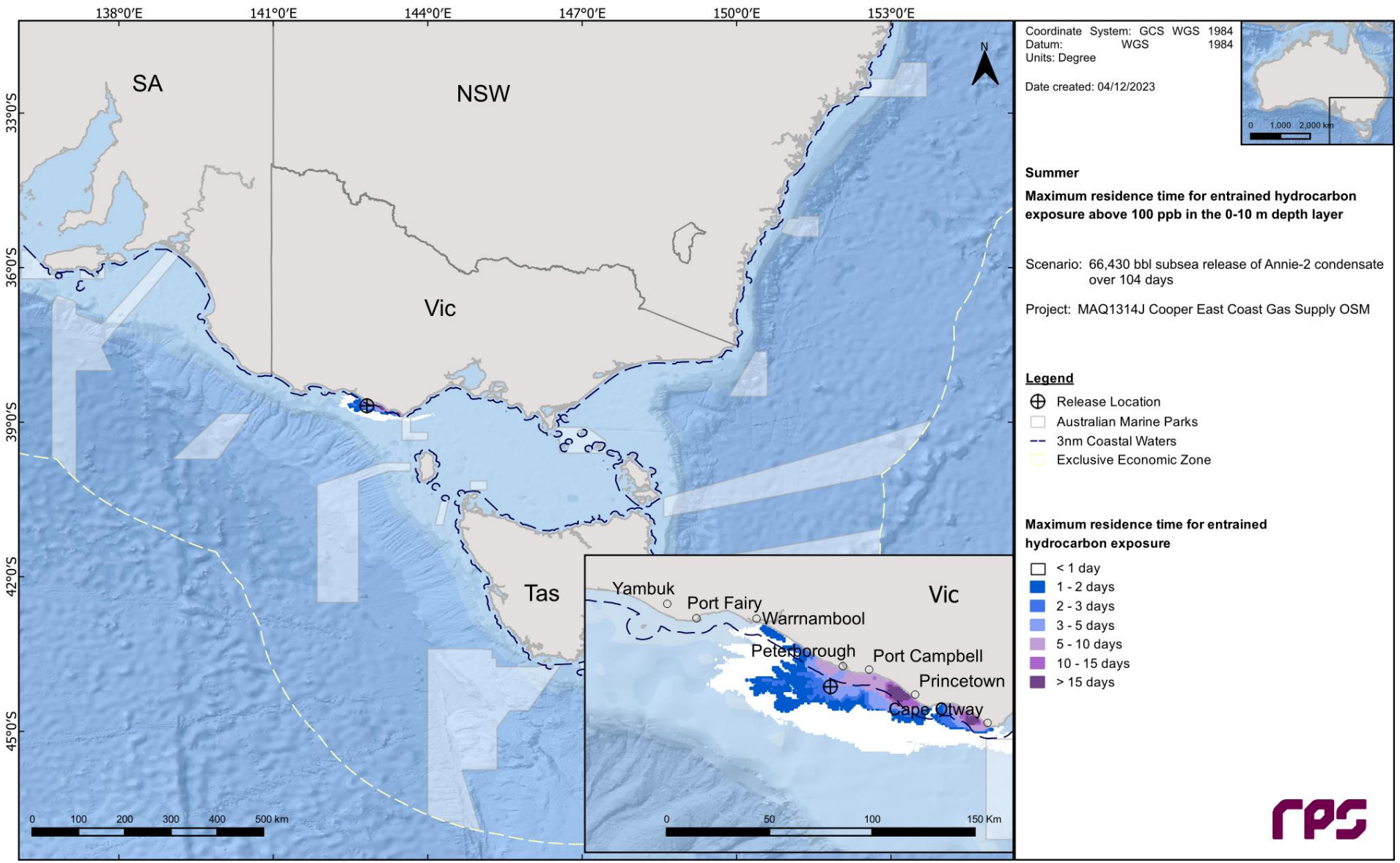

Figure 13.17 Maximum residence time for entrained hydrocarbon exposure above 100 ppb, at 0-10 m below the sea in the event of a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during summer conditions.

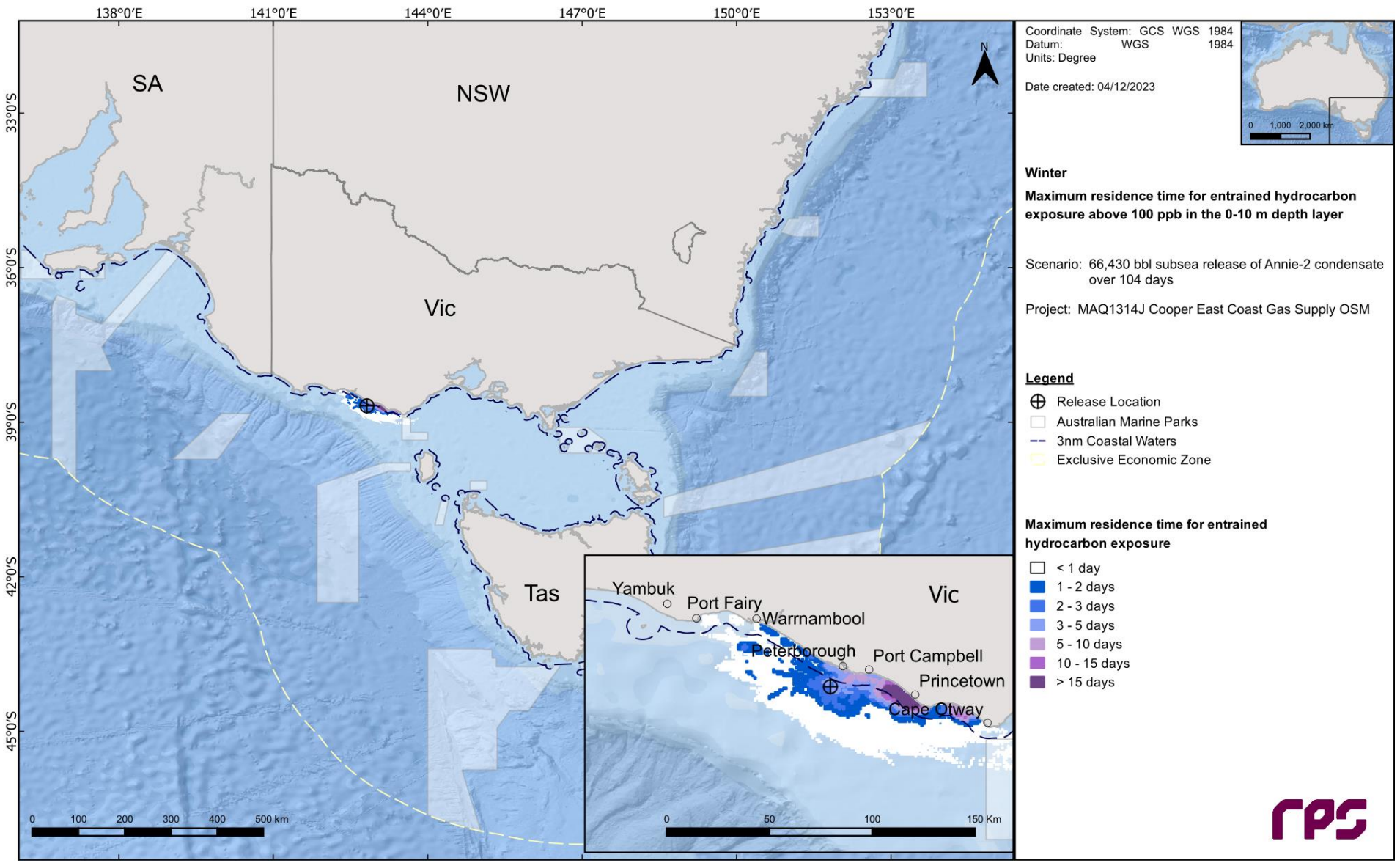

Figure 13.18 Maximum residence time for entrained hydrocarbon exposure above 100 ppb, at 0-10 m below the sea in the event of a 66,430 bbl (10,562 m^3) subsurface release from a loss of well control at Annie-2 over 104 days. The results were calculated from 100 spill simulations during winter conditions.

13.2 Deterministic Analysis

The stochastic modelling results were assessed, and the “worst case” deterministic runs were identified and are presented below for the following criteria:

a. Largest swept area for surface oil above 10 g/m^2;
b. Largest (total) volume of oil ashore;
c. Longest length of shoreline with oil accumulation above 100 g/m^2; and
d. Largest area of entrained hydrocarbon exposure above 100 ppb.
e. Largest area of dissolved hydrocarbon exposure above 50 ppb.

Note, no dissolved hydrocarbon concentrations above 50 ppb were predicted for this scenario.

Table 13.11 presents a summary of in-water exposure and shoreline accumulation at the assessed thresholds for the identified deterministic simulations.

Table 13.11 Summary of the worst-case deterministic analysis based on the scenario presented in the stochastic analysis section.

Variable	Threshold	Deterministic Analysis Criteria				
		Largest swept area of floating oil >10 g/m²	Largest volume of oil ashore	Longest length of shoreline with accumulation >100 g/m²	Largest area of entrained hydrocarbon exposure >100 ppb	Largest area of dissolved hydrocarbon exposure >50 ppb
Season		Winter	Winter	Winter	Winter	-
Run Number		61	88	88	77	-
Total area of floating Oil exposure (km²)	1 g/m²	291.7	190.4	190.4	251.6	-
	10 g/m²	**4.9**	0.8	0.8	0.8	-
	50 g/m²	-	-	-	-	-
Total length of shoreline accumulation (km)	10 g/m²	175	149	149	114	-
	100 g/m²	25	56	**56**	40	-
	1,000 g/m²	-	3	3	1	-
Minimum time before accumulation on any shoreline (hours)	10 g/m²	272	101	101	102	-
	100 g/m²	380	389	389	284	-
	1,000 g/m²	-	2,020	2,020	2,100	-
Total volume of oil ashore (m³)		125	**263**	263	154	-
Total area of entrained hydrocarbon exposure (km²)	10 ppb	28,379	17,526	17,526	17,586	-
	100 ppb	1,449	1,581	1,581	**2,295**	-
Total area of dissolved hydrocarbon exposure (km²)	10 ppb	11	29	29	20	-
	50 ppb	-	-	-	-	-
	400 ppb	-	-	-	-	-
Start Date		28th May 2011	3rd July 2010	3rd July 2010	14th May 2013	-

NC = No contact at, or above the specified shoreline accumulation threshold.

13.2.1 Deterministic Case: Largest swept area of floating oil above 10 g/m^2

The deterministic trajectory that resulted in the largest swept area of floating oil above 10 g/m^2 was identified during winter as run number 61, which started on 28th May 2011.

Figure 13.19 illustrates the floating oil exposure and shoreline accumulation over the 118-day simulation.

Figure 13.20 displays the time series of the area of sea surface exposure above the low (1 g/m^2), moderate (10 g/m^2) and high (50 g/m^2) thresholds over the 118-day simulation.

Figure 13.21 presents the fates and weathering graph for the corresponding single spill trajectory and Table 13.12 summarises the mass balance peaks and at the end of the simulation.

Table 13.12 Summary of the mass balance for the trajectory with the largest swept area of floating oil above 10 g/m^2.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 118
Surface (m^3)	194.4	3.8	0.0
Entrained (m^3)	1451.7	95.2	1131.7
Dissolved (m^3)	4.5	14.5	0.2
Evaporation (m^3)	5695.9	118.0	5695.9
Decay (m^3)	2402.3	118.0	2402.3
Ashore (m^3)	126.3	113.4	125.1

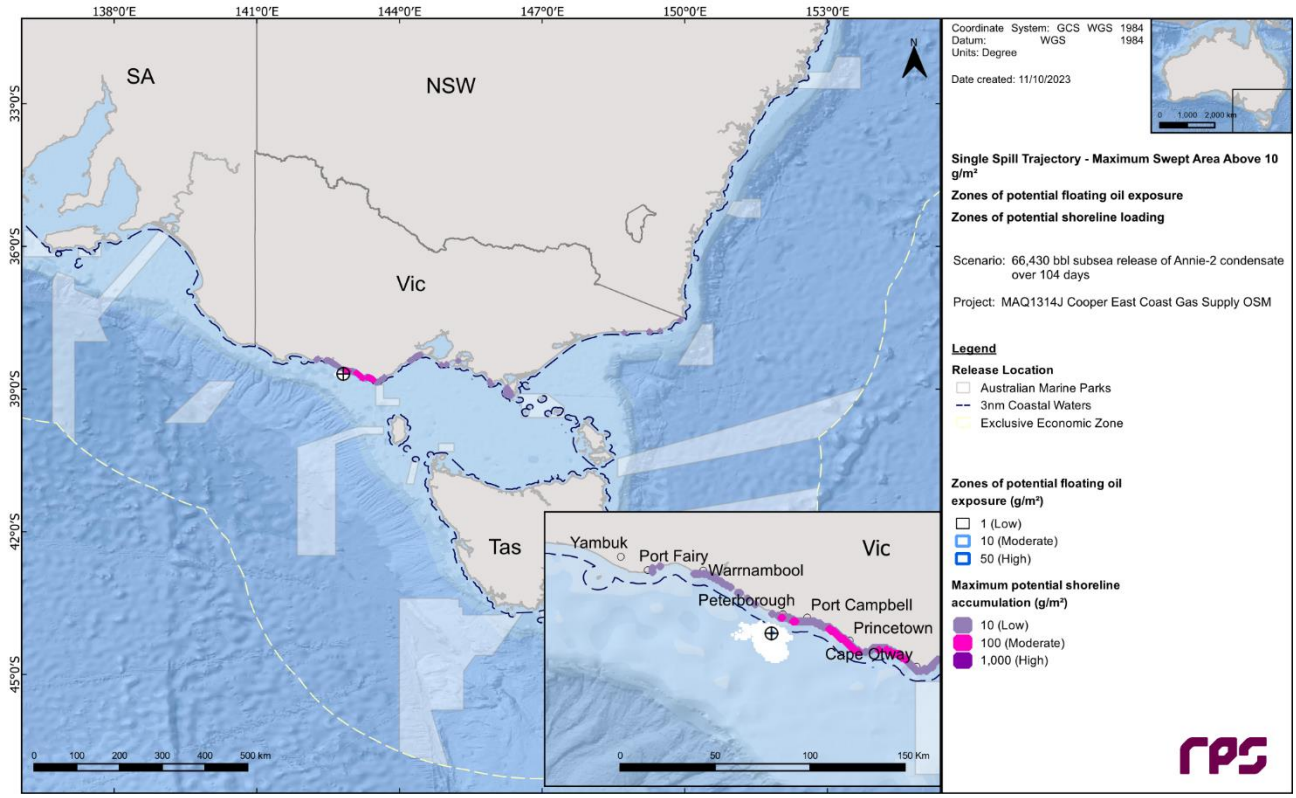

Figure 13.19 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest swept area of floating oil above 10 g/m^2.

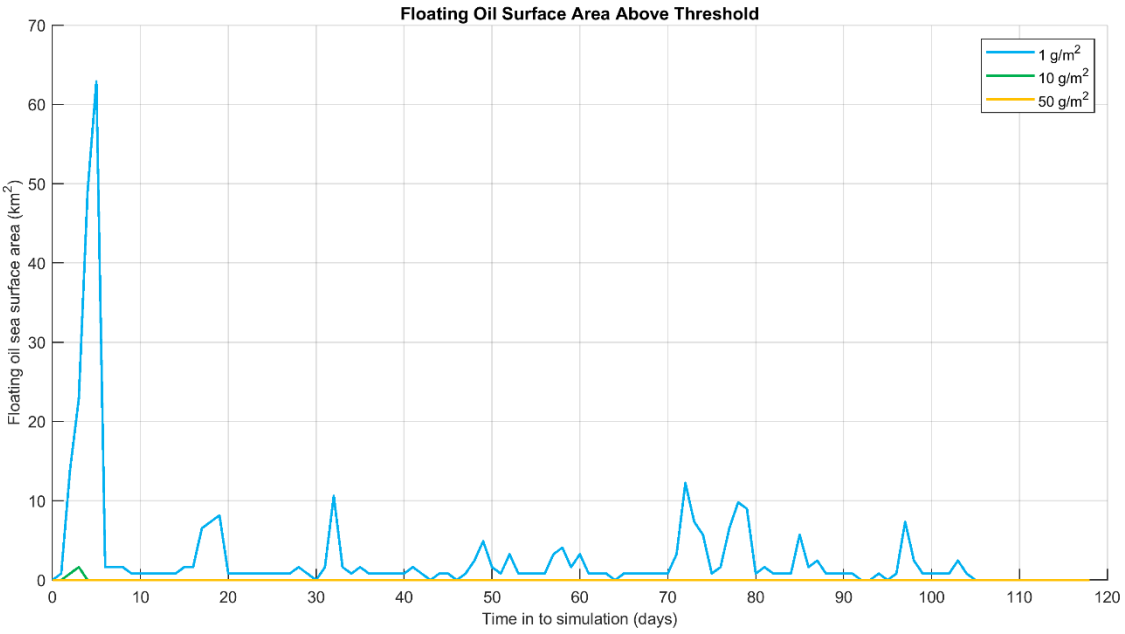

Figure 13.20 Time series of the sea surface exposure above each threshold for the trajectory with the largest swept area of floating oil above 10 g/m^2.

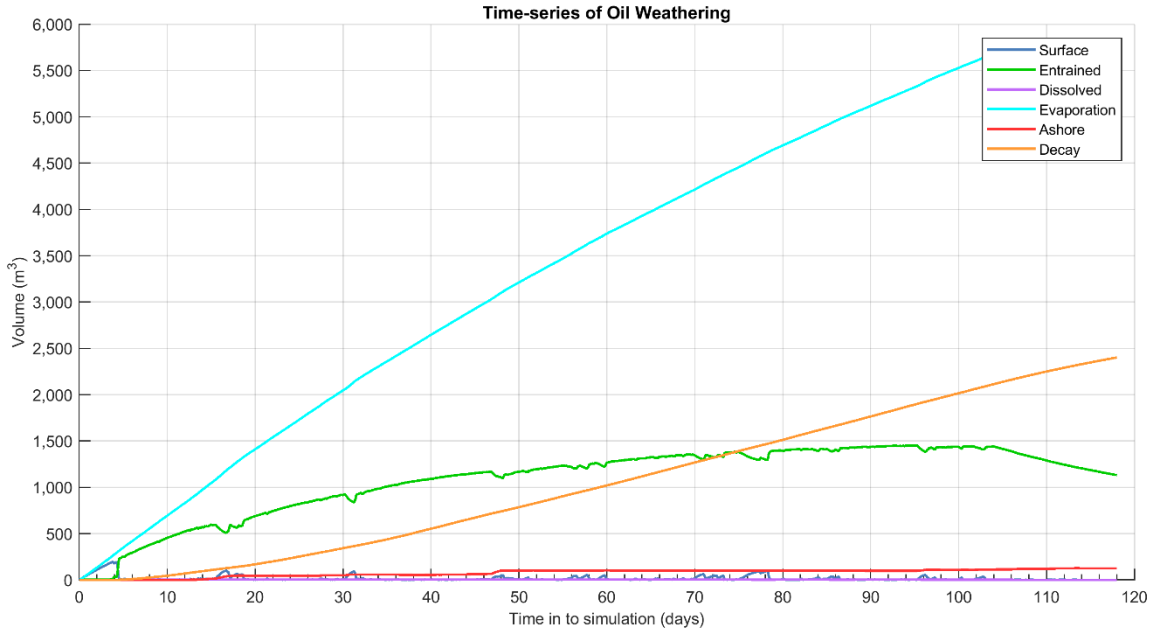

Figure 13.21 Predicted weathering and fates graph for the trajectory with the largest swept area of floating oil above 10 g/m^2.

13.2.2 Deterministic Case: Largest volume of oil ashore and longest length of shoreline with accumulation above 100 g/m^2

The deterministic trajectory that resulted in the largest volume of oil ashore and the longest length of shoreline with accumulation above 100 g/m^2 was identified during winter as run number 88, which started on 3rd July 2010.

Figure 13.22 illustrates the floating oil exposure and shoreline accumulation over the 118-day simulation.

Figure 13.23 displays the time series of the volume of oil accumulating on shorelines at the low (10 g/m^2), moderate (100 g/m^2) and high (1,000 g/m^2) thresholds over the 118-day simulation.

Figure 13.24 presents the fates and weathering graph for the corresponding single spill trajectory and Table 13.13summarises the mass balance peaks and at the end of the simulation.

Table 13.13 Summary of the mass balance for the trajectory with the largest volume ashore and the longest length of shoreline with accumulation above 100 g/m^2.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 118
Surface (m^3)	137.4	5.2	0.3
Entrained (m^3)	1363.9	96.2	1057.9
Dissolved (m^3)	4.8	28.3	0.4
Evaporation (m^3)	5695.2	118.0	5695.2
Decay (m^3)	2338.5	118.0	2338.5
Ashore (m^3)	264.9	113.0	263.0

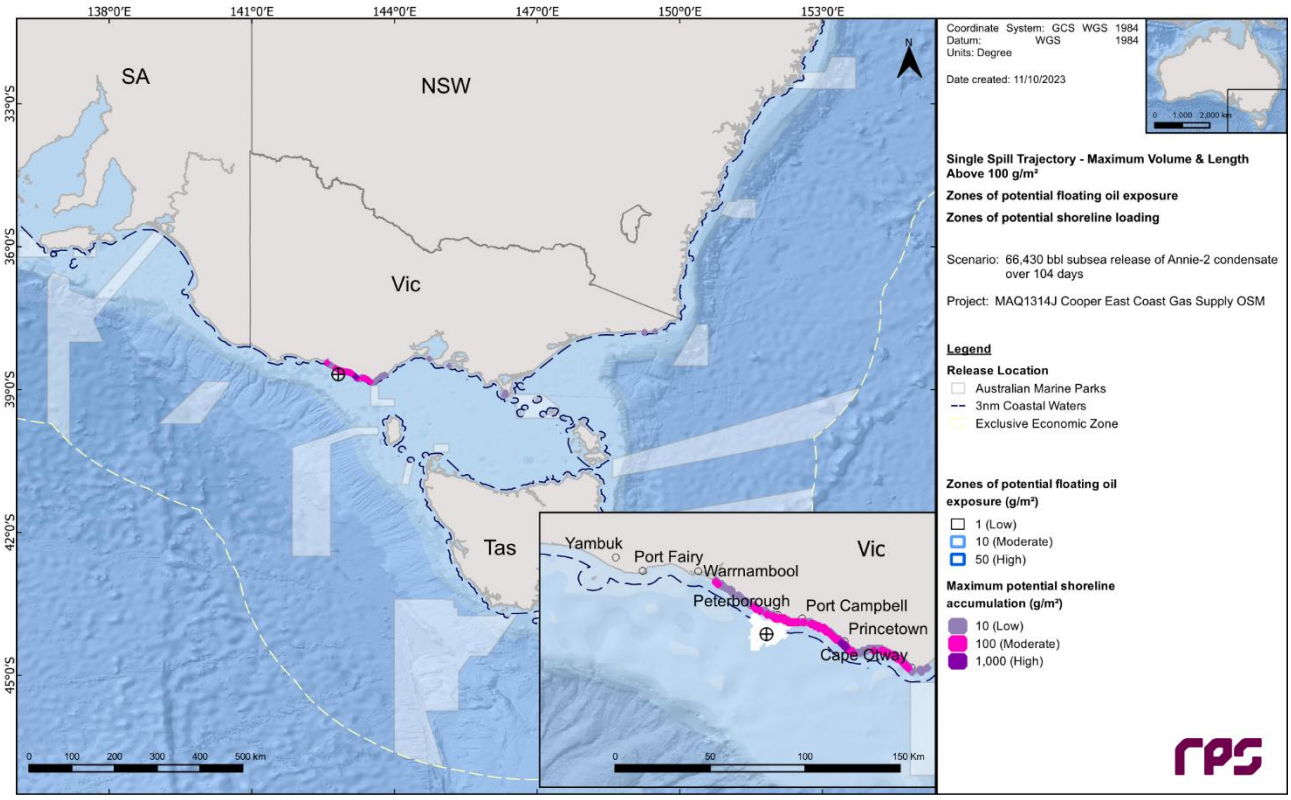

Figure 13.22 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest volume ashore and the longest length of shoreline with accumulation above 100 g/m^2.

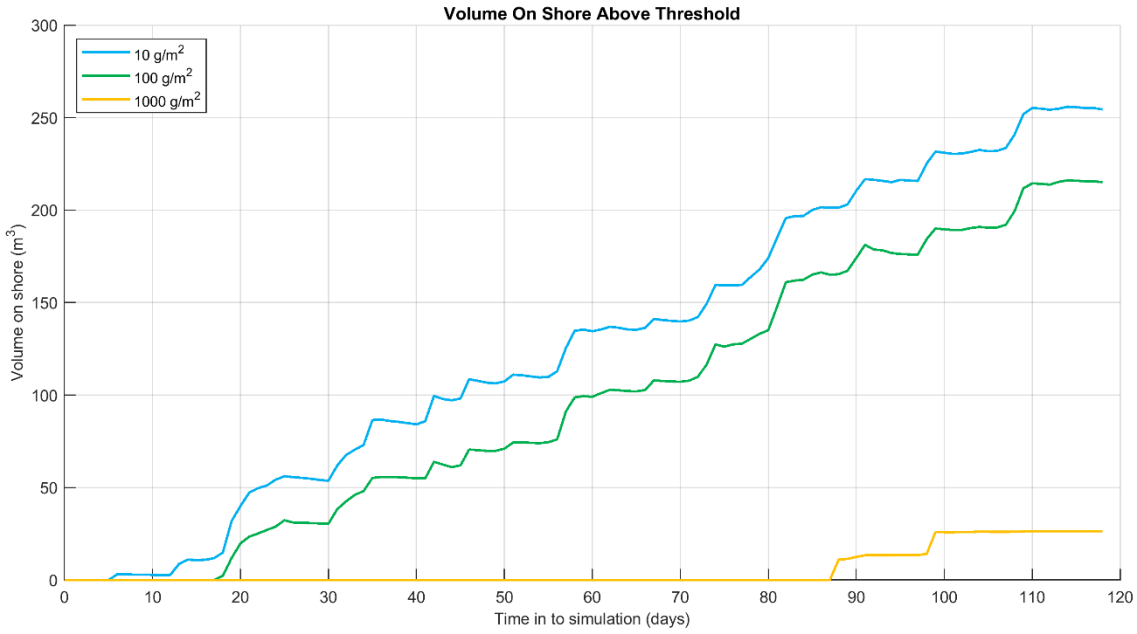

Figure 13.23 Time series of oil accumulation on the shoreline above each threshold for the trajectory with the largest volume ashore and the longest length of shoreline with accumulation above 100 g/m^2.

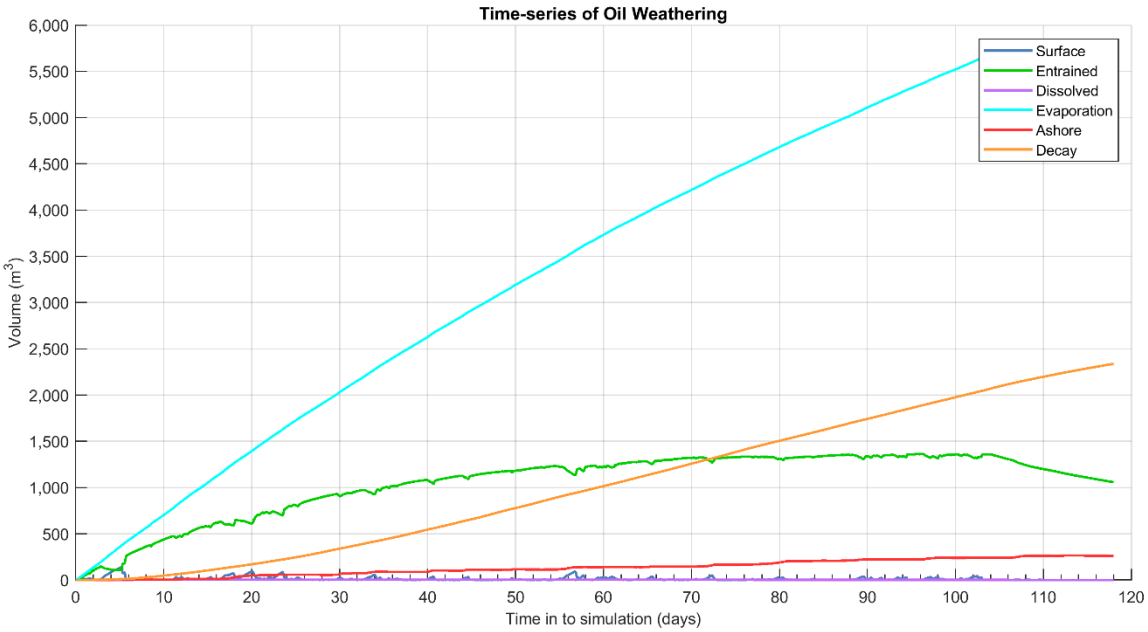

Figure 13.24 Predicted weathering and fates graph for the trajectory with the largest volume ashore and the longest length of shoreline with accumulation above 100 g/m^2.

13.2.3 Deterministic Case: Largest area of entrained hydrocarbon exposure above 100 ppb

The deterministic trajectory that resulted in the largest area of entrained hydrocarbon exposure above 100 ppb was identified during winter as run number 77, which started on 14th May 2014.

Figure 13.25 illustrates the zones of potential entrained hydrocarbon exposure over the 118-day simulation.

Figure 13.26 displays the time series of the area of entrained hydrocarbon exposure at the low (10 ppb) and high (100 ppb) thresholds over the 118-day simulation.

Figure 13.27 presents the fates and weathering graph for the corresponding single spill trajectory and Table 13.14 summarises the mass balance peaks and at the end of the simulation.

Table 13.14 Summary of the mass balance for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 118
Surface (m^3)	169.6	21.9	0.1
Entrained (m^3)	1417.1	102.2	1120.2
Dissolved (m^3)	5.2	17.9	0.4
Evaporation (m^3)	5736.8	118.0	5736.8
Decay (m^3)	2344.2	118.0	2344.2
Ashore (m^3)	154.9	111.7	153.5

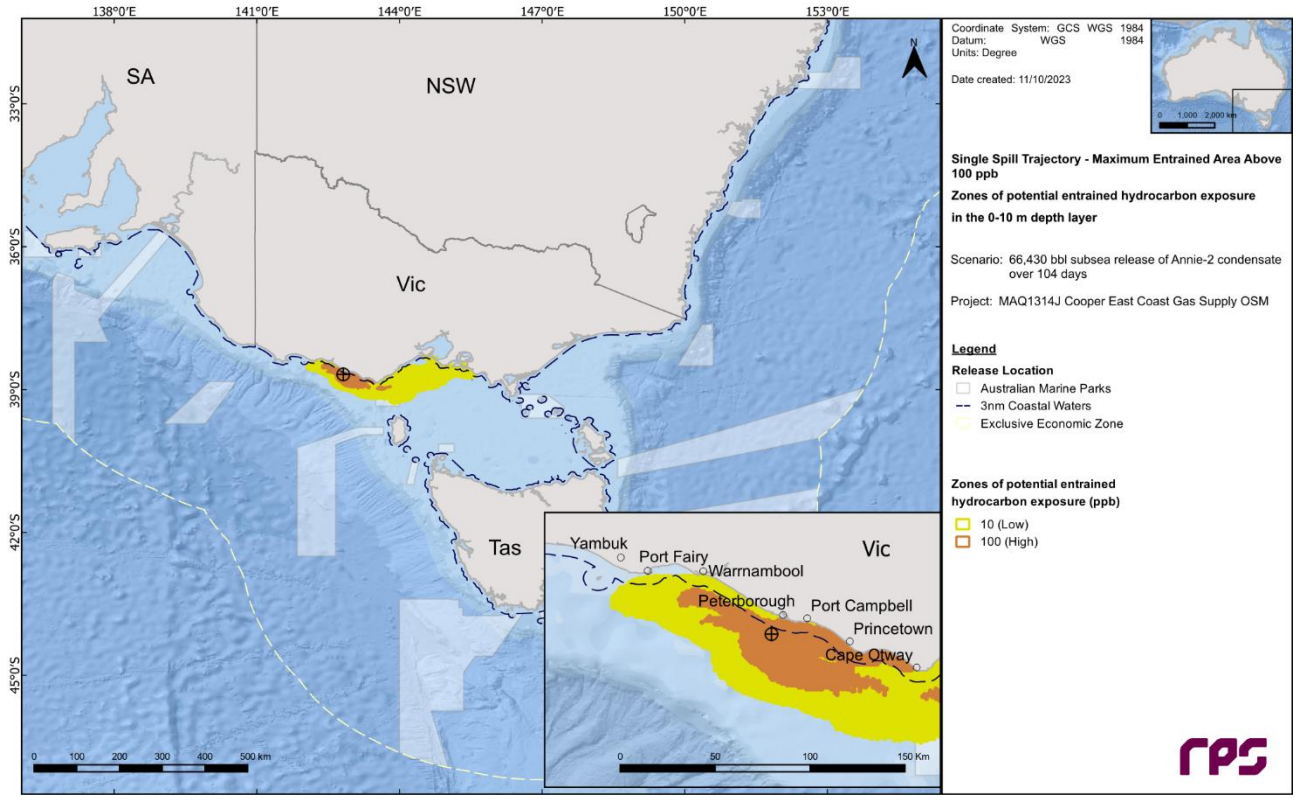

Figure 13.25 Zones of potential entrained hydrocarbon exposure, for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

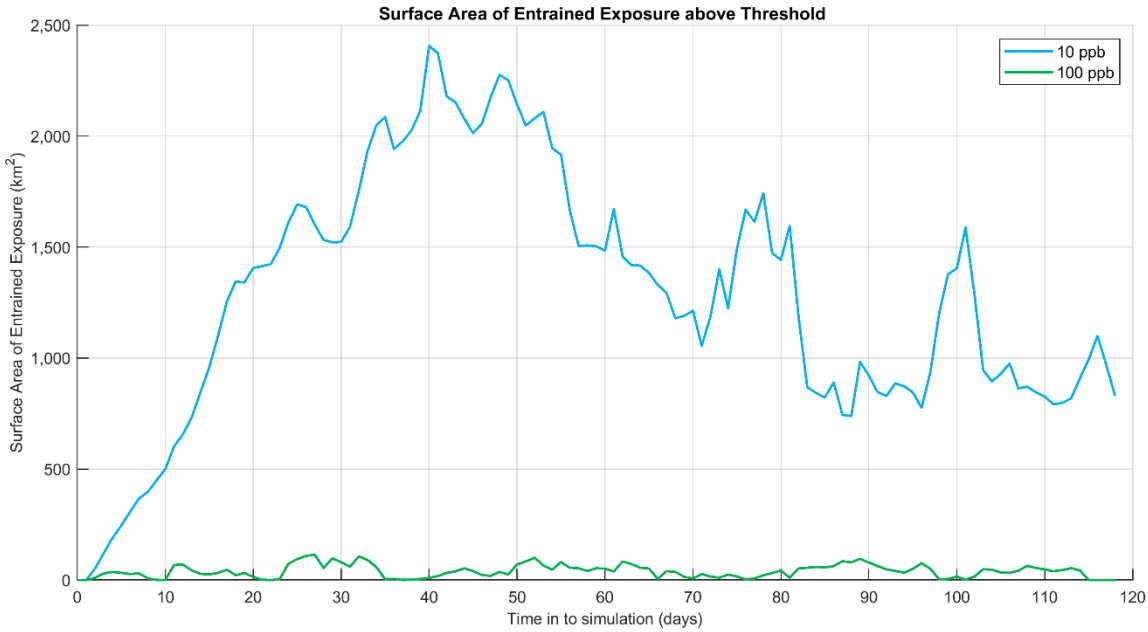

Figure 13.26 Time series of the entrained hydrocarbon exposure area above each threshold for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

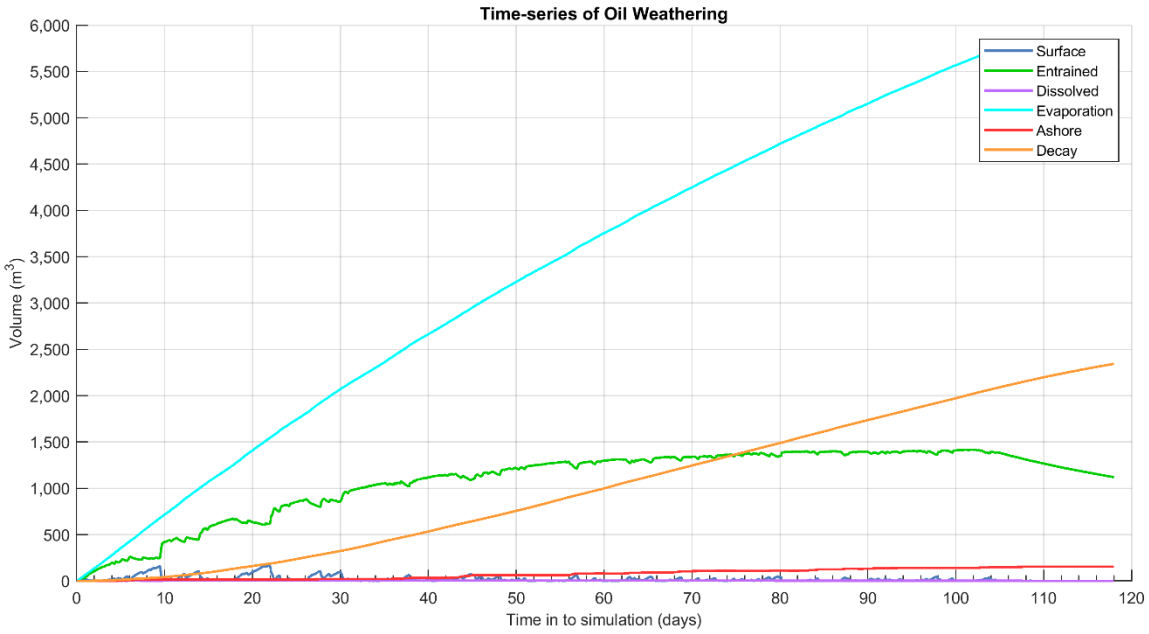

Figure 13.27 Predicted weathering and fates graph for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb.

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ANNIE-2 – VESSEL COLLISION

Oil Spill Modelling

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TERMS AND ABBREVIATIONS

AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZECC	Australian and New Zealand Environment and Conservation Council
API	American Petroleum Institute gravity. A measure of how heavy or light a petroleum liquid is compared to water.
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASTM	American Society for Testing and Materials
BIA	Biologically Important Area
Bonn Agreement	An agreement for cooperation in dealing with pollution of the North Sea by oil and other harmful substances, 1983, includes: Governments of the Kingdom of Belgium, the Kingdom of Denmark, the French Republic, the Federal Republic of Germany, the Republic of Ireland, the Kingdom of the Netherlands, the Kingdom of Norway, the Kingdom of Sweden, the United Kingdom of Great Britain and Northern Ireland and the European Union.
BP	Boiling point. The temperature at which the vapor pressure of the liquid is equal to the pressure exerted on it by the surrounding atmosphere
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CFSR	Climate Forecast System Reanalysis
Decay	The process where oil components are changed either chemically or biologically (biodegradation) to another compound. It includes breakdown to simpler organic carbon compounds by bacteria and other organisms, photo-oxidation by solar energy, and other chemical reactions.
Deterministic oil spill modelling	Oil spill modelling involving a computer simulation of a single hypothetical oil spill event subject to a single sequence of wind, current and other sea conditions over time. Single oil spill modelling, also referred to as "deterministic modelling" provides a simulation of one possible outcome of a given spill scenario, subject to the metocean conditions that are imposed. Single oil spill modelling is commonly used to consider the fate and effects of 'worst-case' oil spill scenarios that are carefully selected in consideration of the nature and scale of the offshore petroleum activity and the local environment (NOPSEMA, 2017). Because the outcomes of a single oil spill simulation can only represent the outcome of that scenario under one sequence of metocean conditions, worst-case conditions are often identified from stochastic modelling. It is impossible to calculate the likelihood of any outcome from a single oil spill simulation. Single oil spill modelling is generally used for response planning, preparedness planning and for supporting oil spill response operations in the event of an actual spill
Dynamic viscosity	The dynamic viscosity of a fluid expresses its resistance to shearing flows, where adjacent layers move parallel to each other with different speeds.
Floating oil exposure	Contact by floating oil on the sea surface at concentrations equal to or exceeding defined threshold concentrations. The consequence will vary depending on the threshold and the receptors
GODAE	Global Ocean Data Assimilation Experiment
HYCOM	Hybrid Coordinate Ocean Model. A data-assimilative, three-dimensional ocean model
HYDROMAP	Advanced ocean/coastal tidal model used to predict tidal water levels, current speed and current direction.
IMCRA	Integrated marine and coastal regionalisation areas
IOA	Index of Agreement
ITOPF	International Tanker Owners Pollution Federation Limited
KEF	Key Ecological Feature
LGA	Local Government Areas
MAE	Mean Absolute Error
MAHs	Monoaromatic Hydrocarbons
MDO	Marine diesel oil
MNP	Marine National Park
MP	Marine Park

MS	Marine Sanctuary
NASA	National Aeronautics and Space Administration (USA)
NCEP	National Centres for Environmental Prediction (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NP	National Park
NR	Nature Reserve
PAH	Polynuclear Aromatic Hydrocarbons
Pour Point	The pour point of a liquid is the temperature below which the liquid loses its flow characteristics
ppb	Parts per billion (concentration)
psu	Practical salinity units
Ramsar site	A site listed under the Ramsar Convention on wetlands which is an international intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.
RSB	Reefs, Shoals and Banks
Shoreline accumulation	Arrival of oil at or near shorelines at on-water concentrations equal to or exceeding defined threshold concentrations. Shoreline contact is judged for floating oil arriving within a 2 km buffer zone from any shoreline as a conservative measure
SIMAP	Spill Impact Model Application Package. SIMAP is designed to simulate the fate and effects of spilled hydrocarbons for surface or subsea releases
SRTM	Shuttle Radar Topography Mission
State Waters	Low water mark seaward for three nautical miles
STB	Standard Barrel
Stochastic oil spill modelling	Stochastic oil spill modelling is created by overlaying and statistically analysing the outcomes of many single oil-spill simulations of a defined spill scenario, where each simulation was subject to a different sequence of metocean conditions, selected objectively (typically by random selection) from a long sequence of historic conditions for the study area. Analysis of this larger set of simulations provides a more accurate indication of the area of hydrocarbon exposure and indicates which locations are more likely to be exposed (as well as other statistics). Stochastic oil spill modelling avoids biases that affect single oil spill modelling (due to the reliance on only one possible sequence of conditions). However, when interpreting stochastic modelling, which is based on a wide range of potential conditions that might happen to occur, it is essential to understand that calculations will encompass a much larger area than could be exposed in any single spill event, where a more limited set of conditions will occur. Consequently, it is misleading to imply that the region derived from stochastic modelling indicate the outcomes expected from a single spill event (NOPSEMA, 2017) Stochastic modelling is generally used for risk assessment and preparedness planning by indicating locations that could be exposed and may require response or subsequent impact assessment
Sub-LGA	Sub-Local Government Areas
TOPEX/Poseidon	A joint satellite mission between NASA and CNES to map ocean surface topography using an array of satellites equipped with detailed altimeters
US EPA	United States Environmental Protection Agency
US CG	United States Coast Guard
World Ocean Atlas	A collection of physicochemical parameters (e.g. temperature, salinity, oxygen, phosphate, silicate, and nitrate) based on profile data from the World Ocean Database (NCEI, 2021) established by NOAA's National Centers for Environmental Information (NCEI)
WGS 1984	World Geodetic System 1984 (WGS84); reference coordinate system

EXECUTIVE SUMMARY

Background

Cooper Energy (Cooper) plans to drill and operate the Annie-2 well in the Otway Basin (Figure 1.1).

In order to inform the offshore environmental impact and risk assessments Cooper commissioned RPS to conduct a detailed oil spill modelling study assessing a 250 m^3 surface release of marine diesel oil over 6 hours following a vessel collision.

The modelling assessment was undertaken on an annual basis.

The purpose of the modelling is to provide an understanding of a conservative 'outer envelope' of the potential area of exposure in the unlikely event of hydrocarbon spill. The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that would be implemented in response to the spill. Therefore, the modelling results represent the maximum extent of hydrocarbon exposure.

The spill modelling was performed using an advanced three-dimensional trajectory and fates model; Spill Impact Model Application Program (SIMAP). The SIMAP model calculates the transport, spreading, entrainment and evaporation of spilled hydrocarbons over time, based on the prevailing wind and current conditions and the physical and chemical properties.

Methodology

The modelling study was carried out in several stages. Firstly, a ten-year wind and current dataset (2010–2019) was generated and the currents included the combined influence of three-dimensional large-scale ocean currents and tidal currents. Secondly, the currents, winds and detailed hydrocarbon characteristics were used as inputs in the three-dimensional oil spill model (SIMAP) to simulate the drift, spread, weathering and fate of the spilled oil.

As spills can occur during any set of wind and current conditions, modelling was conducted using a stochastic (random or non-deterministic) approach, which involved running 100 randomly selected single trajectory simulations per scenario, with each simulation having the same spill information (location, spill volume, duration and composition of hydrocarbons) but varying start times. This ensured that each spill simulation was subject to a unique set of wind and current conditions

The SIMAP system, the methods and analysis presented herein, use modelling algorithms which have been anonymously peer reviewed and published in international journals. Further, RPS warrants that this work meets and exceeds the ASTM Standard F2067-13 "*Standard Practice for Development and Use of Oil Spill Models*".

Oil Properties

The marine diesel oil (MDO) used for the scenario has an API of 24 and a density of 890 kg/m^3 (at 25 ºC) with a viscosity value (14.0 cP at 25 ºC) classifying it as a Group II (light-persistent) oil according to the International Tankers Owners Pollution Federation (ITOPF, 2014) and US EPA/USCG classifications.

The MDO is a mixture of volatile and persistent hydrocarbons with high proportions of semi- and low-volatile components. In favourable evaporation conditions, about 4.0% of the oil mass should evaporate within the first 12 hours (BP < 180°C), a further 32% should evaporate within the first 24 hours (180°C < BP < 265°C) and a further 54% should evaporate over several days (265°C < BP < 380°C). Approximately 10% of the oil is shown to be persistent.

Results

Scenario: 250 m³ loss of containment from a vessel collision

- The maximum distance from the release location to the low (1–10 g/m^2), moderate (10–50 g/m^2) and high (> 50 g/m^2) floating oil exposure zones was 32.5 km (west), 10.3 km (west) and 2.8 km (east-southeast), respectively.
- The probability of accumulation to any shoreline at, or above, the low (10 g/m^2) threshold was 60%. The minimum time before oil accumulation at, or above, the low threshold was 22 hours whilst the maximum total volume ashore for a single spill trajectory was 43.2 m^3, and the maximum length of shoreline with accumulation above the low, moderate and high thresholds were 32 km, 11 km and 1 km, respectively.
- Excluding the 13 BIAs that the release location resides within, the highest probability of low dissolved hydrocarbon exposure ranged between 1% (Short-tailed Shearwater - Foraging) and 2% (Southern Right Whale - Aggregation).
- The highest probability of low entrained hydrocarbon exposure was recorded for the Twelve Apostles MNP (65%) and Short-tailed Shearwater – Foraging BIA (64%). Additional receptors including LGAs, sub-LGAs, and AMPs were predicted with entrained hydrocarbon exposure.

1 INTRODUCTION

1.1 Background

Cooper Energy (Cooper) plans to drill and operate the Annie-2 well in the Otway Basin (Figure 1.1).

In order to inform the offshore environmental impact and risk assessments Cooper commissioned RPS to conduct a detailed oil spill modelling study assessing a 250 m^3 surface release of marine diesel oil over 6 hours following a vessel collision.

The modelling assessment was undertaken on an annual basis.

The purpose of the modelling is to provide an understanding of a conservative 'outer envelope' of the potential area of exposure in the unlikely event of hydrocarbon spill. The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that would be implemented in response to the spill. Therefore, the modelling results represent the maximum extent of hydrocarbon exposure.

The spill modelling was performed using an advanced three-dimensional trajectory and fates model; Spill Impact Model Application Program (SIMAP). The SIMAP model calculates the transport, spreading, entrainment and evaporation of spilled hydrocarbons over time, based on the prevailing wind and current conditions and the physical and chemical properties.

Note that the oil spill model, the method and analysis presented herein uses modelling algorithms which have been anonymously peer reviewed and published in international journals. Furthermore, RPS warrants that this work meets and exceeds the American Society for Testing and Materials (ASTM) Standard F2067-13 "*Standard Practice for Development and Use of Oil Spill Models*".

Table 1-1 Coordinates of the release location.

Infrastructure	Latitude	Longitude	Water Depth (m)
Annie-2	38.68375° S	142.82456° E	36

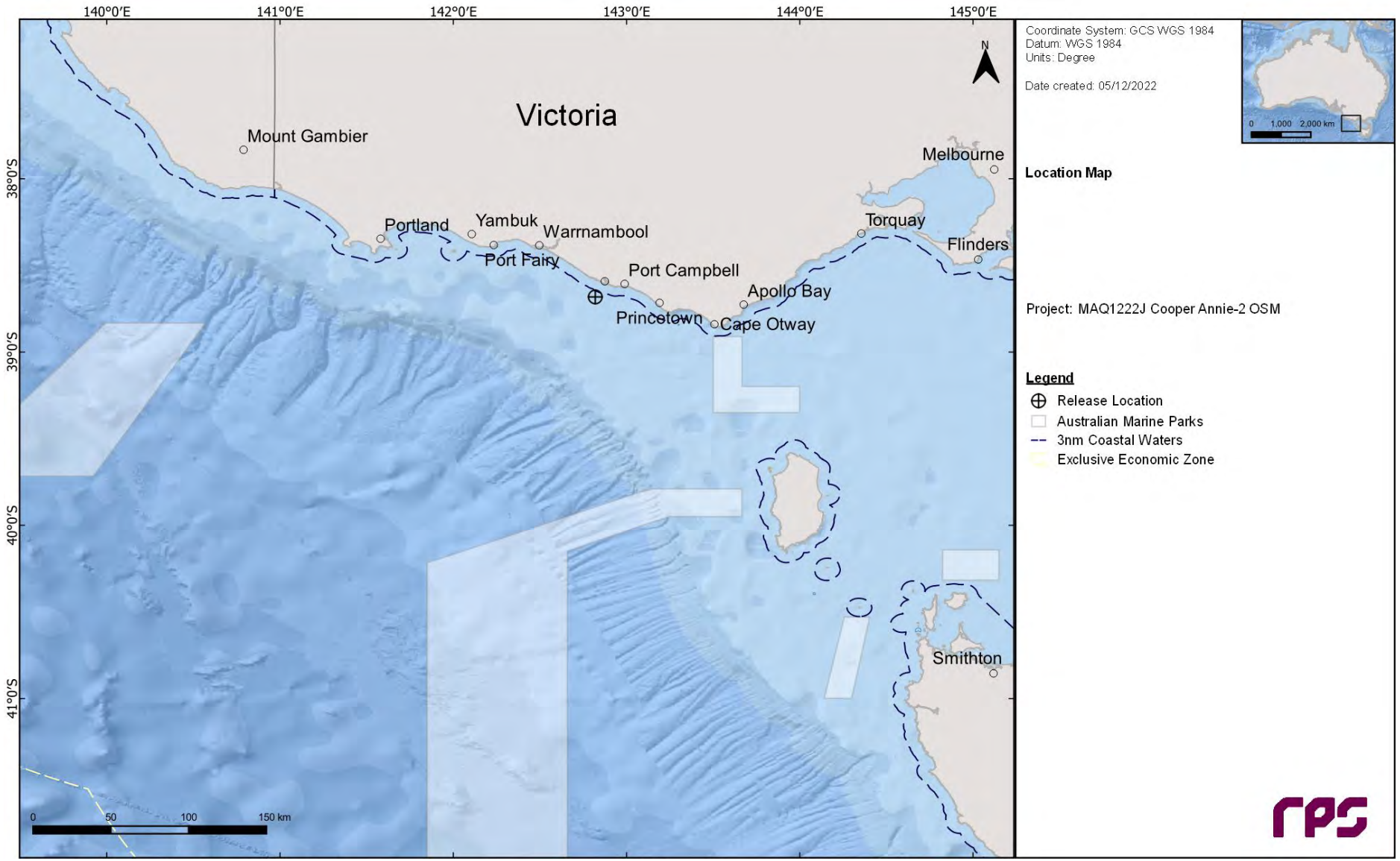

Figure 1.1 Map of the Annie-2 release location.

1.2 What is Oil Spill Modelling?

Oil spill modelling is a valuable tool widely used for risk assessment, emergency response and contingency planning where it can be particularly helpful to proponents and decision makers. By modelling a series of the most likely oil spill scenarios, decisions concerning suitable response measures and strategic locations for deploying equipment and materials can be made, and the locations at most risk can be identified. The two types of oil spill modelling often used are stochastic (Section 1.2.1) and deterministic (Section 1.2.2) modelling.

1.2.1 Stochastic Modelling (Multiple Spill Simulations)

Stochastic oil spill modelling is created by overlaying a great number (often hundreds) of individual, computer-simulated hypothetical spills (NOPSEMA, 2018; Figure 1.2).

Stochastic modelling is a common means of assessing the potential risks from oil spills related to new projects and facilities. Stochastic modelling typically utilises hydrodynamic data for the location in combination with historic wind data. Typically, 100 iterations of the model will be run utilising the data that is most relevant to the season or timing of the project.

The outcomes are often presented as a probability of exposure and is primarily used for risk assessment purposes in view to understand the range of environments that may be affected or impacted by a spill. Elements of the stochastic modelling can also be used in oil spill preparedness and planning.

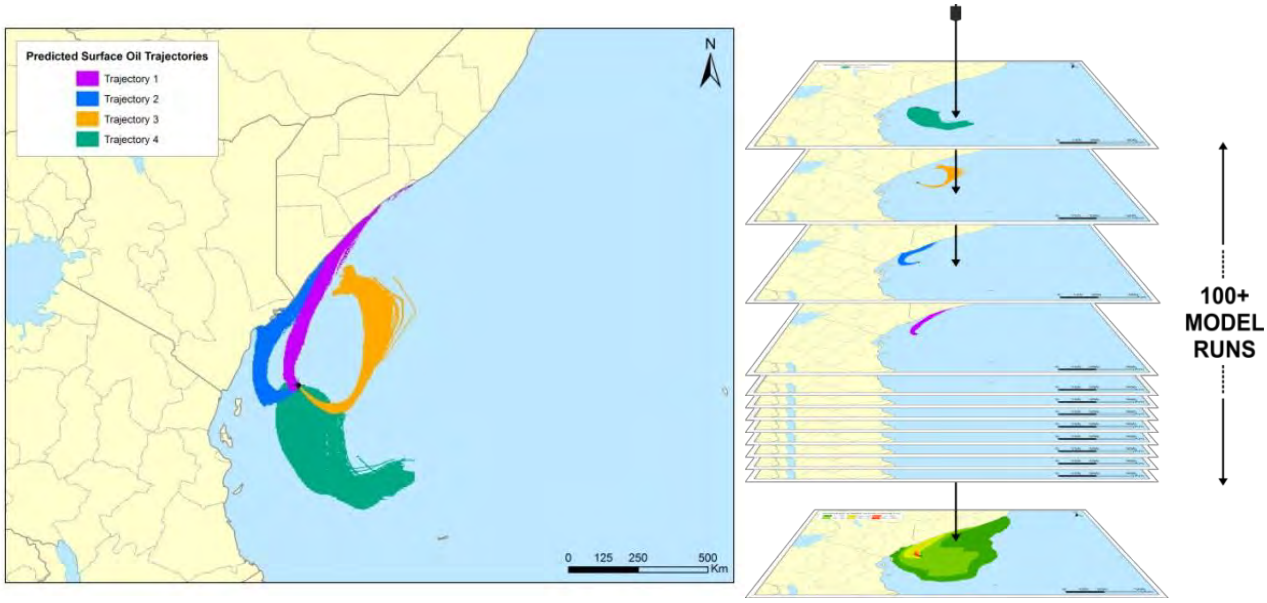

Figure 1.2 Examples of four individual spill trajectories (four replicate simulations) predicted by SIMAP for a spill scenario. The frequency of contact with given locations is used to calculate the probability of impacts during a spill. Essentially, all model runs are overlain (shown as the stacked runs on the right) and the number of times that trajectories contact a given location at a concentration is used to calculate the probability.

1.2.2 Deterministic Modelling (Single Spill Simulation)

Deterministic modelling is the predictive modelling of a single incident subject to a single sample of wind and weather conditions over time (NOPSEMA, 2018; Figure 1.3).

Deterministic modelling is often paired with stochastic modelling to place the large stochastic footprint into perspective. This deterministic analysis is generally a single run selected from the stochastic analysis and serves as the basis for developing the plans and equipment needs for a realistic spill response. Deterministic spills can be selected on several basis such as minimum time to shoreline, largest swept area, maximum volume ashore, longest length of shoreline contacted by oil or largest area of entrained or dissolved hydrocarbons.

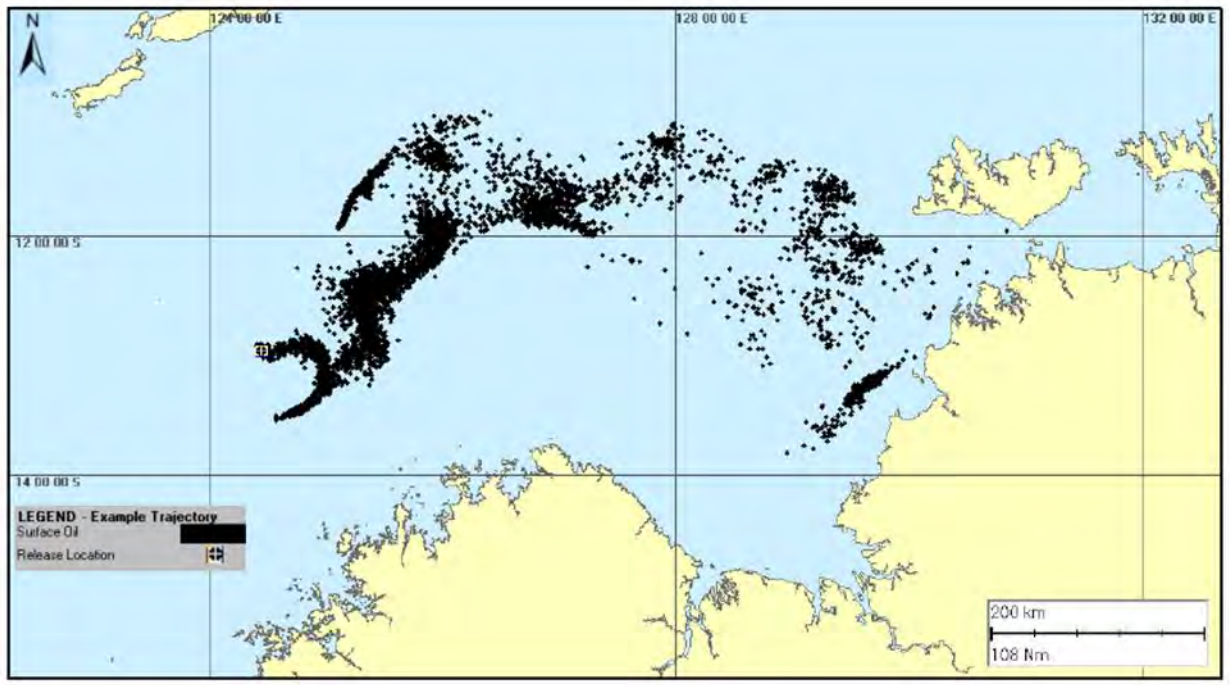

Figure 1.3 Example of an individual spill trajectory predicted by SIMAP for a spill scenario. Note, this image represents surface oil as spillets and do not take any thresholds into consideration.

2 SCOPE OF WORK

The scope of work included the following components:

- Generate 10 years of winds and three-dimensional currents from 2010 to 2019 (inclusive). The currents included the combined influence of tidal and ocean currents.
- Include the wind and current data and characteristics of the MDO as input into the three-dimensional oil spill model (SIMAP), to model the movement, spreading, weathering and shoreline contact by hydrocarbons over time.
- Use SIMAP's stochastic model (also known as a probability model) to calculate exposure to surround waters and shorelines. This involved running 100 randomly selected single trajectory simulations for the scenario, with each simulation having the same spill information (spill volume, duration and composition of hydrocarbons) but varying start times. This ensured that each spill simulation was subject to a unique set of wind and current conditions.
- Results were assessed to determine the exposure to surrounding waters and contact to shorelines based upon the thresholds outlined in the NOPSEMA Oil Spill Modelling Bulletin (NOPSEMA 2019).
- The stochastic modelling results were reviewed, and the "worst case" deterministic runs were identified and presented based on the following criteria (if applicable):
    a. Largest swept area for surface oil above 10 g/m^2
    b. Largest swept area for surface oil above 50 g/m^2
    c. Largest volume of oil ashore
    d. Longest length of shoreline with oil accumulation above 100 g/m^2
    e. Largest area of entrained hydrocarbon exposure above 100 ppb
    f. Largest area of dissolved hydrocarbon exposure above 50 ppb

3 REGIONAL CURRENTS

Bass Strait is a body of water separating Tasmania from the southern Australian mainland, specifically the state of Victoria. The strait is a relatively shallow area of the continental shelf, connecting the southeast Indian Ocean with the Tasman Sea. Currents within the straight are primarily driven by tides, winds, incident continental shelf waves and density driven flows; high winds and strong tidal currents are frequent within the area (Jones, 1980).

The varied geography and bathymetry of the region, in addition to the forcing of the south-eastern Indian Ocean and local meteorology lead to complex shelf and slope circulation patterns (Middleton & Bye, 2007). Figure 3.1 displays seasonal current trends within the Bass Strait. During winter there is a strong eastward water flow due to the strengthening of the South Australian Current (fed by the Leeuwin Current in the Northwest Shelf), which bifurcates with one extension moving though the Bass Strait, and another forming the Zeehan Current off western Tasmania (Sandery & Kämpf, 2007). During summer, water flow reverses off Tasmania, King Island and the Otway Basin travelling eastward, as the coastal current develops due to south-easterly winds.

To accurately describe the variability in currents between the inshore and offshore region, a hybrid regional dataset was developed by combining deep ocean predictions obtained from HYCOM (Hybrid Coordinate Ocean Model) with surface tidal currents developed by RPS. The following sections provide a summary of the hybrid regional dataset.

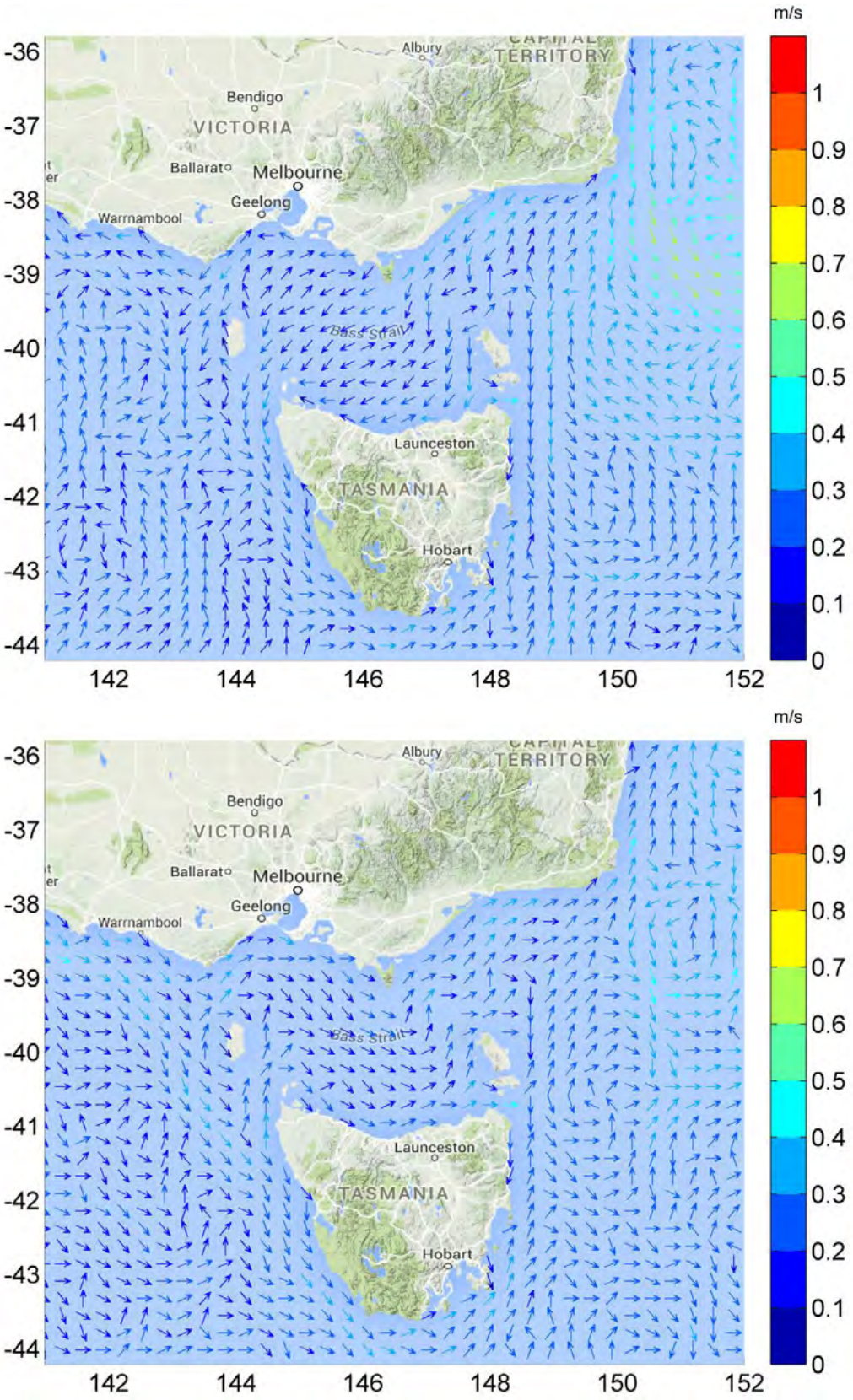

Figure 3.1 HYCOM averaged seasonal surface drift currents during summer (upper image) and winter (lower image).

3.1 Tidal currents

Tidal current data was generated using RPS's advanced ocean/coastal model, HYDROMAP. The HYDROMAP model has been thoroughly tested and verified through field measurements throughout the world for more than 30 years (Isaji & Spaulding, 1984; Isaji, et al., 2001; Zigic, et al., 2003). HYDROMAP tidal current data has been used as input to forecast (in the future) and hindcast (in the past) pollutant spills in Australian waters and forms part of the Australian National Oil Spill Emergency Response System operated by AMSA (Australian Maritime Safety Authority).

HYDROMAP employs a sophisticated sub-gridding strategy, which supports up to six levels of spatial resolution, halving the grid cell size as each level of resolution is employed. The sub-gridding allows for higher resolution of currents within areas of greater bathymetric and coastline complexity, and/or of interest to a study.

The numerical solution methodology follows that of Davies (1977a and 1977b) with further developments for model efficiency by Owen (1980) and Gordon (1982). A more detailed presentation of the model can be found in Isaji and Spaulding (1984) and Isaji et al. (2001).

3.1.1 Grid Setup

The tidal model domain is sub-gridded to a resolution of 500 m for shallow and coastal regions, starting from an offshore (or deep water) resolution of 8 km. The finer grids are progressively allocated in a step-wise fashion to more accurately resolve flows along the coastline, around islands and over regions with more complex bathymetry. Figure 3.2 shows the tidal model grid covering the study domain.

A combination of datasets was used and merged to describe the shape of the seabed within the grid domain (Figure 3.3). These included spot depths and contours which were digitised from nautical charts released by the hydrographic offices as well as Geoscience Australia database and depths extracted from the Shuttle Radar Topography Mission (SRTM30_PLUS) Plus dataset (see Becker et al., 2009).

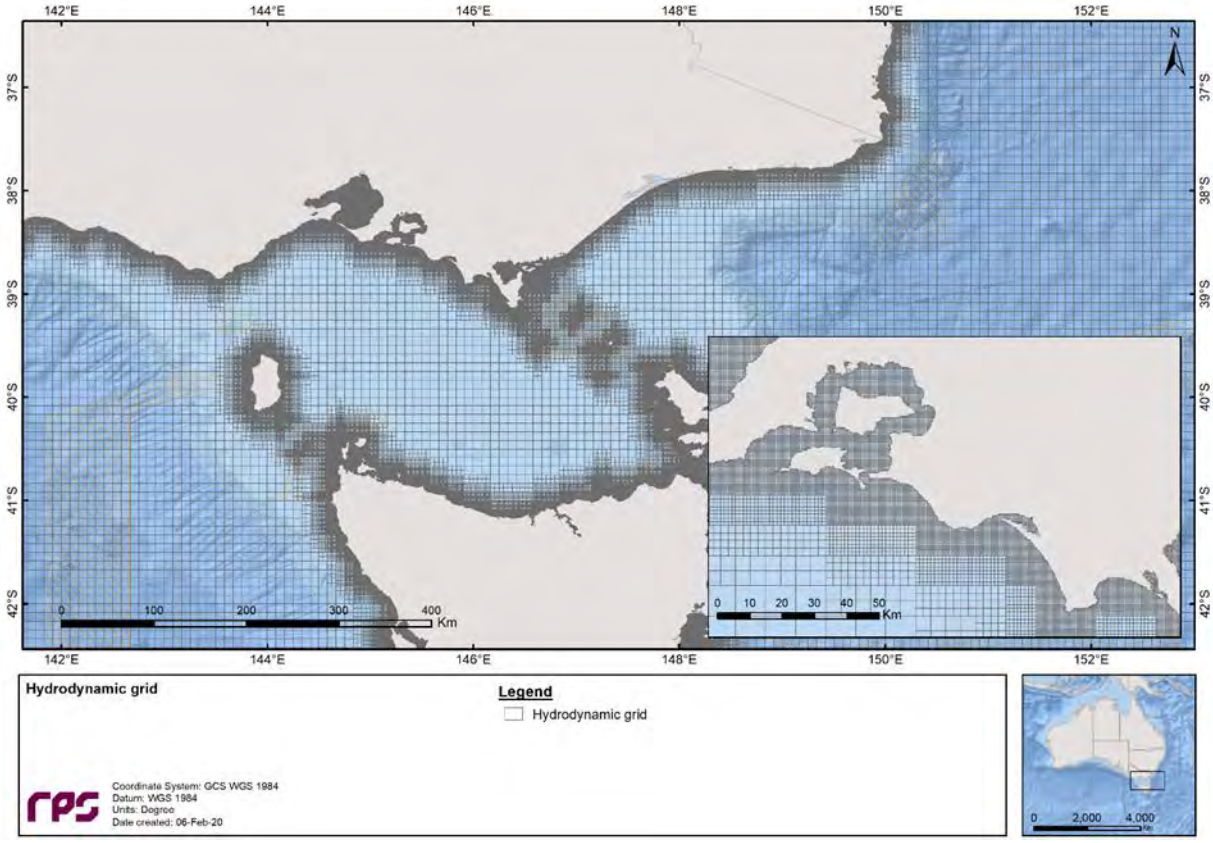

Figure 3.2 Sample of the model grid used to generate the tidal currents for the study region. Higher resolution areas are shown by the denser mesh.

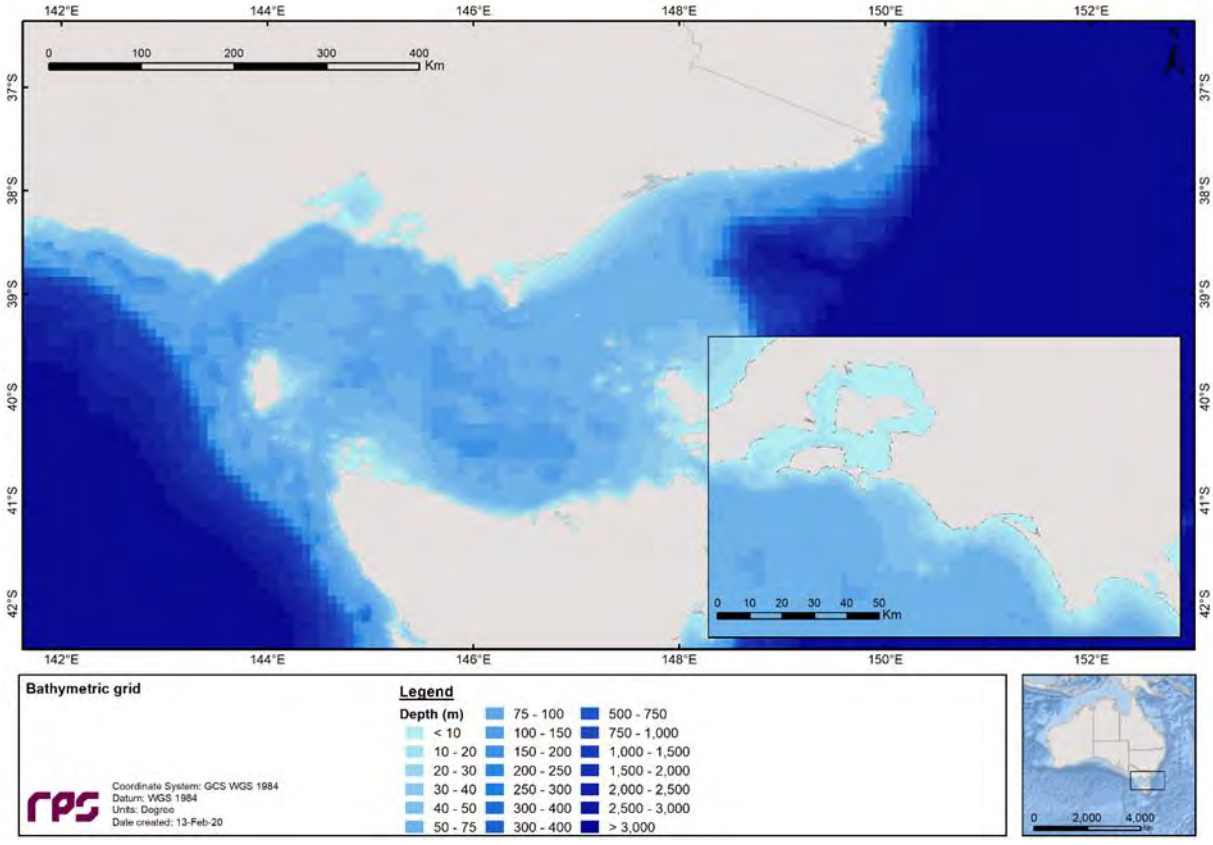

Figure 3.3 Bathymetry defined throughout the tidal model domain.

3.1.2 Tidal Conditions

The ocean boundary data for the regional model was obtained from satellite measured altimetry data (TOPEX/Poseidon 8.0) which provided estimates of the eight dominant tidal constituents at a horizontal scale of approximately 0.25 degrees. The eight major tidal constituents used were K_2, S_2, M_2, N_2, K_1, P_1, O_1 and Q_1. Using the tidal data, time series surface heights were calculated along the open boundaries for the simulation period.

The Topex/Poseidon satellite data has a resolution of 0.25 degrees globally, with higher resolution in coastal regions, and is produced and quality controlled by NASA (National Aeronautics and Space Administration). The data capturing satellites, equipped with two altimeters capable of taking sea level measurements accurate to less than ± 5 cm, measured oceanic surface elevations (and the resultant tides) for the period 1992–2005. In total these satellites carried out 62,000 orbits of the planet. The Topex/Poseidon tidal data has been widely used amongst the oceanographic community, being refereced in more than 2,100 research publications (e.g. Andersen, 1995; Ludicone et al., 1998; Matsumoto et al., 2000; Kostianoy et al., 2003; Yaremchuk & Tangdong, 2004; Qiu & Chen 2010). The Topex/Poseidon tidal data is considered suitably accurate for this study.

3.1.3 Surface Elevation Validation

To ensure that tidal predictions were accurate, predicted surface elevations were compared to data observed at a location situated within the study area (Figure 3.4).

To provide a statistical measure of the model performance, the Index of Agreement (IOA – Willmott, 1981) and the Mean Absolute Error (MAE – Willmott, 1982; Willmott & Matsuura, 2005) were used.

The MAE (Eq.1) is simply the average of the absolute values of the difference between the model-predicted (P) and observed (O) variables. It is a more natural measure of the average error (Willmott and Matsuura, 2005) and more readily understood. The MAE is determined by:

$$MAE = N^{-1} \sum_{i=1}^{N} |P_i - O_i| \qquad \text{Eq.1}$$

Where: N = Number of observations

P_i = Model predicted surface elevation

O_i = Observed surface elevation

The Index of Agreement (IOA; Eq. 2) in contrast, gives a non-dimensional measure of model accuracy or performance. A perfect agreement between the model predicted and observed surface elevations exists if the index gives an agreement value of 1, and complete disagreement between model and observed surface elevations will produce an index measure of 0 (Wilmott, 1981). Willmott et al. (1985) also suggests that values larger than 0.5 may represent good model performance. The IOA is determined by:

$$IOA = 1 - \frac{\sum |X_{model} - X_{obs}|^2}{\sum (|X_{model} - \overline{X_{obs}}| + |X_{obs} - \overline{X_{obs}}|)^2} \qquad \text{Eq.2}$$

Where: X_{model} = Model predicted surface elevation

X_{obs} = Observed surface elevation

Clearly, a greater IOA and lower MAE represent a better model performance.

Figure 3.5 and Figure 3.6 illustrate a comparison of the predicted and observed surface elevations in February 2014. As shown on the graph, the model accurately reproduced the phase and amplitudes throughout the spring and neap tidal cycles.

Table 3-1 shows the IOA and MAE values for the selected tide station locations indicating that the model is performing well.

Table 3-1 Statistical comparison between the observed and HYDROMAP predicted surface elevations.

Tide Station	IOA	MAE (m)
Gabo Island	0.98	0.08
Port MacDonnell	0.98	0.05
Port Welshpool	0.92	0.30
Portland	0.97	0.07
Stack Island	0.96	0.22

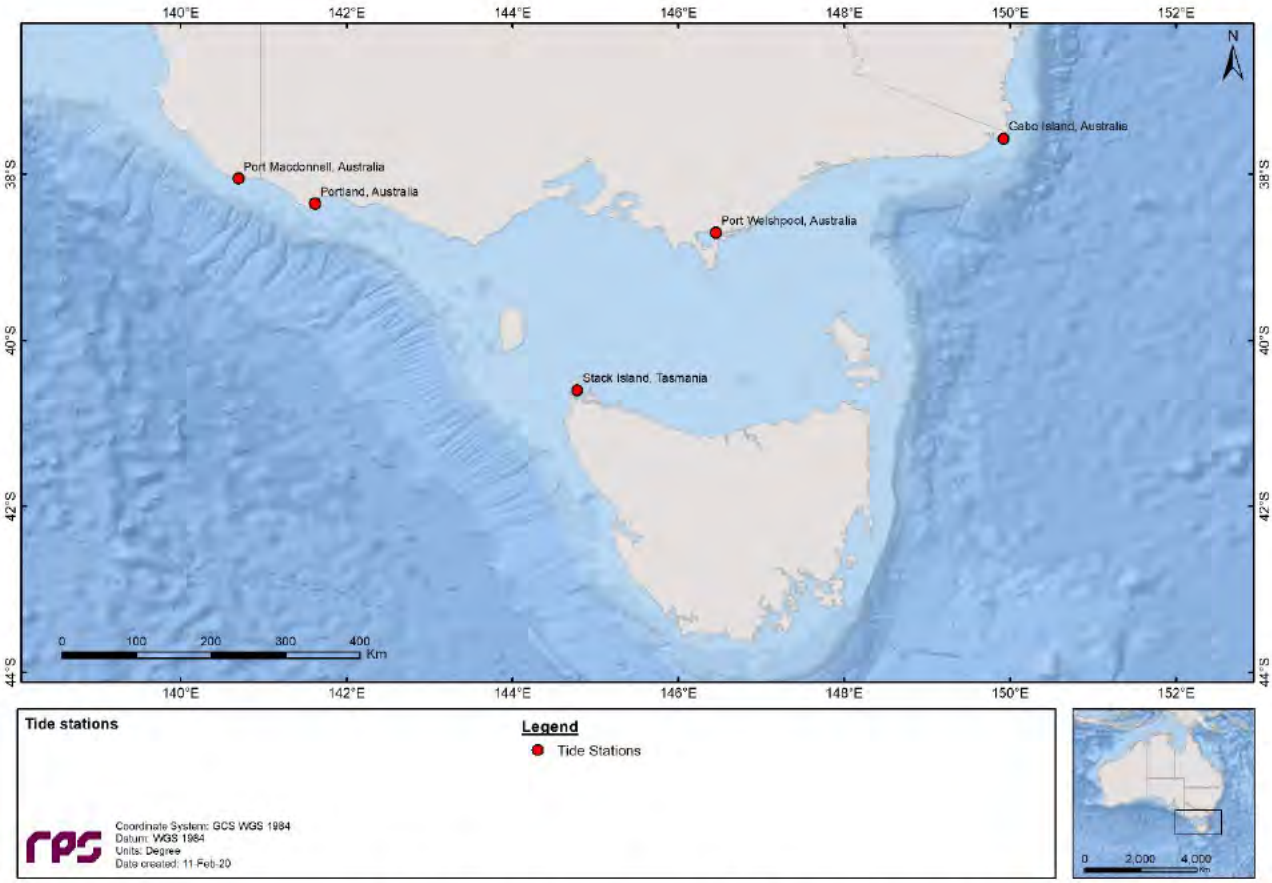

Figure 3.4 Location of the tide stations used in the surface elevation validation.

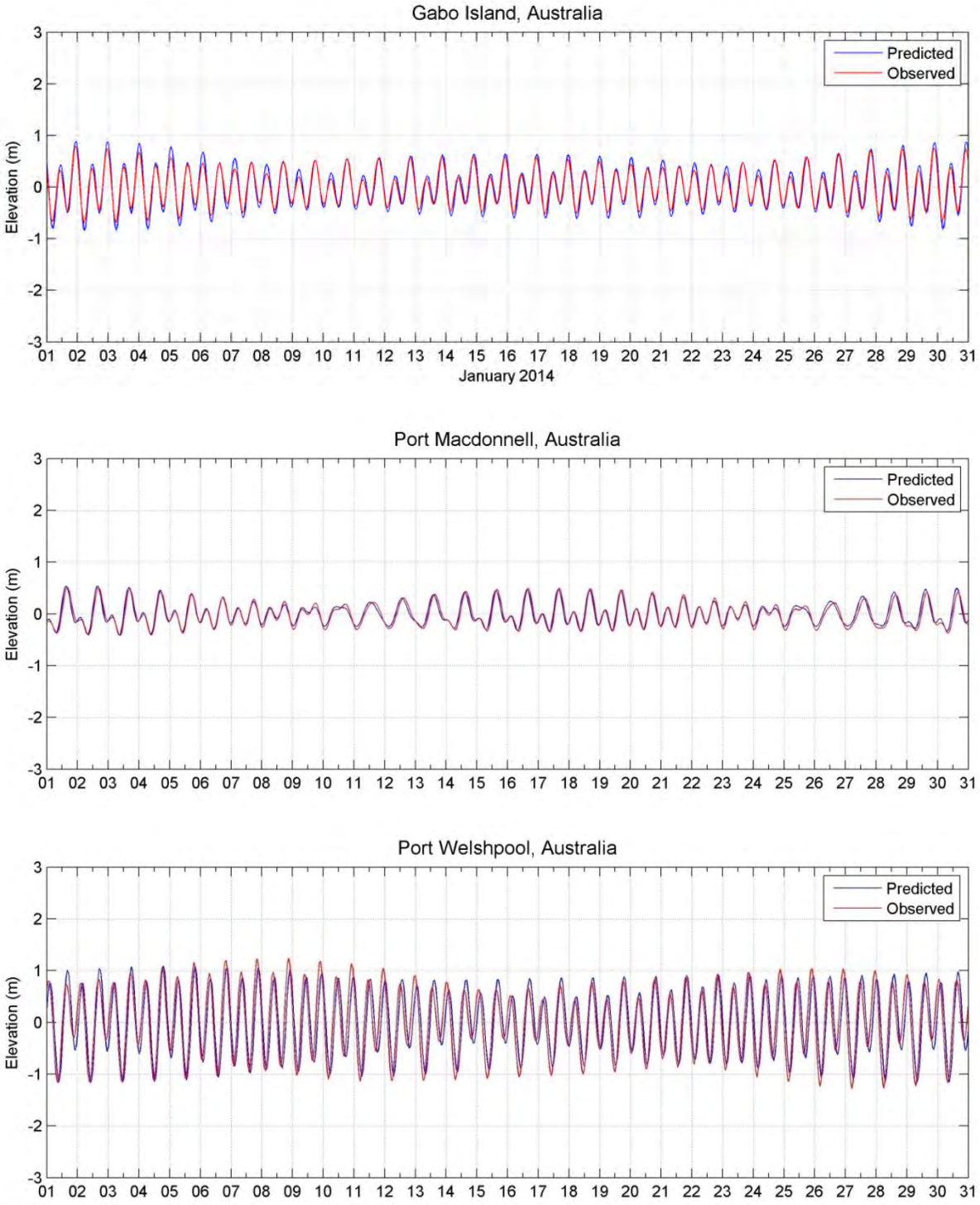

Figure 3.5 Comparison between HYDROMAP predicted (blue line) and observed (red line) surface elevation at tidal stations Gabo Island (upper image), Port MacDonnell (middle image) and Port Welshpool (lower image).

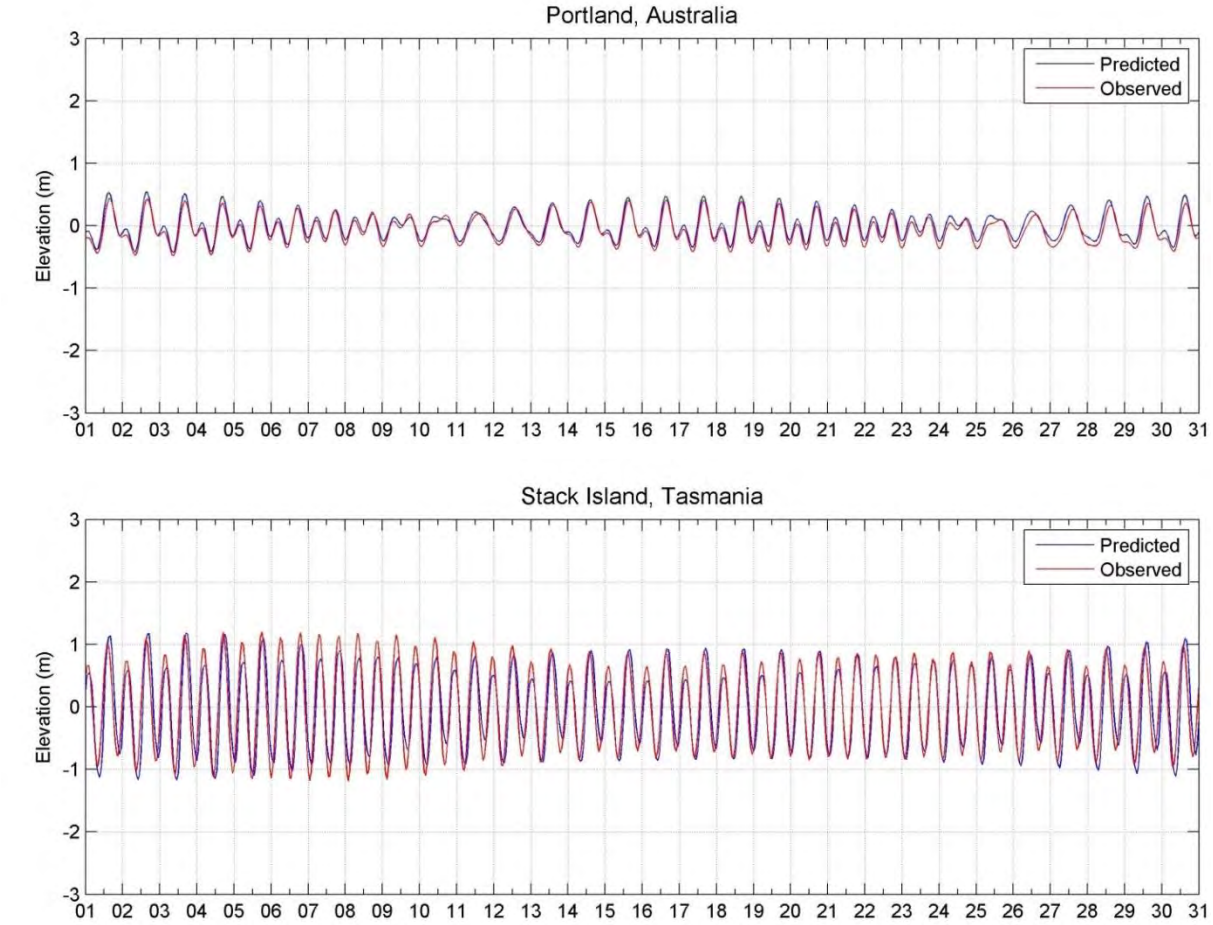

Figure 3.6 Comparison between HYDROMAP predicted (blue line) and observed (red line) surface elevation at tidal stations Portland (upper image) and Stack Island (lower image).

3.2 Ocean Currents

Data describing the flow of ocean currents for the years 2010 to 2019 (inclusive) was obtained from HYCOM (Hybrid Coordinate Ocean Model, (Chassignet et al., 2007), which is operated by the HYCOM Consortium, sponsored by the Global Ocean Data Assimilation Experiment (GODAE). HYCOM is a data-assimilative, three-dimensional ocean model that is run as a hindcast (for a past period), assimilating time-varying observations of sea surface height, sea surface temperature and in-situ temperature and salinity measurements (Chassignet et al., 2009). The HYCOM predictions for drift currents are produced at a horizontal spatial resolution of approximately 8.25 km (1/12th of a degree) over the region, at a frequency of once per day. HYCOM uses isopycnal layers in the open, stratified ocean, but uses the layered continuity equation to make a dynamically smooth transition to a terrain-following coordinate in shallow coastal regions, and to z-level coordinates in the mixed layer and/or unstratified seas.

3.3 Surface Currents

Table 3-2 presents the average and maximum net surface current speeds nearby the release location by combining the ocean and tidal currents. Current speeds varied throughout the year with maximum current speeds ranging between approximately 0.72 m/s (February) and 1.10 m/s (September). The dominant surface current directions throughout the year were identified as (towards) the west during summer months and east during the winter months.

Figure 3.7 and Figure 3.8 show the monthly and total surface current rose distributions for the selected location.

Note the convention for defining current direction is the direction the current flows towards, which is used to reference current direction throughout this report. Each branch of the rose represents the currents flowing to that direction, with north to the top of the diagram. Sixteen directions are used. The branches are divided into segments of different colour, which represent the current speed ranges for each direction. Speed intervals of 0.1 m/s are predominantly used in these current roses. The length of each coloured segment is relative to the proportion of currents flowing within the corresponding speed and direction.

Table 3-2 Predicted monthly average and maximum surface current speeds for the selected location. The data was derived by combining the HYCOM ocean data and HYDROMAP tidal data from 2010–2019 (inclusive).

Month	Average current speed (m/s)	Maximum current speed (m/s)	General direction(s) (Towards)
January	0.17	0.77	West
February	0.19	0.72	West
March	0.18	0.92	West
April	0.15	0.83	East and West
May	0.19	0.90	East
June	0.19	1.07	East
July	0.24	1.07	East
August	0.23	1.05	East
September	0.20	1.10	East
October	0.19	0.88	East
November	0.18	0.82	East and West
December	0.18	0.92	East and West
Minimum	**0.15**	**0.72**	
Maximum	**0.24**	**1.10**	

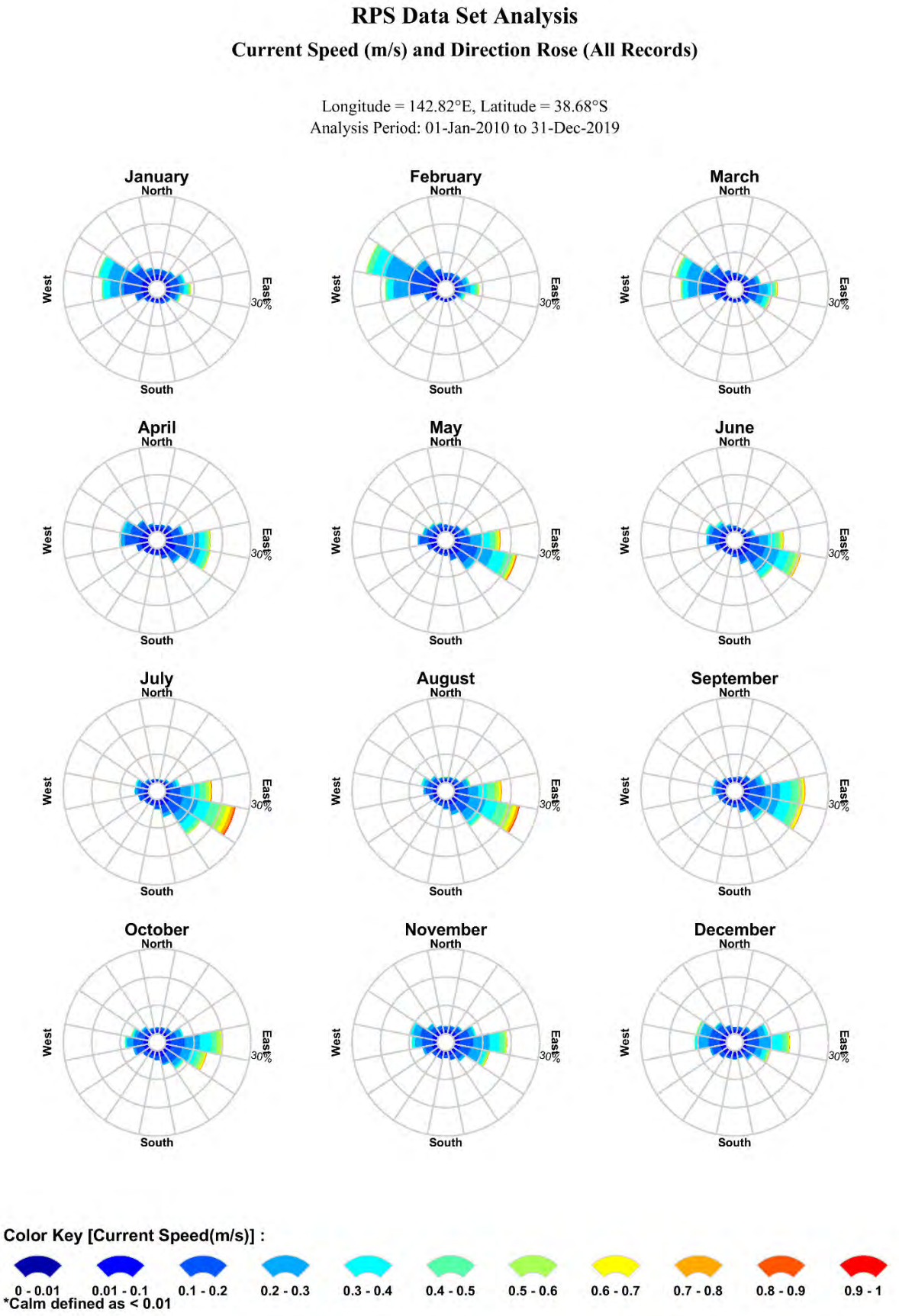

Figure 3.7 Monthly surface current rose plots nearby the release location (derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

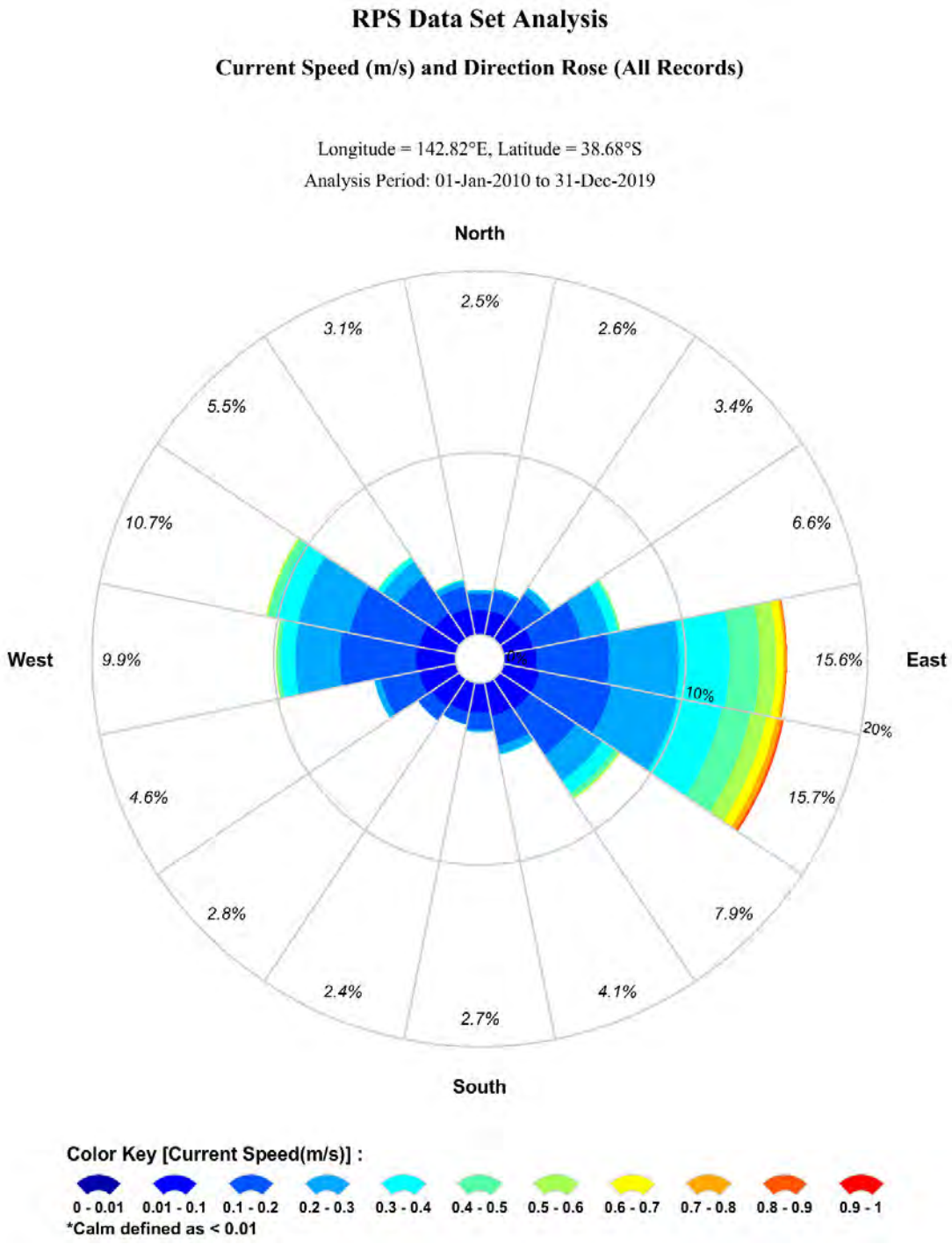

Figure 3.8 Total surface current rose plot nearby the release location (derived by combining the HYDROMAP tidal currents and HYCOM ocean currents for 2010–2019 (inclusive).

4 WIND DATA

High resolution wind data for the years 2010 to 2019 (inclusive) was sourced from the National Centre for Environmental Prediction (NCEP) Climate Forecast System Reanalysis dataset (CFSR; see Saha et al., 2010). The CFSR wind model is a fully coupled, data-assimilative hindcast model representing the interaction between the earth's oceans, land and atmosphere. The gridded wind data output is available at ¼ of a degree resolution (~33 km) and 1-hourly time intervals. Figure 4.1 shows the spatial resolution of the wind field used as input into the oil spill model.

Table 4-1 presents the monthly average and maximum winds derived from a CFSR wind node nearby the release location. The wind data demonstrated average monthly wind speeds ranging from 10 knots during summer to 13 knots during winter, with maximums ranging between 30 knots (January and November) and 42 knots (June). The dominant wind direction throughout the year ranged from the southeast in summer, through the westerly sectors to the northwest for winter, before returning to the southeast at the end of the year.

Figure 4.2 and Figure 4.3 show the monthly and total wind rose distributions derived from the CFSR data for the selected node nearby the release location.

Note that the atmospheric convention for defining wind direction, that is, the direction the wind blows from, is used to reference wind direction throughout this report. Each branch of the rose represents wind coming from that direction, with north to the top of the diagram. Sixteen directions are used. The branches are divided into segments of different colour, which represent wind speed ranges from that direction. Speed ranges of 5 knots are typically used in these wind roses. The length of each segment within a branch is proportional to the frequency of winds blowing within the corresponding range of speeds from that direction.

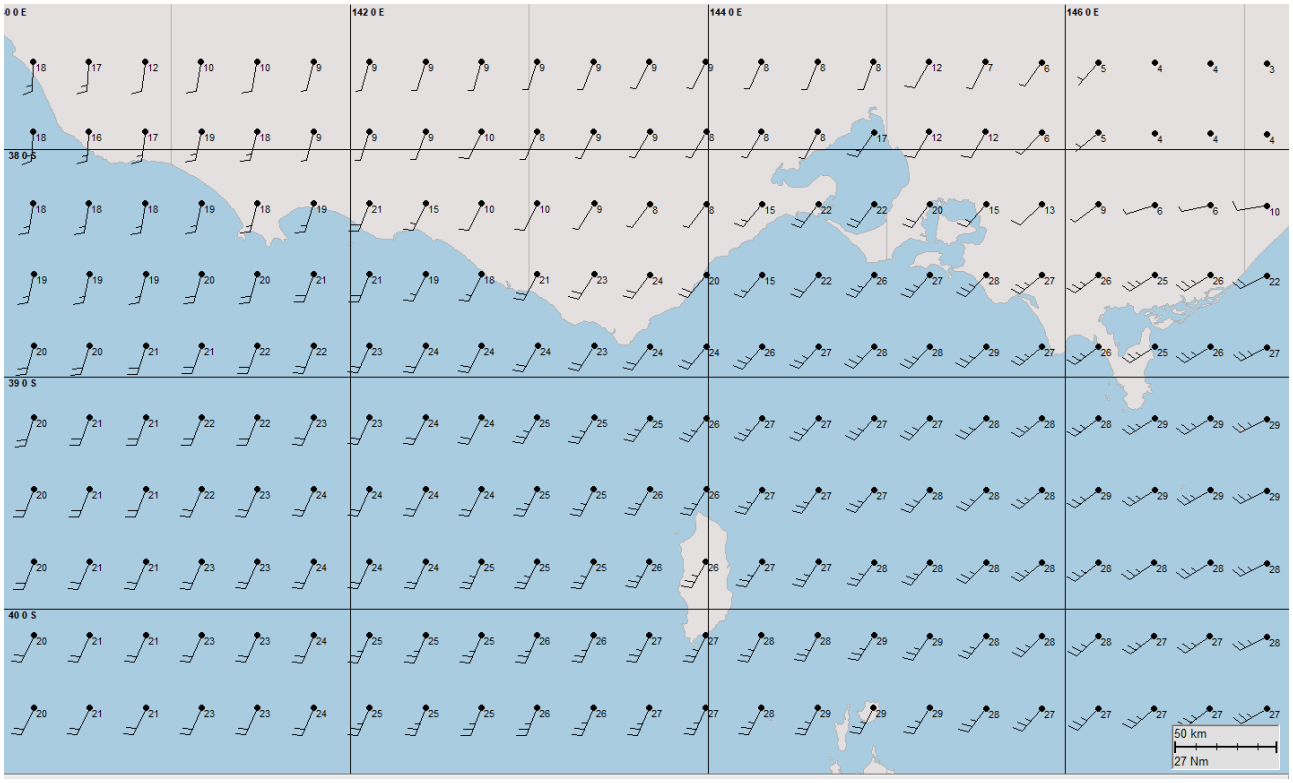

Figure 4.1 Spatial resolution of the CFSR modelled wind data used as input into the oil spill model.

Table 4-1 Predicted average and maximum winds representative for the selected node nearby the release location. Data derived from CFSR hindcast model from 2010–2019 (inclusive).

Month	Average wind speed (knots)	Maximum wind speed (knots)	General direction(s) (From)
January	10	30	South-Southeast
February	10	31	South-Southeast
March	10	34	Southeast
April	10	33	West
May	11	32	West
June	11	42	Northwest
July	13	35	Northwest
August	13	39	Northwest
September	12	41	West
October	11	31	West
November	10	30	West
December	10	31	West and Southeast
Minimum	**10**	**30**	
Maximum	**13**	**42**	

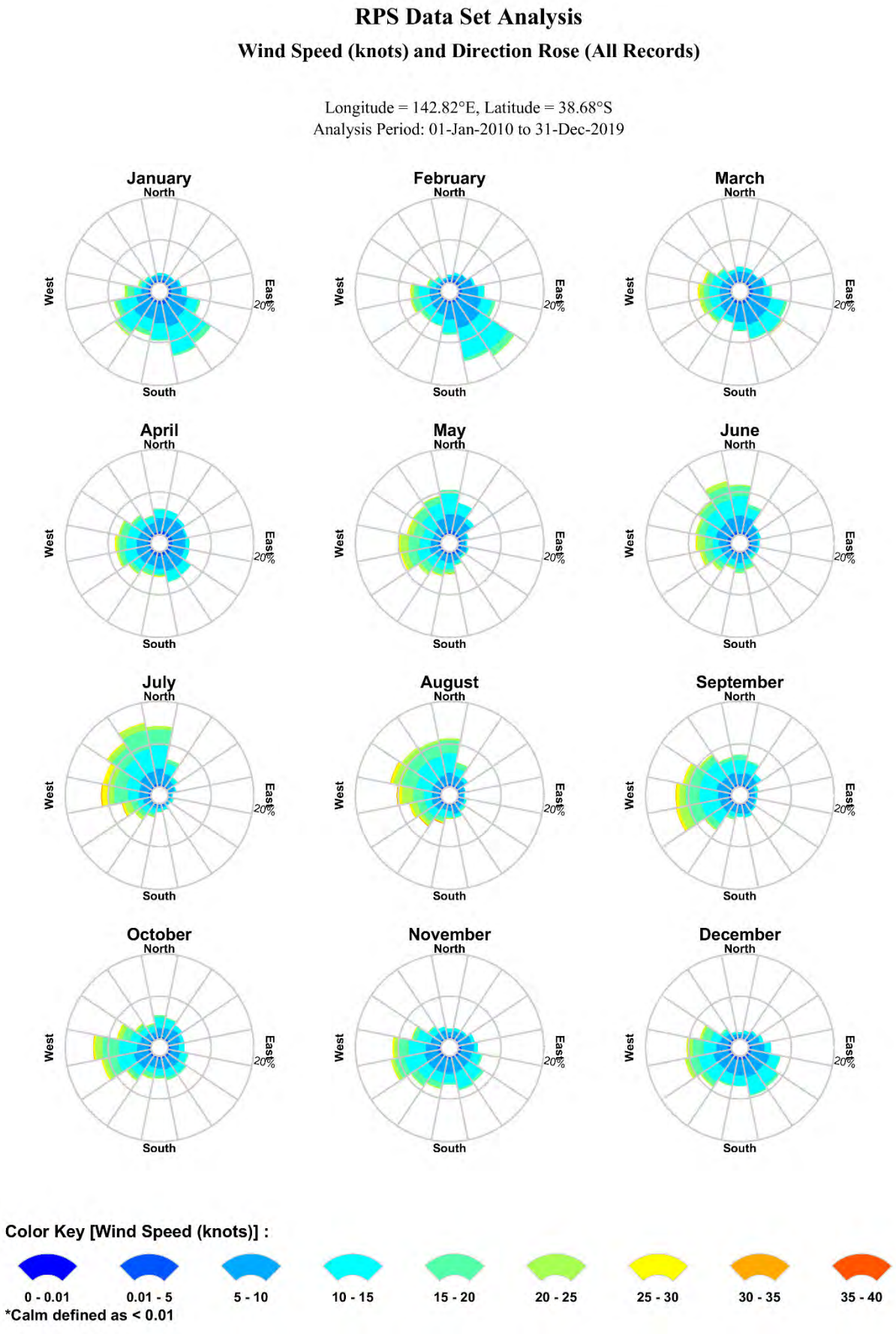

Figure 4.2 Modelled monthly wind rose distributions from 2010–2019 (inclusive) for the node nearby the release location.

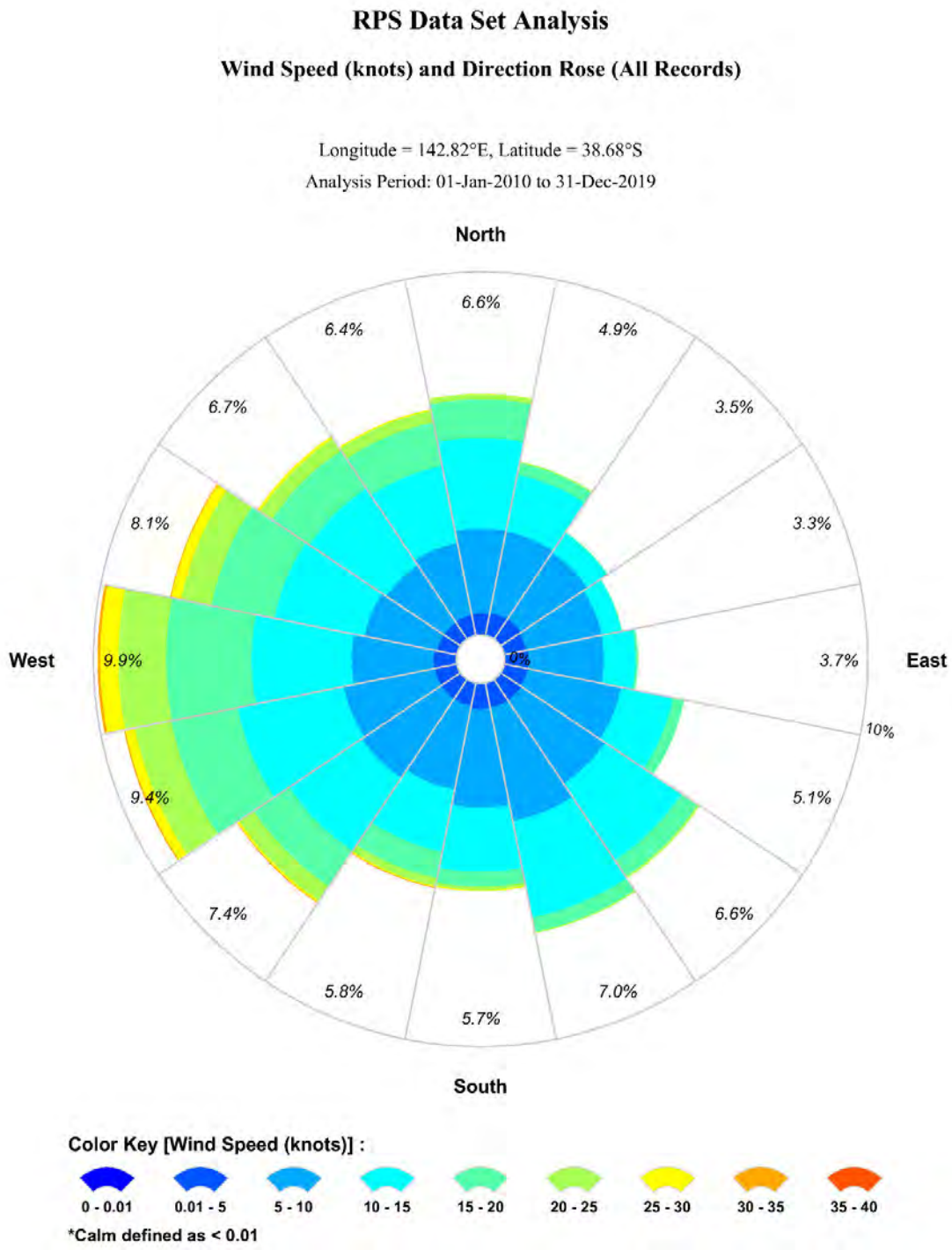

Figure 4.3 Modelled total wind rose distributions from 2010–2019 (inclusive) for the node nearby the release location.

5 WATER TEMPERATURE AND SALINITY

The monthly sea temperature and salinity profiles of the water column within the study was obtained from the World Ocean Atlas 2013 database produced by the National Oceanographic Data Centre (National Oceanic and Atmospheric Administration) and its co-located World Data Center for Oceanography (see Levitus et al., 2013). These parameters were used as factors to inform the weathering, movement and evaporative loss of hydrocarbon spills in the surface and sub-surface layers.

Table 5-1 presents the sea temperature and salinity of the surface layer nearby the selected location. The monthly average sea surface temperatures ranged between 13.4°C (September) and 18.2°C (March). The monthly average surface salinity values remain relatively consistent ranging between 35.4 psu and 35.6 psu.

Table 5-1 Monthly average sea surface temperature and salinity in the study area.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (°C)	18.0	17.8	18.2	16.7	16.4	15.8	15.0	14.7	13.4	14.6	15.2	17.5
Salinity (psu)	35.5	35.4	35.6	35.4	35.5	35.5	35.6	35.5	35.4	35.4	35.5	35.5

6 OIL SPILL MODEL – SIMAP

Modelling of the fate of oil was performed using the Spill Impact Mapping Analysis Program (SIMAP). SIMAP is designed to simulate the fate and effects of spilled hydrocarbons for both the surface and subsurface releases (Spaulding et al., 1994; French et al., 1999; French-McCay, 2003, 2004; French-McCay et al., 2004).

SIMAP has been used to predict the weathering and fate of oil spills during and after major incidents including: Montara (Australia) well blowout August 2009 in the Timor Sea (Asia-Pacific ASA, 2010); Macondo (USA) well blowout April 2010 in the Gulf of Mexico; Bohai Bay (China) oil spill August 2011; and the pipeline oil spill July 2013 in the Gulf of Thailand.

The SIMAP model calculates the transport, spreading, entrainment, evaporation and decay of surface hydrocarbon slicks as well as the entrained and dissolved oil components in the water column, either from surface slicks or from oil discharged subsea. The movement and weathering of the spilled oil is calculated for specific oil types. Input specifications for oil mixtures include the density, viscosity, pour point, distillation curve (volume lost versus temperature) and the aromatic/aliphatic component ratios within given boiling point (BP) ranges.

SIMAP is a three-dimensional model that allows for various response actions to be modelled including oil removal from skimming, burning, or collection booms, and surface and subsurface dispersant application.

The SIMAP oil spill model includes advanced weathering algorithms, specifically focussed on unique oils that tend to form emulsions and/or tar balls. The weathering algorithms are based on 5 years of extensive research conducted in response to the Deepwater Horizon oil spill in the Gulf of Mexico (French-McCay et al., 2015).

Biodegradation is included in the oil spill model. In the model, SIMAP, degradation is calculated for the surface slick, deposited oil on the shore, the entrained oil and dissolved constituents in the water column, and oil in the sediments. For surface oil, water column oil and sedimented oil a first order degradation rate is specified. Biodegradation rates are relatively high for hydrocarbons in dissolved state or in dispersed small droplets.

6.1 Stochastic Modelling

For the stochastic modelling presented herein, 100 oil spills were modelled for the scenarios using the same spill information (release location, spill volume, duration and oil type) but with varied start dates. During each simulation, the model records whether any grid cells are exposed to any oil concentrations, the concentrations involved and the elapsed time before exposure. The results of all 100 oil spill simulations were analysed to determine the following statistics for every grid cell:

- Exposure load (concentrations and volumes);
- Minimum time before exposure;
- Probability of contact above defined concentrations;
- Volume of oil that may accumulate on shorelines from any single simulation;
- Concentration that might occur on sections of individual shorelines;
- Exposure (instantaneous and/or over a specified duration) to dissolved hydrocarbons in the water column; and
- Exposure (instantaneous and/or over a specified duration) to entrained hydrocarbons in the water column.

6.2 Floating, Shoreline and In-Water Thresholds

The thresholds and their relationship to exposure for the sea surface, shoreline and water column (entrained and dissolved hydrocarbons) are presented in Sections 6.2.1 to 6.2.3. Supporting justifications of the adopted thresholds applied during the study and additional context relating to the area of potential exposure are also provided. It is important to note that the thresholds herein are based on NOPSEMA (2019).

6.2.1 Floating Oil Exposure Thresholds

The modelling results can be presented to any levels; therefore, thresholds have been specified (based on scientific literature) to record floating oil exposure to the sea-surface at meaningful levels only, described in the following paragraphs.

The low threshold to assess the potential for floating oil exposure, was 1 g/m^2, which equates approximately to an average thickness of 1 µm, referred to as visible oil. Oil of this thickness is described as rainbow sheen in appearance, according to the Bonn Agreement Oil Appearance Code (Bonn Agreement, 2009; AMSA, 2014) (see Table 6-1). Figure 6.1 shows photographs highlighting the difference in appearance between a silvery sheen, rainbow sheen and metallic sheen. This threshold is considered below levels which would cause environmental harm and it is more indicative of the areas perceived to be affected due to its visibility on the sea surface and potential to trigger temporary closures of areas (i.e. fishing grounds) as a precautionary measure. Table 6-1 provides a description of the appearance in relation to exposure zone thresholds used to classify the zones of floating oil exposure.

Ecological impact has been estimated to occur at 10 g/m^2 (a film thickness of approximately 10 µm or 0.01 mm) according to French et al. (1996) and French-McCay (2009) as this level of fresh oiling has been observed to mortally impact some birds through adhesion of oil to their feathers, exposing them to secondary effects such as hypothermia. The appearance of oil at this average thickness has been described as a metallic sheen (Bonn Agreement, 2009).

Scholten et al. (1996) and Koops et al. (2004) indicated that at oil concentrations on the sea surface of 25 g/m^2 (or greater), would be harmful for all birds that have landed in an oil film due to potential contamination of their feathers, with secondary effects such as loss of temperature regulation and ingestion of oil through preening. The appearance of oil at this thickness is also described as metallic sheen (Bonn Agreement, 2009). For this study the high exposure threshold was set to 50 g/m^2 and above based on NOPSEMA (2019). This threshold can also be used to inform response planning.

Table 6-2 defines the thresholds used to classify the zones of floating oil exposure reported herein.

Table 6-1 The Bonn Agreement Oil Appearance Code.

Code	Description Appearance	Layer Thickness Interval (g/m^2 or µm)	Litres per km^2
1	Sheen (silvery/grey)	0.04 – 0.30	40 – 300
2	Rainbow	0.30 – 5.0	300 – 5,000
3	Metallic	5.0 – 50	5,000 – 50,000
4	Discontinuous True Oil Colour	50 – 200	50,000 – 200,000
5	Continuous True Oil Colour	≥ 200	≥ 200,000

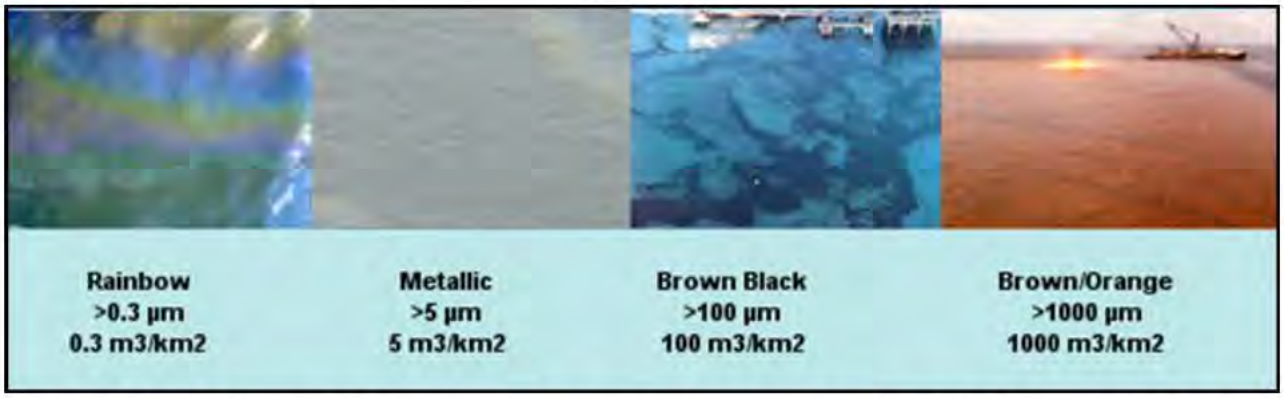

Figure 6.1 Photographs showing the difference between oil colour and thickness on the sea surface (source: adapted from Oil Spill Solutions, 2015).

Table 6-2 Floating oil exposure thresholds used in this report (in alignment with NOPSEMA (2019)).

Threshold level	Floating oil (g/m^2)	Description
Low	1	Approximates range of socioeconomic effects and establishes planning area for scientific monitoring
Moderate	10	Approximates lower limit for harmful exposures to birds and marine mammals
High	50	Approximates surface oil slick and informs response planning

6.2.2 Shoreline Accumulation Thresholds

There are many different types of shorelines, ranging from cliffs, rocky beaches, sandy beaches, mud flats and mangroves, and each of these influences the volume of oil that can remain stranded ashore and its thickness before the shoreline saturation point occurs. For instance, a sandy beach may allow oil to percolate through the sand, thus increasing its ability to hold more oil ashore over tidal cycles and various wave actions than an equivalent area of water; hence oil can increase in thickness onshore over time. A sandy beach shoreline was assumed as the default shoreline type for the modelling herein, as it allows for the highest carrying capacity of oil (of the available open/exposed shoreline types). Hence the results contained herein would be indicative of a worst-case scenario, where the highest volume of oil may be stranded on the shoreline (when compared to other shoreline types, such as exposed rocky shores).

In previous risk assessment studies, French-McCay et al. (2005a; 2005b) used a threshold of 10 g/m^2 to assess the potential for shoreline accumulation. This is a conservative threshold used to define regions of socio-economic impact, such as triggering temporary closures of adjoining fisheries or the need for shore clean-up on beaches or man-made features/amenities (breakwaters, jetties, marinas, etc.). It would equate to approximately 2 teaspoons of hydrocarbon per square meter of shoreline accumulation. The appearance is described as a stain/film. On that basis, the 10 g/m^2 shoreline accumulation threshold has been selected to define the zone of potential "low shoreline accumulation".

French et al. (1996) and French-McCay (2009) define a shoreline oil accumulation threshold of 100 g/m^2, or above, would potentially harm shorebirds and wildlife (furbearing aquatic mammals and marine reptiles on or along the shore) based on studies for sub-lethal and lethal impacts. This threshold has been used in previous environmental risk assessment studies (see French-McCay, 2003; French-McCay et al., 2004, French-McCay et al., 2011; 2012; NOAA, 2013). Additionally, a shoreline concentration of 100 g/m^2, or above, is the minimum limit that the oil can be effectively cleaned according to the AMSA (2015) guideline. This threshold equates to approximately ½ a cup of oil per square meter of shoreline accumulation. The appearance is described as a thin oil coat. Therefore, 100 g/m^2 has been selected to define the zone of potential "moderate shoreline accumulation".

Observations by Lin & Mendelssohn (1996), demonstrated that loadings of more than 1,000 g/m^2 of hydrocarbon during the growing season would be required to impact marsh plants significantly. Similar thresholds have been found in studies assessing hydrocarbon impacts on mangroves (Grant et al., 1993; Suprayogi & Murray, 1999). Hence, 1,000 g/m^2 has been selected to define the zone of potential "high shoreline accumulation". It equates to approximately 1 litre of hydrocarbon per square meter of shoreline accumulation. The appearance is described as a hydrocarbon cover.

It is worth noting that the shoreline accumulation thresholds derived from extensive literature review (outlined in Table 6-3) agree with the commonly used threshold values for oil spill modelling specified in NOPSEMA (2019).

Table 6-3 Thresholds used to assess shoreline accumulation.

Threshold level	Shoreline loading (g/m^2)	Description
Low (socioeconomic/sublethal)	10	Predicts potential for some socio-economic impact
Moderate	100	Loading predicts area likely to require clean-up effort
High	> 1,000	Loading predicts area likely to require intensive clean-up effort

6.2.3 In-water Exposure Thresholds

Oil is a mixture of thousands of hydrocarbons of varying physical, chemical, and toxicological characteristics, and therefore, demonstrate varying fates and impacts on organisms. As such, for in-water exposure, the SIMAP model provides separate outputs for dissolved and entrained hydrocarbons from oil droplets. The consequences of exposure to dissolved and entrained components will differ because they have different modes and magnitudes of effect.

Entrained hydrocarbon concentrations were calculated based on oil droplets that are suspended in the water column, though not dissolved. The composition of this oil would vary with the state of weathering (oil age) and may contain soluble hydrocarbons when the oil is fresh. Calculations for dissolved hydrocarbons specifically calculates oil components which are dissolved in water, which are known to be the primary source of toxicity exerted by oil.

6.2.3.1 Dissolved Hydrocarbons

Laboratory studies have shown that dissolved hydrocarbons exert most of the toxic effects of oil on aquatic biota (Carls et al., 2008; Nordtug et al., 2011; Redman, 2015). The mode of action is a narcotic effect, which is positively related to the concentration of soluble hydrocarbons in the body tissues of organisms (French-McCay, 2002). Dissolved hydrocarbons are taken up by organisms directly from the water column by absorption through external surfaces and gills, as well as through the digestive tract. Thus, soluble hydrocarbons are termed “bioavailable”.

Hydrocarbon compounds vary in water-solubility and the toxicity exerted by individual compounds is inversely related to solubility, however bioavailability will be modified by the volatility of individual compounds (Nirmalakhandan & Speece, 1988; Blum & Speece, 1990; McCarty, 1986; McCarty et al., 1992a, 1992b; Mackay et al., 1992; McCarty & Mackay, 1993; Verhaar et al., 1992, 1999; Swartz et al., 1995; French-McCay, 2002; McGrath and Di Toro, 2009). Of the soluble compounds, the greatest contributor to toxicity for water-column and benthic organisms are the lower-molecular-weight aromatic compounds, which are both volatile and soluble in water. Although they are not the most water-soluble hydrocarbons within most oil types, the polynuclear aromatic hydrocarbons (PAHs) containing 2-3 aromatic ring structures typically exert the largest narcotic effects because they are semi-soluble and not highly volatile, so they persist in the environment long enough for significant accumulation to occur (Anderson et al., 1974, 1987; Neff & Anderson, 1981; Malins & Hodgins, 1981; McAuliffe, 1987; NRC, 2003). The monoaromatic hydrocarbons (MAHs), including the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), and the soluble alkanes (straight chain hydrocarbons) also contribute to toxicity, but these compounds are highly volatile, so that their contribution will be low when oil is exposed to evaporation and higher when oil is discharged at depth where volatilisation does not occur (French-McCay, 2002).

French-McCay (2002) reviewed available toxicity data, where marine biota was exposed to dissolved hydrocarbons prepared from oil mixtures, finding that 95% of species and life stages exhibited 50% population mortality (LC_{50}) between 6 and 400 ppb total PAH concentration after 96 hrs exposure, with an average of 50 ppb. Hence, concentrations lower than 6 ppb total PAH value should be protective of 97.5% of species and life stages even with exposure periods of days (at least 96 hours). Early life-history stages of fish appear to be more sensitive than older fish stages and invertebrates.

Exceedances of 10, 50 or 400 ppb over a 1 hour timestep (see Table 6-4) was applied to indicate increasing potential for sub-lethal to lethal toxic effects (or low to high), based on NOPSEMA (2019).

6.2.3.2 Entrained Hydrocarbons

Entrained hydrocarbons consist of oil droplets that are suspended in the water column and insoluble. As such, insoluble compounds in oil cannot be absorbed from the water column by aquatic organisms, hence are not bioavailable through absorption of compounds from the water. Exposure to these compounds would require routes of uptake other than absorption of soluble compounds. The route of exposure of organisms to whole oil alone include direct contact with tissues of organisms and uptake of oil by direct consumption, with potential for biomagnification through the food chain (NRC, 2005).

The 10 ppb threshold represents the very lowest concentration and corresponds generally with the lowest trigger levels for chronic exposure for entrained hydrocarbons in the ANZECC & ARMCANZ (2000) water quality guidelines. Due to the requirement for relatively long exposure times (> 24 hours) for these concentrations to be significant, they are likely to be more meaningful for juvenile fish, larvae and planktonic

organisms that might be entrained (or otherwise moving) within the entrained plumes, or when entrained hydrocarbons adhere to organisms or trapped against a shoreline for periods of several days or more.

This exposure zone is not considered to be of significant biological impact and is therefore outside the adverse exposure zone. This exposure zone represents the area contacted by the spill. This area does not define the area of influence as it is considered that the environment will not be affected by the entrained hydrocarbon at this level.

Thresholds of 10 ppb and 100 ppb were applied over a 1-hour time exposure (Table 6-4), to cover the range of thresholds outlined in ANZECC & ARMCANZ (2000) water quality guidelines, the incremental change for greater potential effect and is per NOPSEMA (2019).

A complicating factor that should be considered when assessing the consequence of dissolved and entrained oil distributions is that there will be some areas where both physically entrained oil droplets and dissolved hydrocarbons co-exist. Higher concentrations of each will tend to occur close to the source where sea conditions can force mixing of relatively unweathered oil into the water column, resulting in more rapid dissolution of soluble compounds.

Table 6-4 Dissolved and entrained hydrocarbon exposure values assessed over a 1-hour time step, as per NOPSEMA (2019).

	Exposure level	In-water threshold (ppb)	Description
Dissolved hydrocarbons	Low	10	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers
	Moderate	50	Approximates potential toxic effects, particularly sublethal effects to sensitive species
	High	400	Approximates toxic effects including lethal effects to sensitive species
Entrained hydrocarbons	Low	10	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers
	High	100	As appropriate given oil characteristics for informing risk evaluation

7 HYDROCARBON PROPERTIES

7.1 Physical Properties

Table 7-1 and Table 7-2 present the physical properties and boiling point ranges of the MDO.

The MDO has an API of 24 and a density of 890 kg/m^3 (at 25 ºC) with a viscosity value (14.0 cP at 25 ºC) classifying it as a Group II (light-persistent) oil according to the International Tankers Owners Pollution Federation (ITOPF, 2014) and US EPA/USCG classifications.

The MDO is a mixture of volatile and persistent hydrocarbons with high proportions of semi- and low-volatile components. In favourable evaporation conditions, about 4.0% of the oil mass should evaporate within the first 12 hours (BP < 180°C), a further 32% should evaporate within the first 24 hours (180°C < BP < 265°C) and a further 54% should evaporate over several days (265°C < BP < 380°C). Approximately 10% of the oil is shown to be persistent.

The boiling points (BP) are dictated by the length of the carbon chains, with the longer and more complex compounds having a higher boiling point, and therefore lower volatility and evaporation rate. Typical evaporation times once the hydrocarbons reach the surface and are exposed to the atmosphere are:

- Up to 12 hours for the C_4 to C_{10} compounds (BP <180 °C).
- Up to 24 hours for the C_{11} to C_{15} compounds (BP 180-265 °C).
- Several days for the C_{16} to C_{20} compounds (BP 265-380 °C).
- Not applicable for the residual compounds (BP >380°C), which will resist evaporation, persist in the marine environment for longer periods, and be subject to relatively slow degradation.

Table 7-1 Physical properties of MDO.

Characteristic	MDO
Density (kg/m^3)	890 (@ 25 °C)
API	24
Dynamic viscosity (cP)	14.0 (@ 25 °C)
Pour point (°C)	-9
Hydrocarbon property category	Group II
Hydrocarbon property classification	Light - Persistent

Table 7-2 Boiling point ranges of MDO.

Oil Type	Component	Volatile (%)	Semi-volatile (%)	Low-volatility (%)	Residual (%)
	Boiling point (°C)	<180 C_4 to C_{10}	180-265 C_{11} to C_{15}	265-380 C_{16} to C_{20}	>380 >C_{20}
MDO	% of total	4.0	32.0	54.0	10.0

7.2 Weathering Properties

7.2.1 MDO

A series of model weathering tests were conducted to illustrate the potential behaviour of the MDO when exposed to idealised and representative environmental conditions:

- A 50 m^3 surface release over 1-hour under calm wind conditions (constant 5 knots), assuming low seasonal water temperature (15°C) and ambient tidal and drift currents.
- A 50 m^3 surface release over 1-hour under variable wind conditions (1-23. knots, drawn from representative data files), assuming low seasonal water temperature (15°C) and ambient tidal and drift currents.

The first case is indicative conditions that would not generate entrainment, while the second case represents conditions that would likely cause entrainment. Both scenarios provide examples of potential behaviour during a spill once the oil is on the sea surface.

The mass balance for the MDO under the constant 5 knot wind case (Figure 7.1) shows that 34.3% of the oil is shown to evaporate within 24 hours. Under calm conditions, the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the low volatile, longer-chain compounds. Evaporation shall cease when the residual compounds remain, and they will be subject to more gradual decay through biological and photochemical processes.

Under the variable-wind case (Figure 7.2), where the winds are of greater strength on average, entrainment of MDO into the water column is shown to increase. Approximately 24 hours after the spill, 83.1% of the oil mass is shown to have entrained and a further 11.4% is shown to have evaporated, leaving only a small proportion of the oil floating on the water surface (1.3%).

The increased level of entrainment in the variable-wind case result in a higher percentage decaying at an approximate rate of 3% per day with 22% after 7 days, compared to 0.4% per day and a total of 2.6% after 7 days for the constant-wind case. Given the proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons will decay over time scales of several weeks.

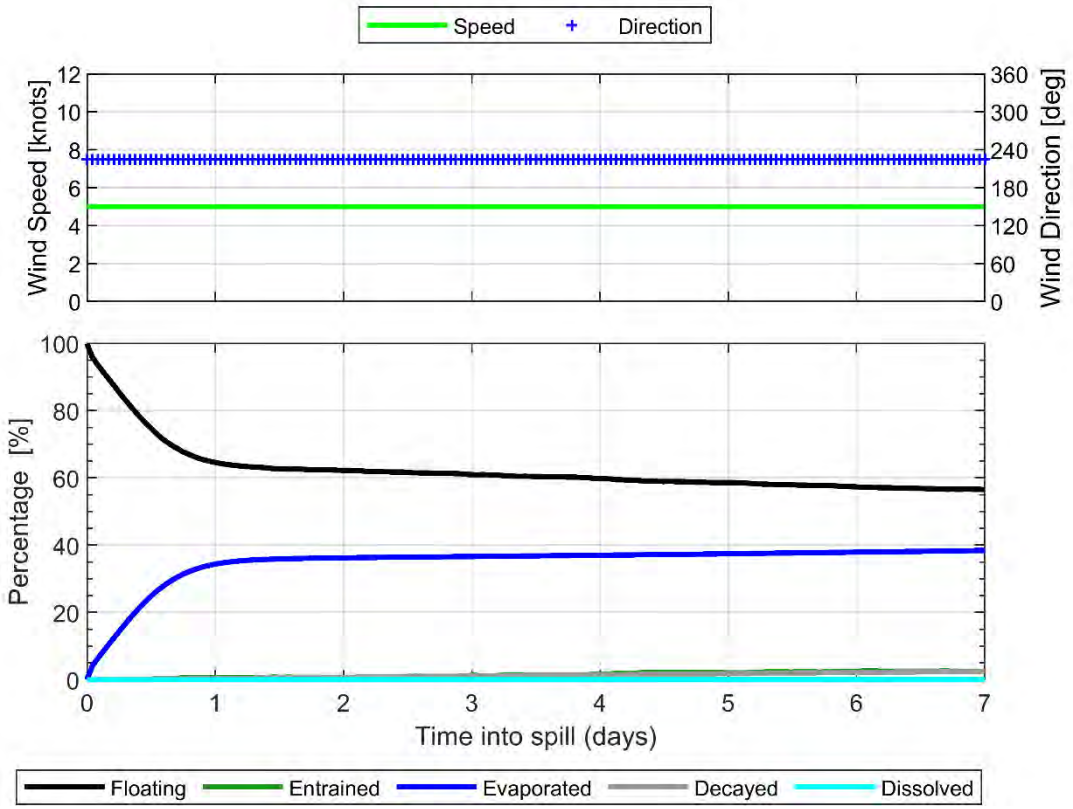

Figure 7.1 Proportional mass balance plot representing the weathering of MDO spilled onto the water surface over 1 hour and subject to a constant 5 knots wind speed at 15°C water temperature.

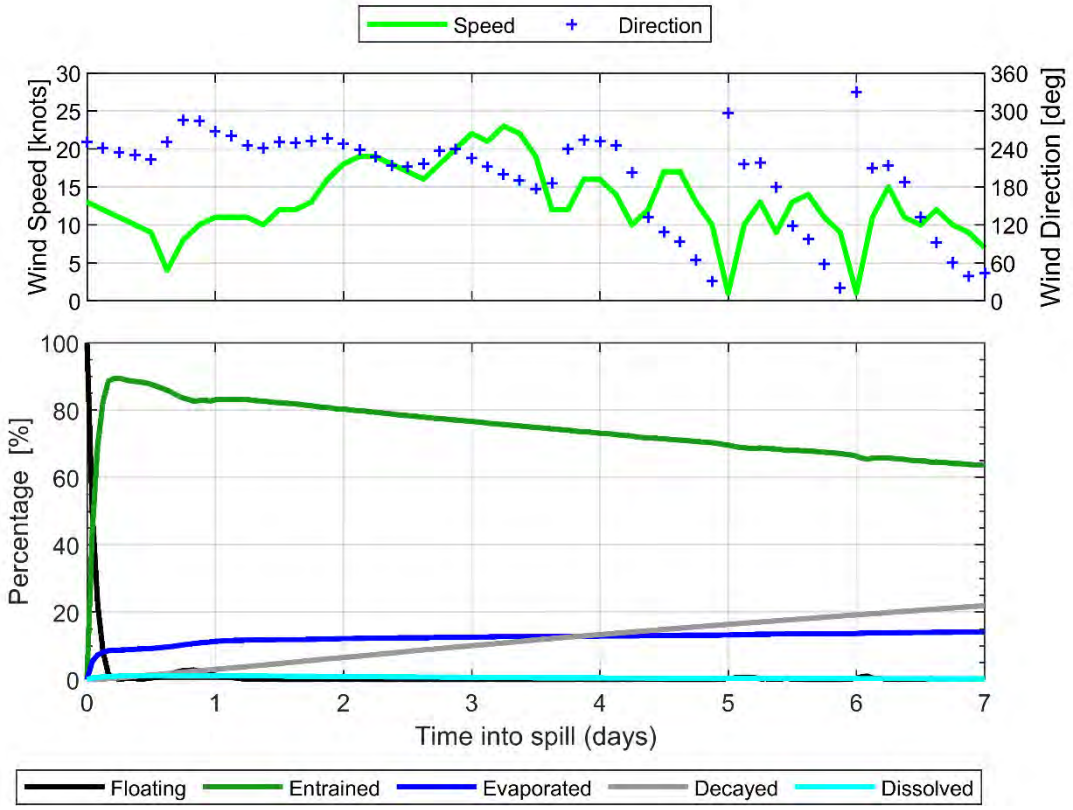

Figure 7.2 Proportional mass balance plot representing the weathering of MDO spilled onto the water over 1 hour and subject to variable wind speeds (1-23 knots) at 15°C water temperature.

8 MODEL SETTINGS

Table 8-1 provides a summary of the oil spill model settings.

Table 8-1 Summary of the oil spill model settings and thresholds used in this assessment.

Parameter	Scenario
Description	Vessel Collision
Number of randomly selected spill start times	100
Model period	Annual
Oil type	MDO
Spill volume	250 m^3
Release type	Surface
Release duration	6 hours
Simulation length (days)	30
Surface oil concentration thresholds (g/m^2) ^	1 (low); 10 (moderate); 50 (high)
Shoreline oil accumulation thresholds (g/m^2) ^	10 (low); 100 (moderate); 1,000 (high)
Dissolved hydrocarbon concentrations (ppb) ^	10 (low); 50 (moderate); 400 (high)
Entrained hydrocarbon concentrations (ppb) ^	10 (low); 100 (high)

^Thresholds based on NOPSEMA (2019)

9 PRESENTATION AND INTERPRETATION OF MODEL RESULTS

The results from the modelling study are presented in a number of tables and figures, which aim to provide an understanding of potential sea-surface and water column exposure and shoreline accumulation.

9.1 Annual Analysis

The statistics are based on the following principles:

- The ***greatest distance travelled by a spill trajectory*** – is determined by a) recording the maximum and b) second greatest distance travelled (or 99th percentile) by a single trajectory, within a scenario, from the release location to the identified exposure thresholds.
- The ***probability of oil exposure to a receptor*** – is determined by recording the number of spill trajectories to reach a specified sea surface or subsea threshold within a receptor polygon, divided by the total number of spill trajectories within that scenario.
- The ***minimum time before oil exposure to a receptor*** – is determined by ranking the elapsed time before sea surface exposure, at a specified threshold, to grid cells within a receptor polygon and recording the minimum value.
- The ***maximum residence time for oil exposure within a receptor*** – is determined by recording the longest continuous length of time a grid cell is exposed to either floating, entrained or dissolved hydrocarbon above each threshold, within a receptor.
- The ***probability of oil accumulation at a receptor*** – is determined by recording the number of spill trajectories to reach a specified shoreline accumulation threshold within a receptor polygon, divided by the total number of spill trajectories within that scenario.
- The ***maximum (total) volume of oil ashore*** – is the total volume of oil stranded on the shorelines throughout the duration of the simulation.
- The ***maximum potential oil loading within a receptor*** – is determined by identifying the maximum loading to any grid cell within a receptor polygon, for a scenario.
- The ***dissolved and entrained hydrocarbon exposure*** – is determined by recording the maximum instantaneous concentrations at each grid cell.

9.2 Deterministic Trajectories

The stochastic modelling results were assessed for each scenario, and the deterministic runs were identified and are presented in the result section based on the following criteria;

a. Largest swept area for surface oil above 10 g/m^2
b. Largest swept area for surface oil above 50 g/m^2
c. Largest (total) volume of oil ashore
d. Longest length of shoreline with oil accumulation above 100 g/m^2
e. Largest area of entrained hydrocarbon exposure above 100 ppb
f. Largest area of dissolved hydrocarbon exposure above 50 ppb

9.3 Receptors Assessed

A range of environmental receptors and shorelines were assessed for floating oil exposure, shoreline accumulation and water column exposure as part of the study (see Figure 9.1 to Figure 9.11). Receptor categories (see Table 9-1) include sections of shorelines which are defined by local government areas (LGAs), sub-LGAs and offshore islands. All other sensitive receptors other than submerged reefs, shoals and banks (RSB) were sourced from Australian Government Department of Climate Change, Energy, the Environment and Water (http://www.environment.gov.au/).

Risks of exposure were separately calculated for each sensitive receptor area and have been tabulated.

Table 9-2 summarises the receptors that the release locations reside within.

Table 9-1 Summary of receptors used to assess floating oil, shoreline and in-water exposure to hydrocarbons.

Receptor Category	Acronym	Hydrocarbon Exposure Assessment			Figure reference
		Water Column	Floating oil	Shoreline	
Australian Marine Park	AMP	✓	✓	×	Figure 9.1
Integrated Marine and Coastal Regionalisation Areas	IMCRA	✓	✓	×	Figure 9.2
Marine National Park	MNP	✓	✓	×	Figure 9.3
Marine Park	MP	✓	✓	×	Figure 9.4
Nature Reserve	NR	✓	✓	×	Figure 9.5
Ramsar	Ramsar	✓	✓	✓	Figure 9.6
Reefs, Shoals and Banks	RSB	✓	✓	×	Figure 9.7
Key Ecological Feature	KEF	✓	✓	×	Figure 9.8
State Waters	State Waters	✓	✓	×	
Local and Sub-Local Government Area	LGA and Sub-LGA	✓ (Reported as: Nearshore Waters)	✓ (Reported as: Nearshore Waters)	✓ (Reported as: Shore)	Figure 9.9 to Figure 9.11

Table 9-2 Summary of the receptors that the release locations reside within.

Acronym	Receptor
BIA	Antipodean Albatross – Foraging
	Black-browed Albatross – Foraging
	Buller's Albatross – Foraging
	Campbell Albatross – Foraging
	Common Diving-petrel – Foraging
	Indian Yellow-nosed Albatross – Foraging
	Pygmy Blue Whale – Distribution
	Pygmy Blue Whale – Foraging (annual high use area)
	Shy Albatross – Foraging
	Wandering Albatross – Foraging
	Wedge-tailed Shearwater – Foraging
	White Shark – Distribution
IMCRA	Otway

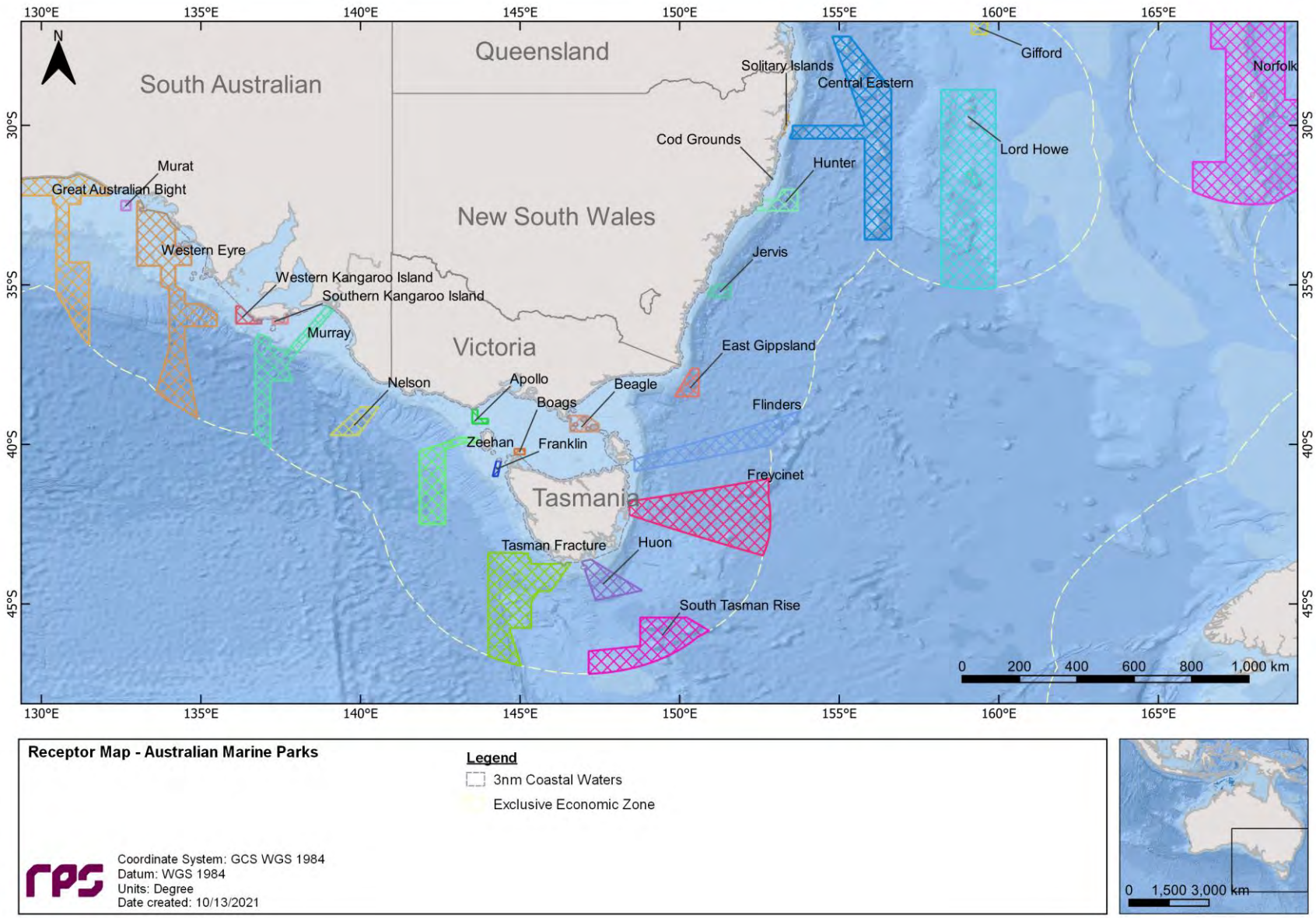

Figure 9.1 Receptor map for Australian Marine Parks (AMP).

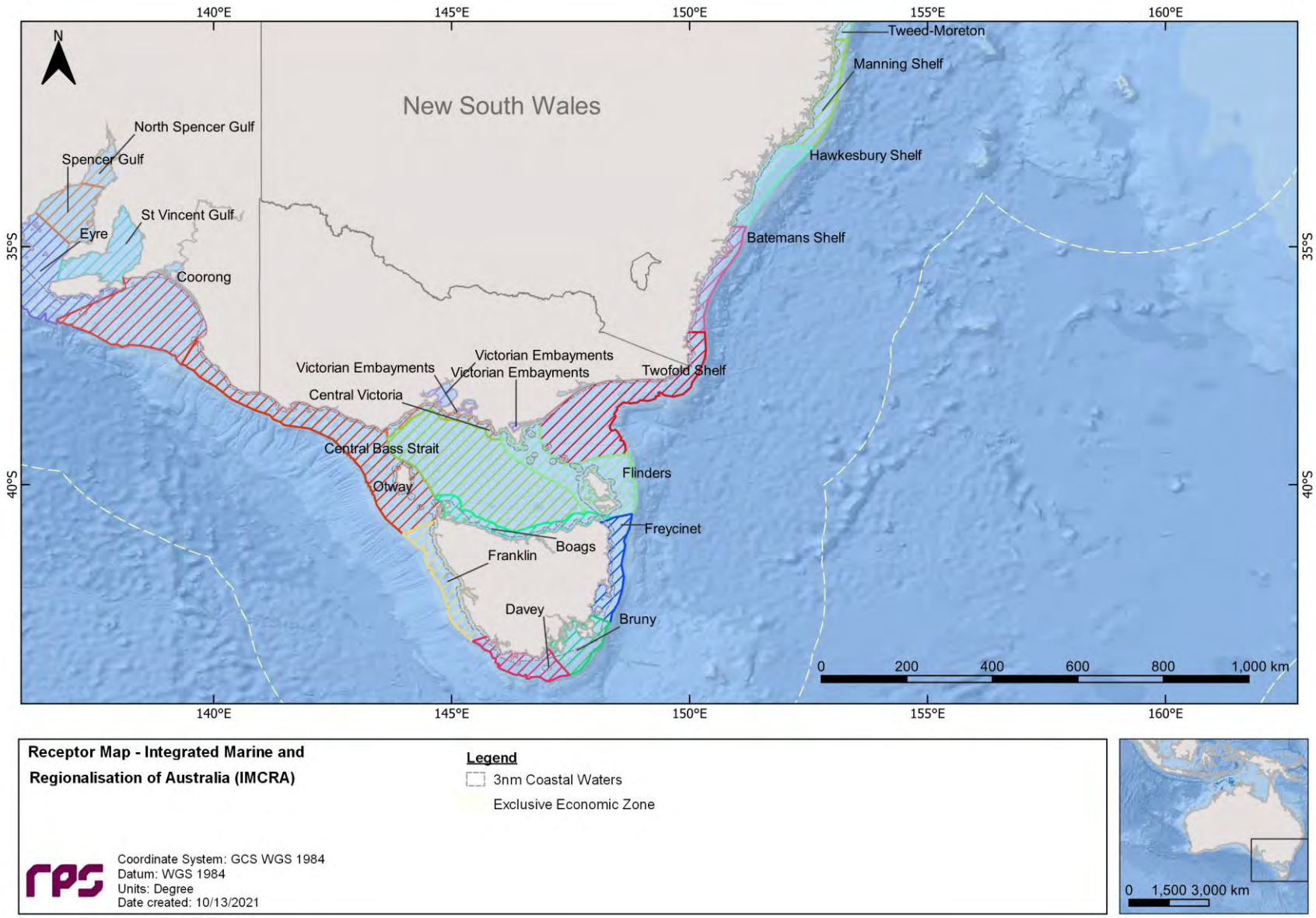

Figure 9.2 Receptor map for integrated marine and coastal regionalisation (IMCRA) areas.

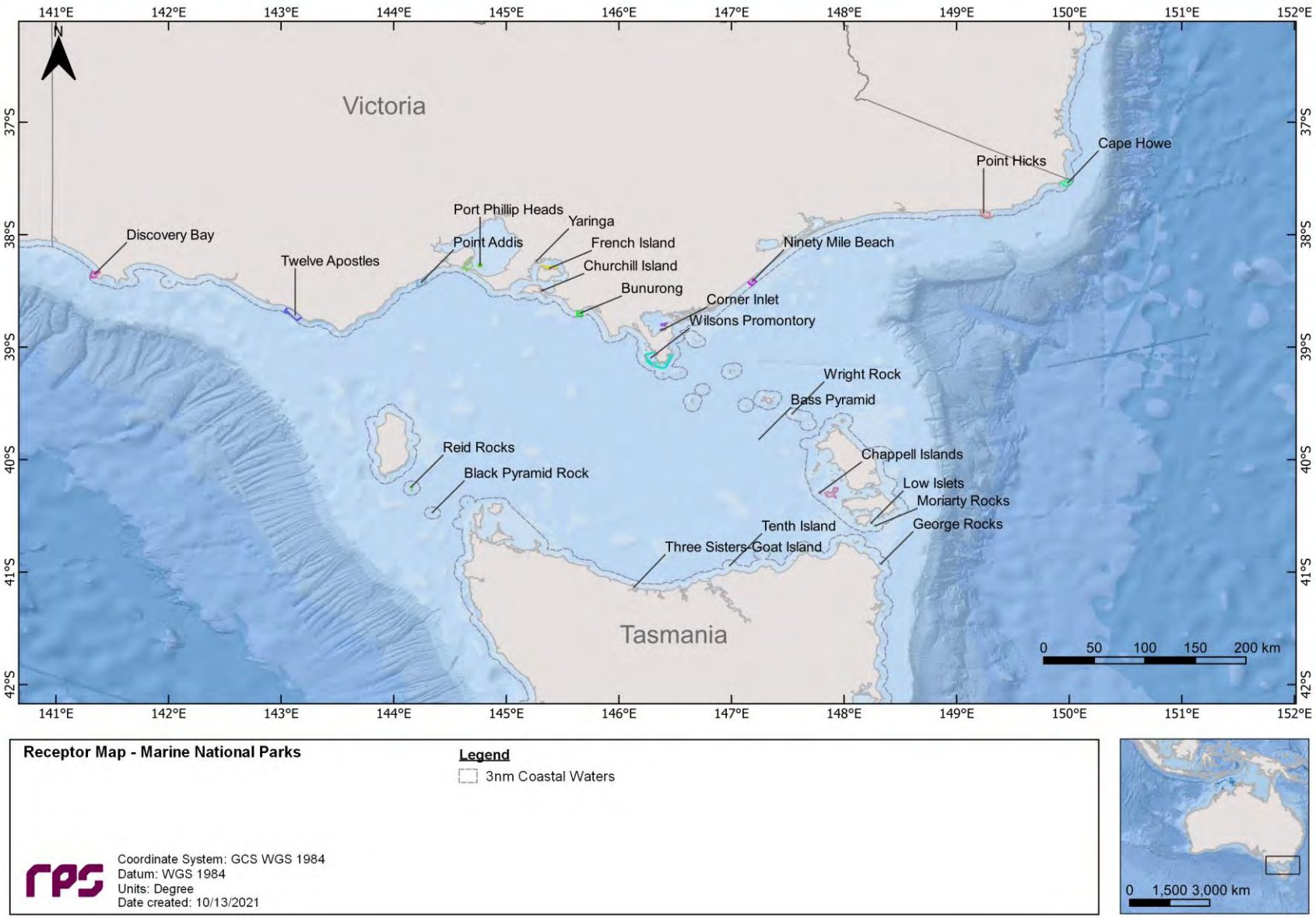

Figure 9.3 Receptor map for Marine National Parks (MNP).

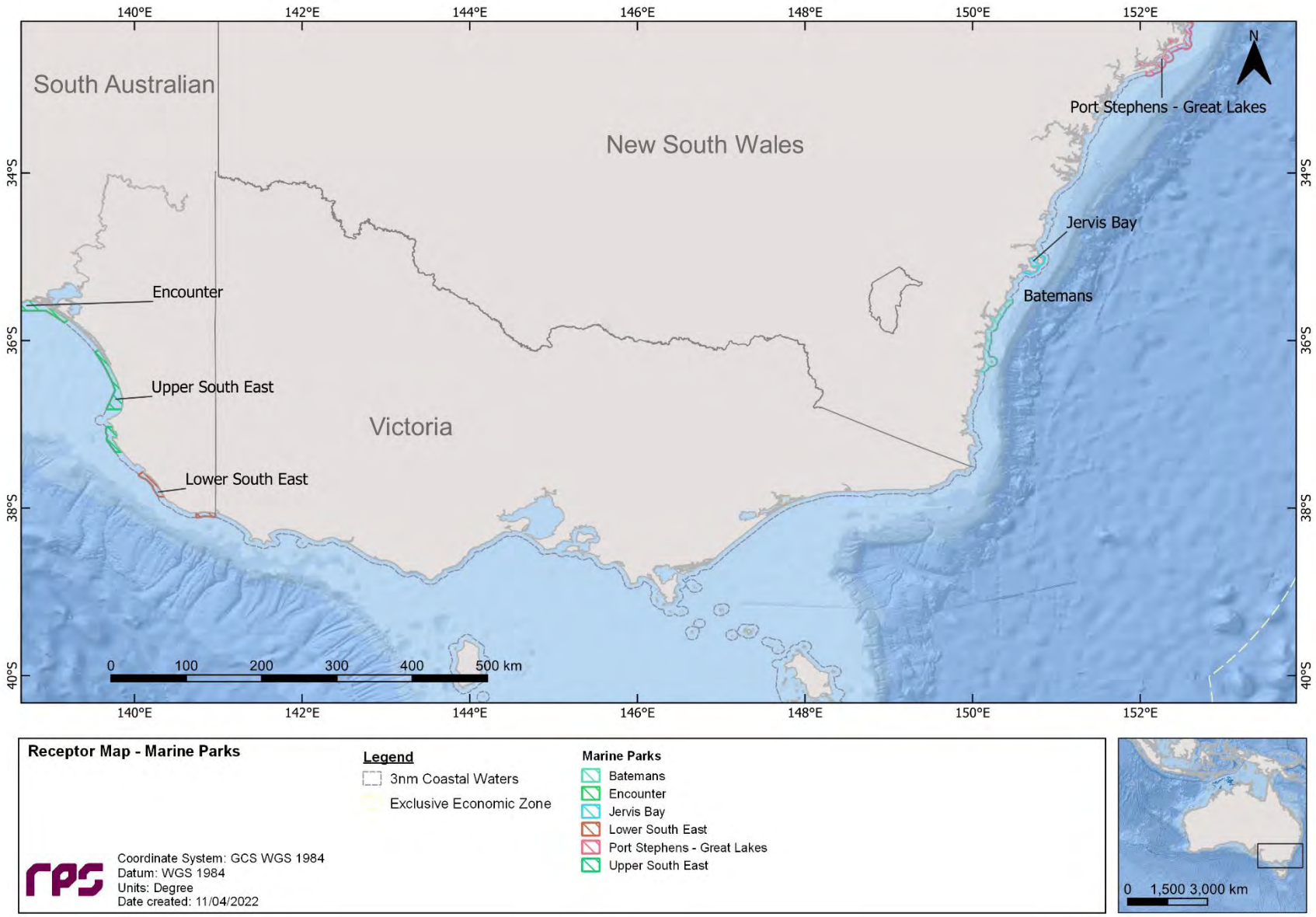

Figure 9.4 Receptor map for Marine Parks (MP).

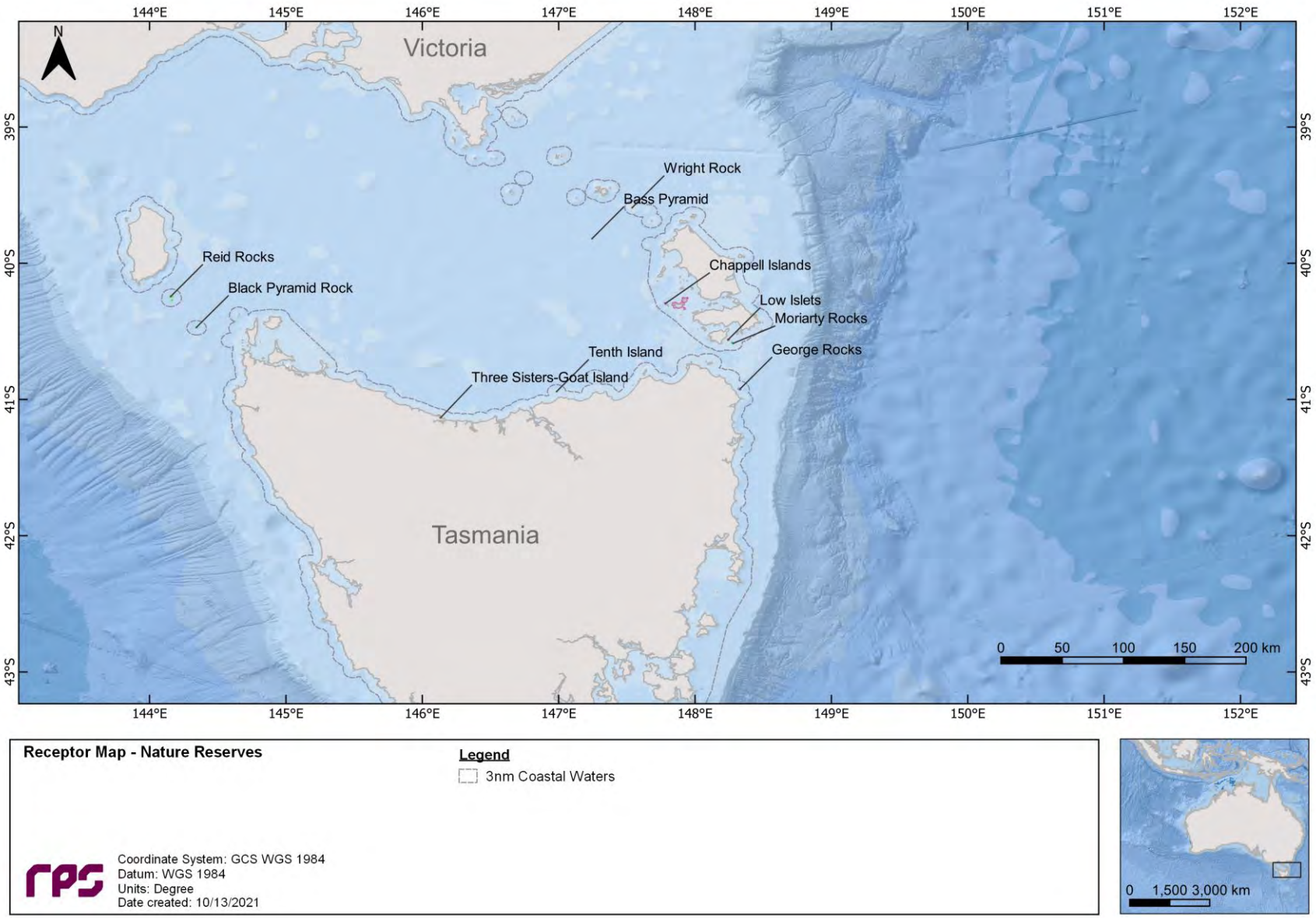

Figure 9.5 Receptor map for Nature Reserves (NR).

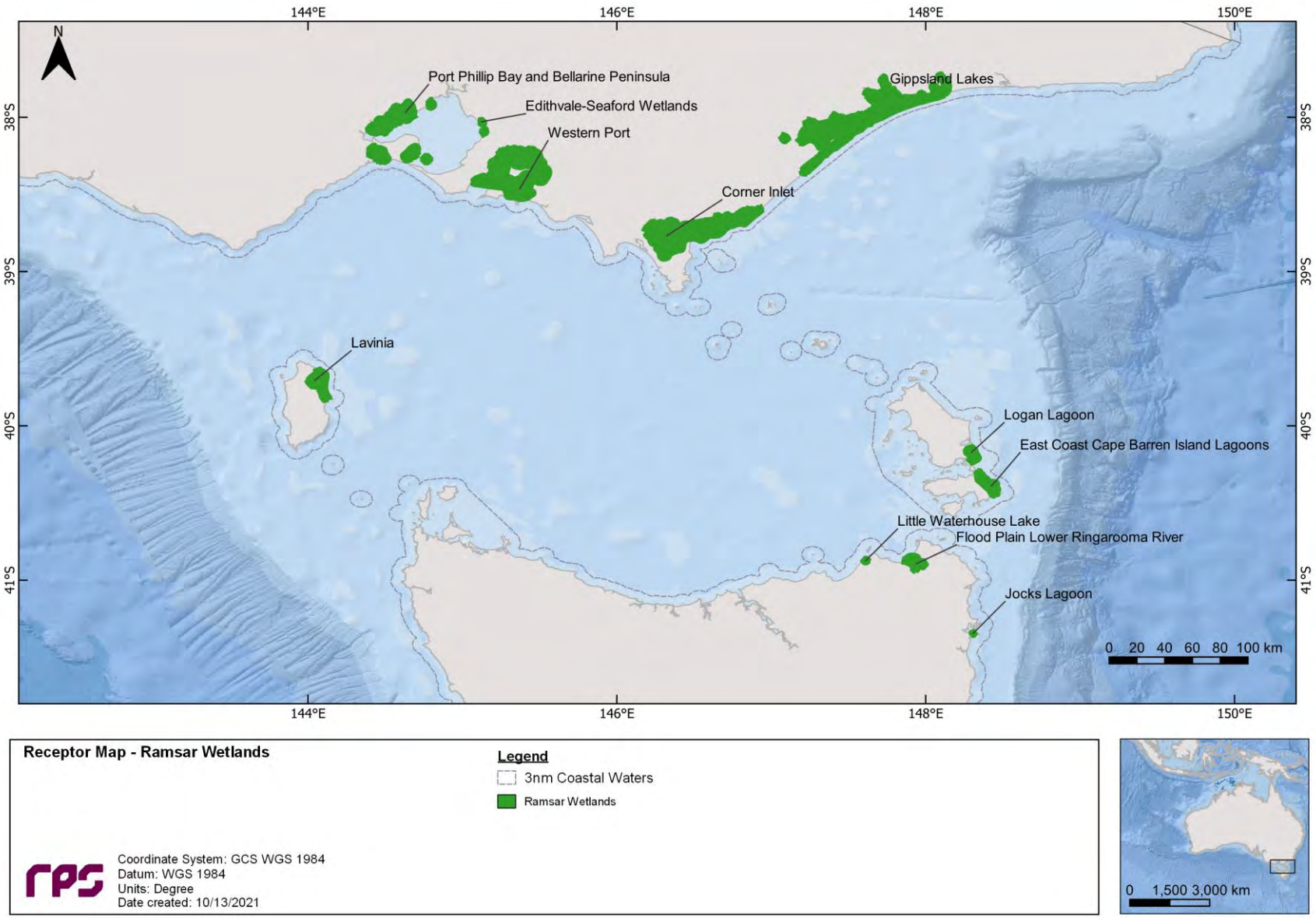

Figure 9.6 Receptor map for Ramsar Sites (Ramsar).

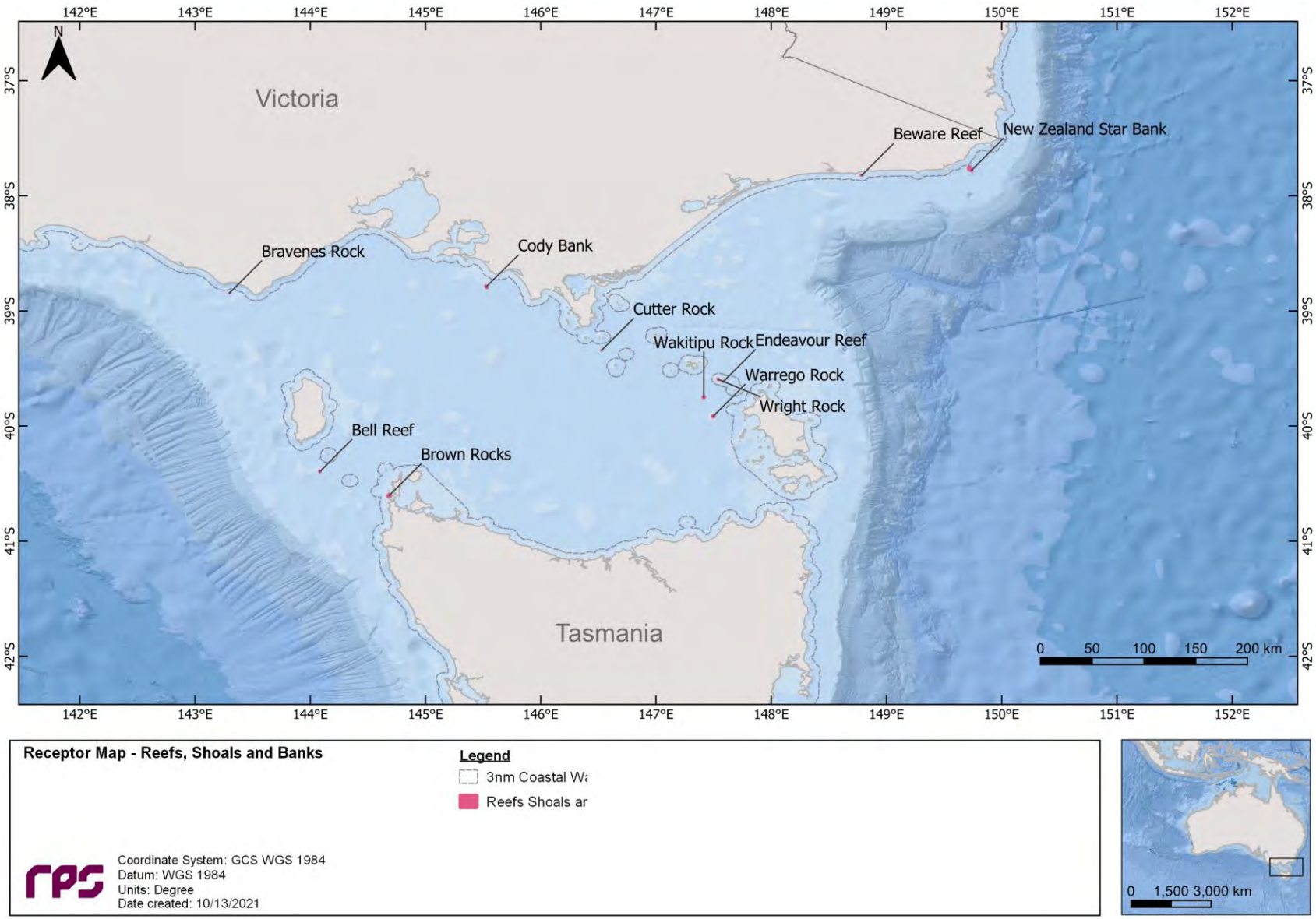

Figure 9.7 Receptor map for Reefs, Shoals and Banks (RSB).

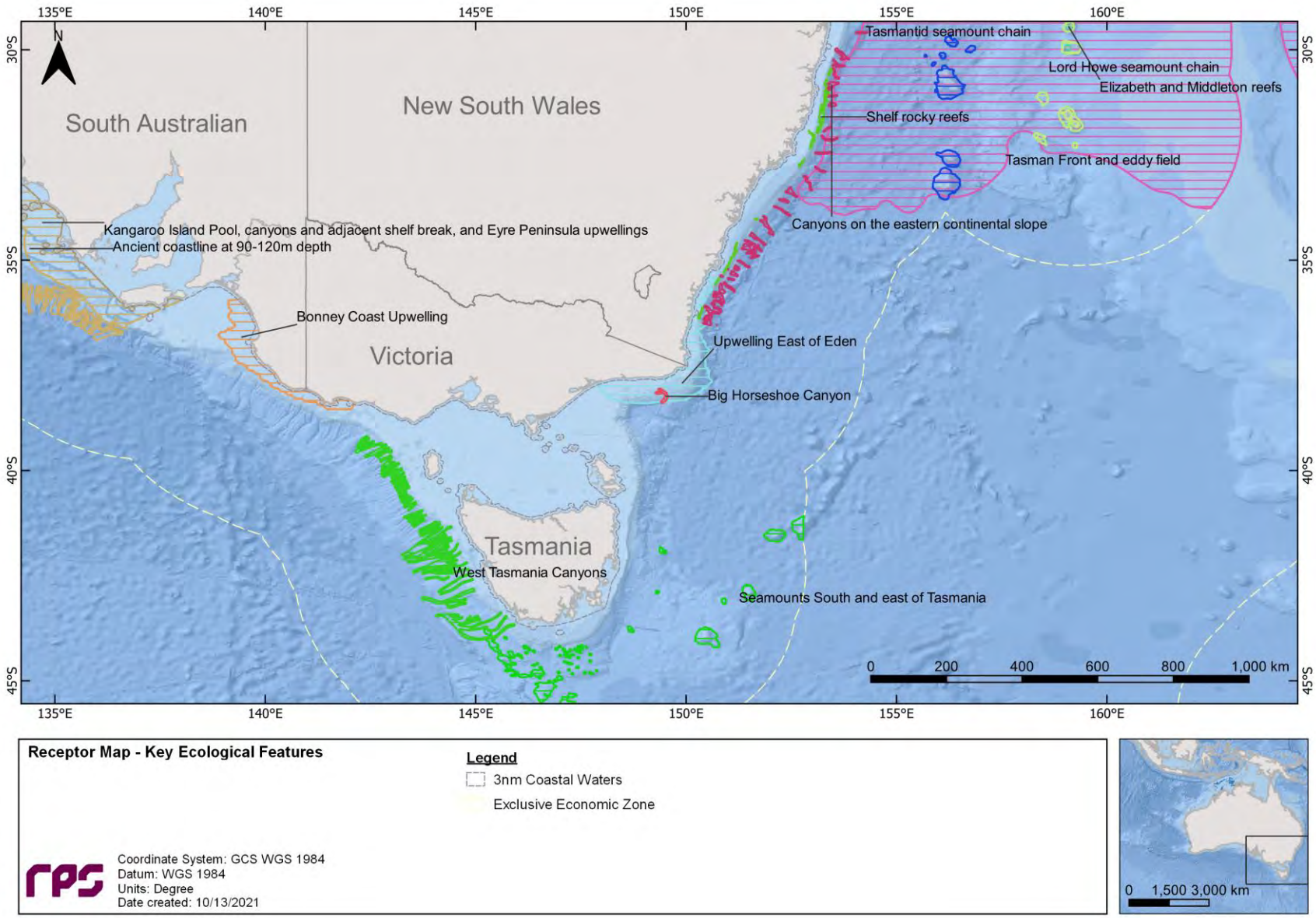

Figure 9.8 Receptor map for Key Ecological Features (KEF).

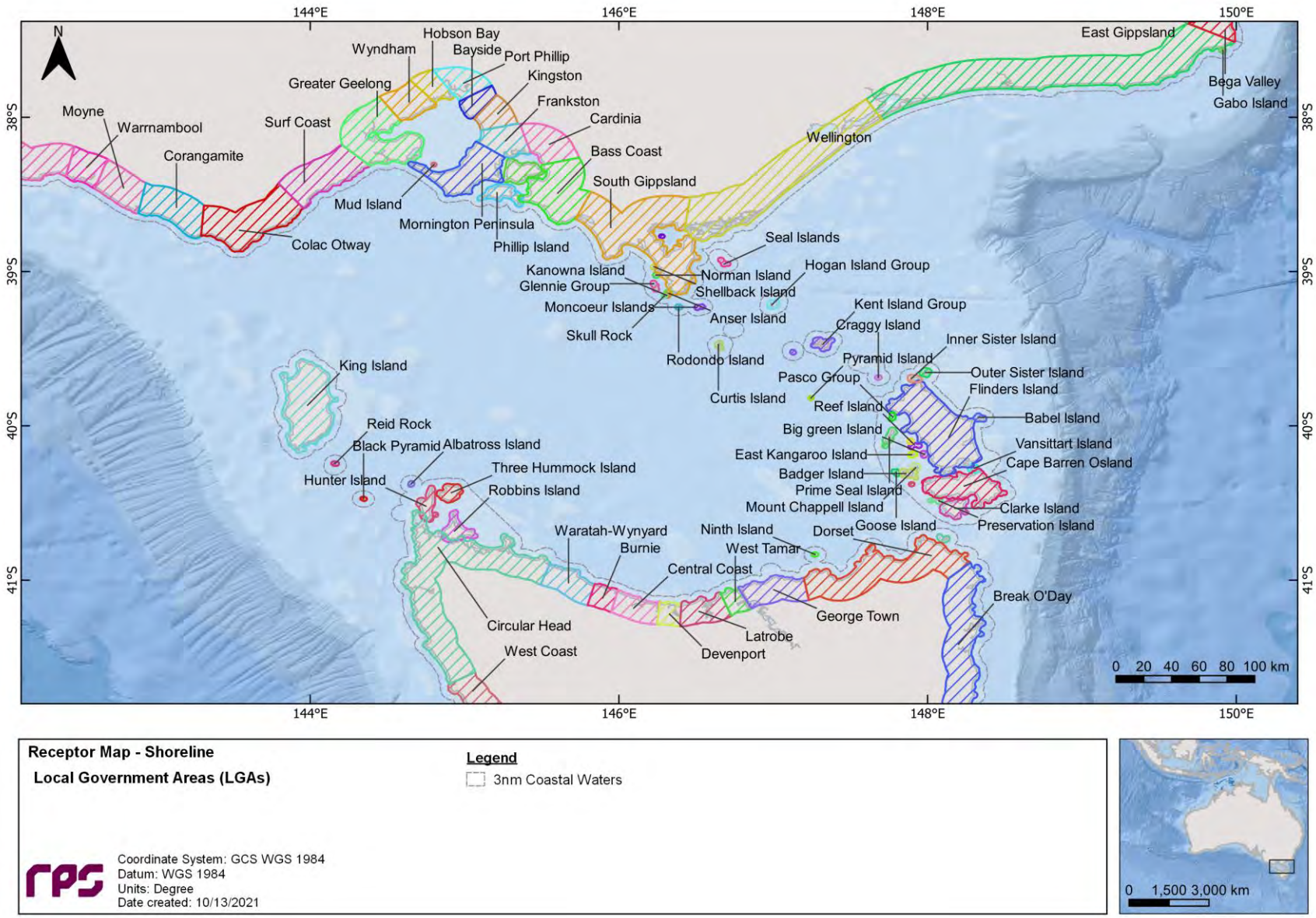

Figure 9.9 Receptor map for shorelines (1 of 3).

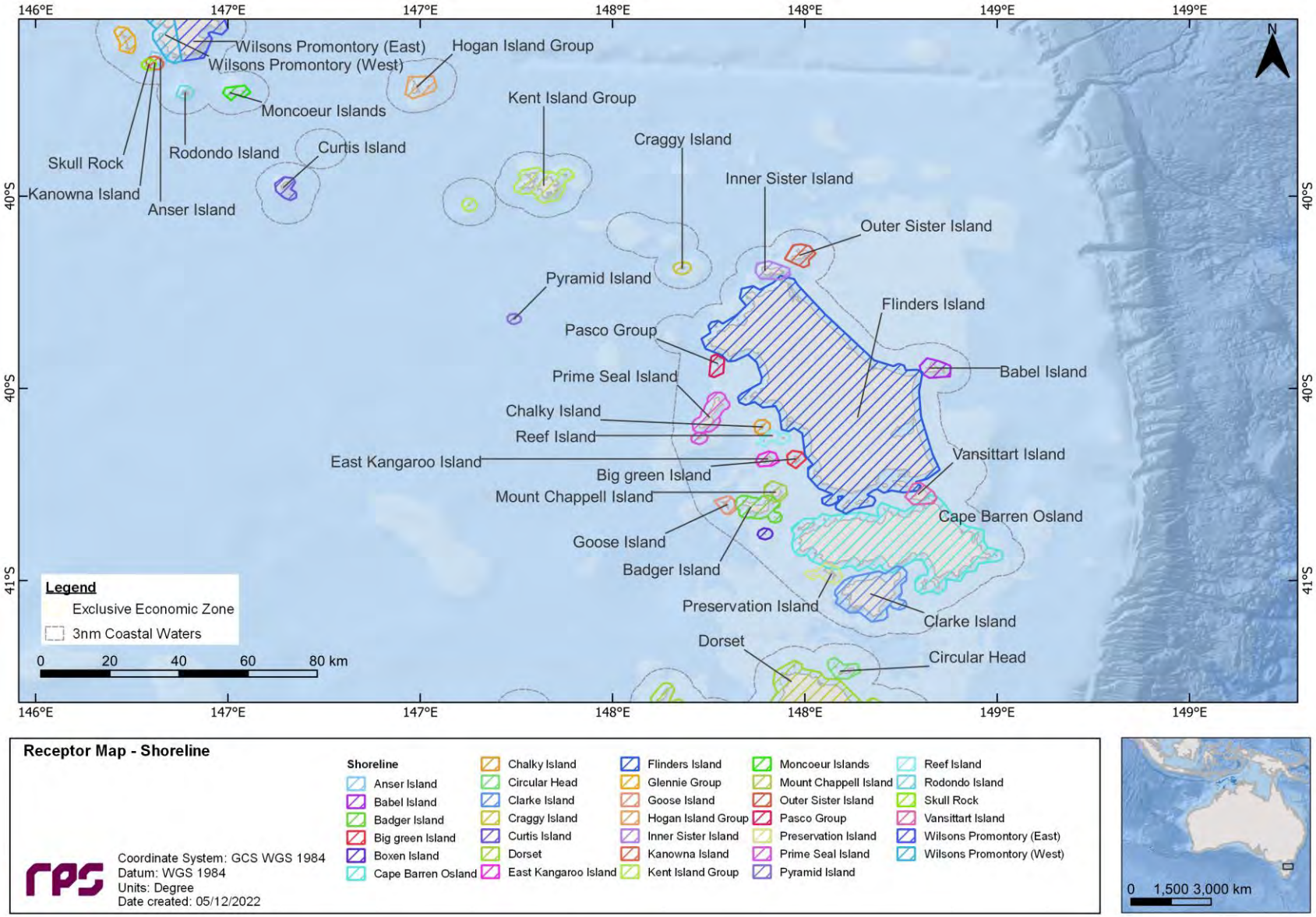

Figure 9.10 Receptor map for shorelines (2 of 3).

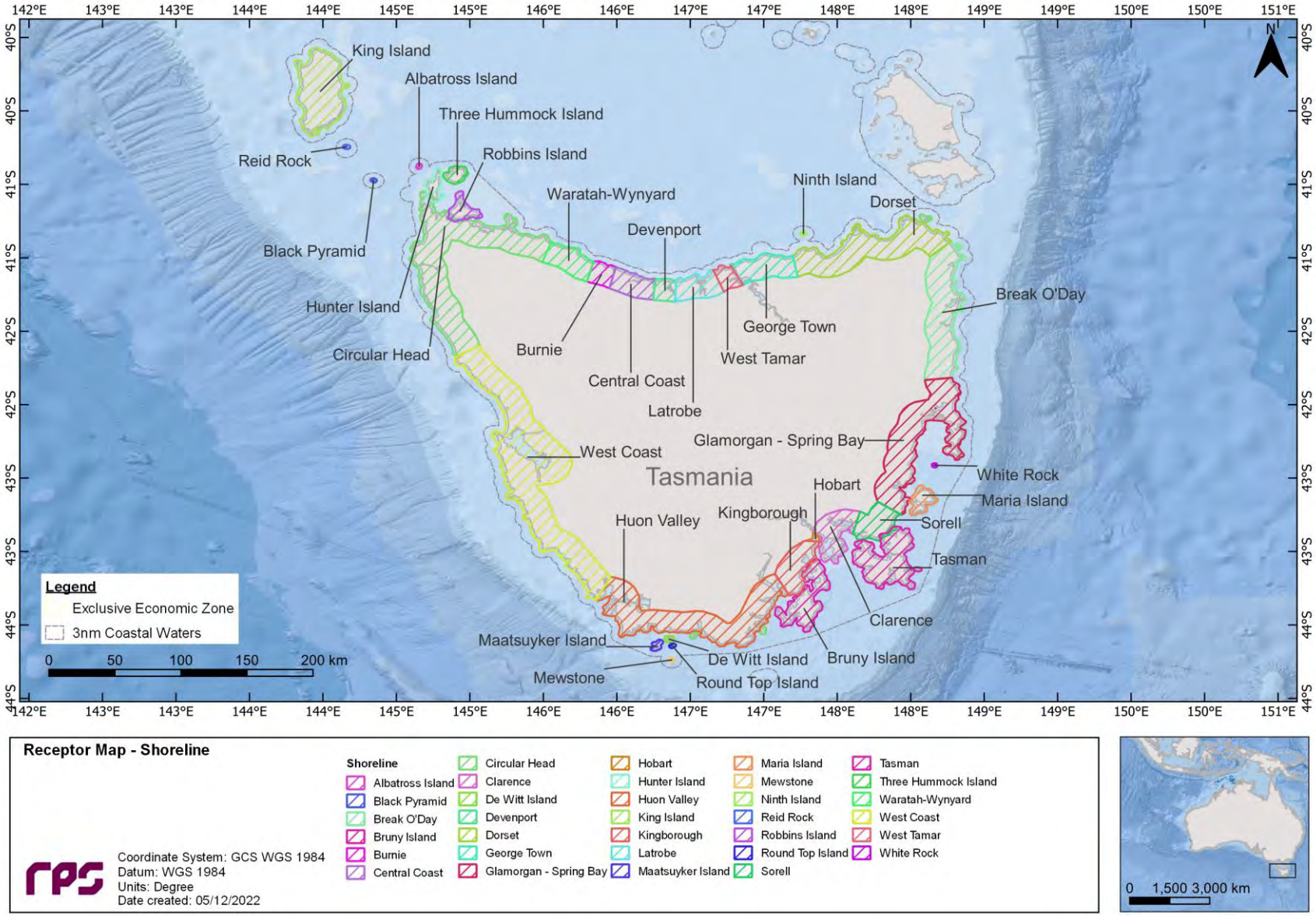

Figure 9.11 Receptor map for shorelines (3 of 3).

10 RESULTS – 250 m³ LOSS OF CONTAINMENT FROM A VESSEL COLLISION

This scenario examined a 250 m^3 surface release of MDO over 6 hours to represent a loss of containment from a vessel collision. A total of 100 spill simulations were run and tracked for 30 days. The results for all 100 simulations were combined and are presented on an annual basis.

Sections 10.1 and 10.2 present the annual stochastic analysis and deterministic analysis results, respectively.

10.1 Stochastic Analysis

10.1.1 Area of Exposure

Figure 10.1 presents the area of exposure based on the low thresholds produced by overlaying the results from all 100 simulations.

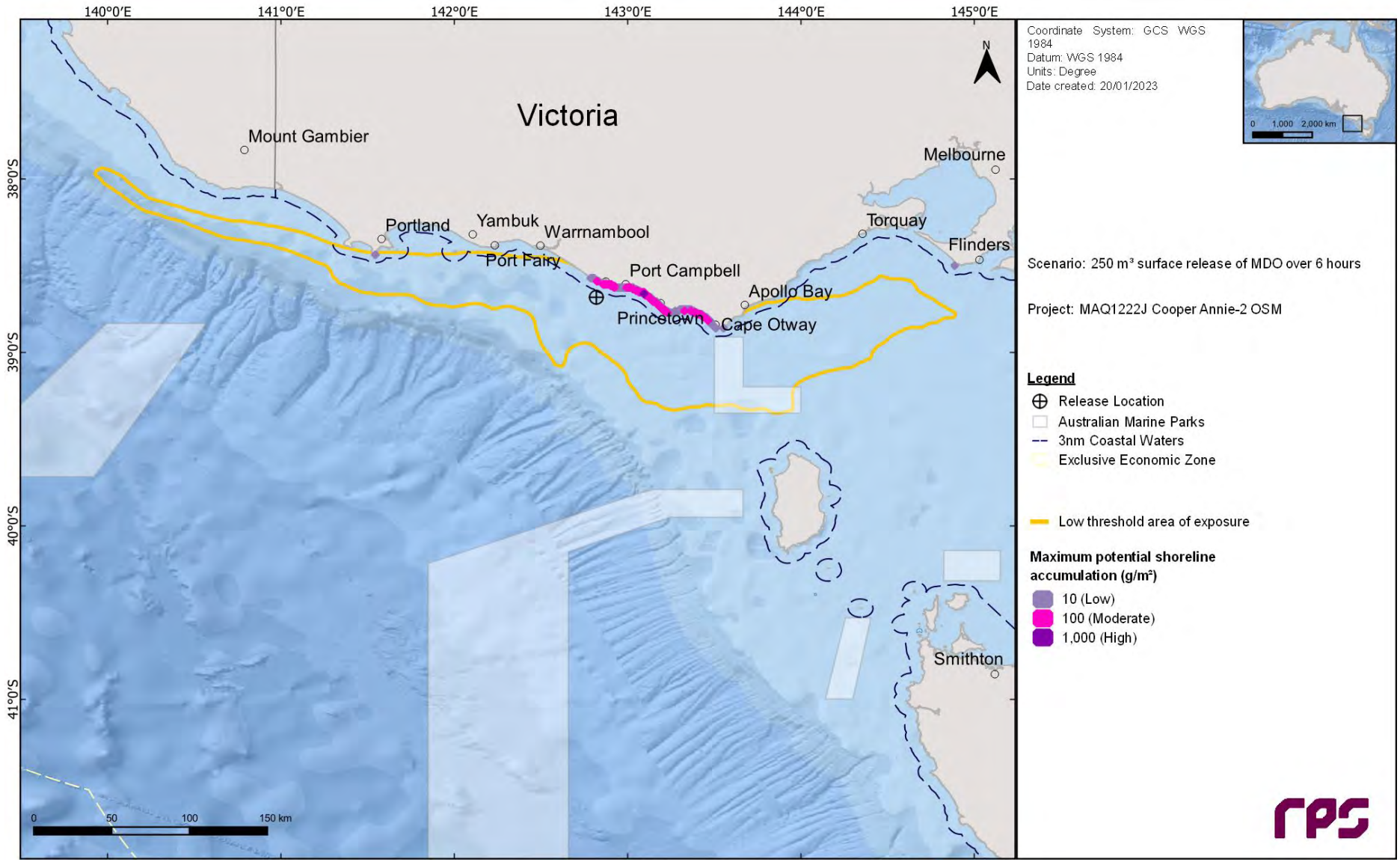

Figure 10.1 Predicted area of exposure for low thresholds produced by overlaying the results from 100 simulations of a 250 m^3 surface release of MDO over 6 hours.

10.1.2 Floating Oil Exposure

Table 10-1 summarises the maximum distance travelled by floating oil on the sea surface at each threshold. The maximum distance from the release location to the low (1–10 g/m^2), moderate (10–50 g/m^2) and high (> 50 g/m^2) exposure zones was 32.5 km (west), 10.3 km (west) and 2.8 km (east-southeast), respectively.

Table 10-2 summarises the potential floating oil exposure to individual receptors.

A total of 14 Biologically Important Areas (BIAs) were predicted to be exposed to floating oil at, or above, the low threshold. Excluding the 13 BIAs that the release location resides within (see Section 9.3), the highest probability (3%) of low exposure were predicted at the Southern Right Whale – Aggregation BIA. The minimum time before low exposure to the Southern Right Whale – Aggregation ranged between 28 hours.

Additionally, Twelve Apostles MNP, Corangamite LGA and Moonlight Head sub-LGA recorded a probability of low floating oil exposure of 2%.

Table 10.3 presents the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor.

Figure 10.2 presents the zones of potential floating oil exposure whilst Figure 10.3 to Figure 10.4 present the maximum residence time of floating oil exposure for the NOPSEMA thresholds.

Table 10-1 Maximum distance and direction from the release location to the edge of floating oil exposure. Results are based on a 250 m^3 surface release of MDO over 6 hours. The results were calculated from 100 spill simulations.

Distance and direction travelled	Zones of potential floating oil exposure		
	Low	Moderate	High
Maximum distance (km) from release location	32.5	10.3	2.8
Maximum distance (km) from release location (99th percentile)	30.3	10.3	2.8
Direction	W	W	ESE

Table 10-2 Summary of the potential floating oil exposure to individual receptors. Results are based on a 250 m^3 surface release of MDO over 6 hours. The results were calculated from 100 spill simulations.

Receptor		Probability of floating oil exposure (%)			Minimum time before floating oil exposure (hours)		
		Low	Moderate	High	Low	Moderate	High
BIA	Antipodean Albatross – Foraging*	100	100	38	1	1	1
	Black-browed Albatross – Foraging*	100	100	38	1	1	1
	Buller's Albatross – Foraging*	100	100	38	1	1	1
	Campbell Albatross – Foraging*	100	100	38	1	1	1
	Common Diving-petrel – Foraging*	100	100	38	1	1	1
	Indian Yellow-nosed Albatross – Foraging*	100	100	38	1	1	1
	Pygmy Blue Whale – Distribution*	4	-	-	23	1	1
	Pygmy Blue Whale – Foraging (annual high use area) *	100	100	38	1	1	1
	Shy Albatross – Foraging*	100	100	38	1	1	1
	Southern Right Whale – Aggregation	4	-	-	23	-	-
	Southern Right Whale – Migration and resting on migration	100	100	38	1	1	1
	Wandering Albatross – Foraging*	100	100	38	1	1	1
	Wedge-tailed Shearwater – Foraging*	100	100	38	1	1	1
	White Shark – Distribution*	100	100	38	1	1	1
IMCRA	Otway*	100	100	38	1	1	1
MNP	Twelve Apostles	2	-	-	32	-	-
Nearshore Waters (LGA)	Corangamite	2	-	-	36	-	-
Nearshore Waters (Sub-LGA)	Moonlight Head	2	-	-	35	-	-
State Waters	Victoria State Waters*	10	2	-	6	16	-

*The release location resides within the receptor boundaries.

Table 10.3 Summary of the maximum residence time of floating oil exposure for each individual grid cell within each individual receptor. Results are based on a 250 m^3 surface release of MDO over 6 hours. The results were calculated from 100 spill simulations.

Receptor		Maximum residence time of floating oil exposure (hours)		
		Low	Moderate	High
BIA	Antipodean Albatross – Foraging*	31.92	18	6.96
	Black-browed Albatross – Foraging*	31.92	18	6.96
	Buller's Albatross – Foraging*	31.92	18	6.96
	Campbell Albatross – Foraging*	31.92	18	6.96
	Common Diving-petrel – Foraging*	31.92	18	6.96
	Indian Yellow-nosed Albatross – Foraging*	31.92	18	6.96
	Pygmy Blue Whale – Distribution*	31.92	18	6.96
	Pygmy Blue Whale – Foraging*	31.92	18	6.96
	Shy Albatross – Foraging*	31.92	18	6.96
	Southern Right Whale - Aggregation	9.12	-	-
	Southern Right Whale – Migration and resting on migration	31.92	18	6.96
	Wandering Albatross – Foraging*	31.92	18	6.96
	Wedge-tailed Shearwater – Foraging*	31.92	18	6.96
	White Shark – Distribution*	31.92	18	6.96
IMCRA	Otway*	31.92	18	6.96
MNP	Twelve Apostles	3.12	-	-
Nearshore Waters (LGA)	Corangamite	3.12	-	-
Nearshore Waters (Sub-LGA)	Moonlight Head	3.12	-	-
State Waters*	Victoria State Waters	19.92	3.12	-

*The release location resides within the receptor boundaries.

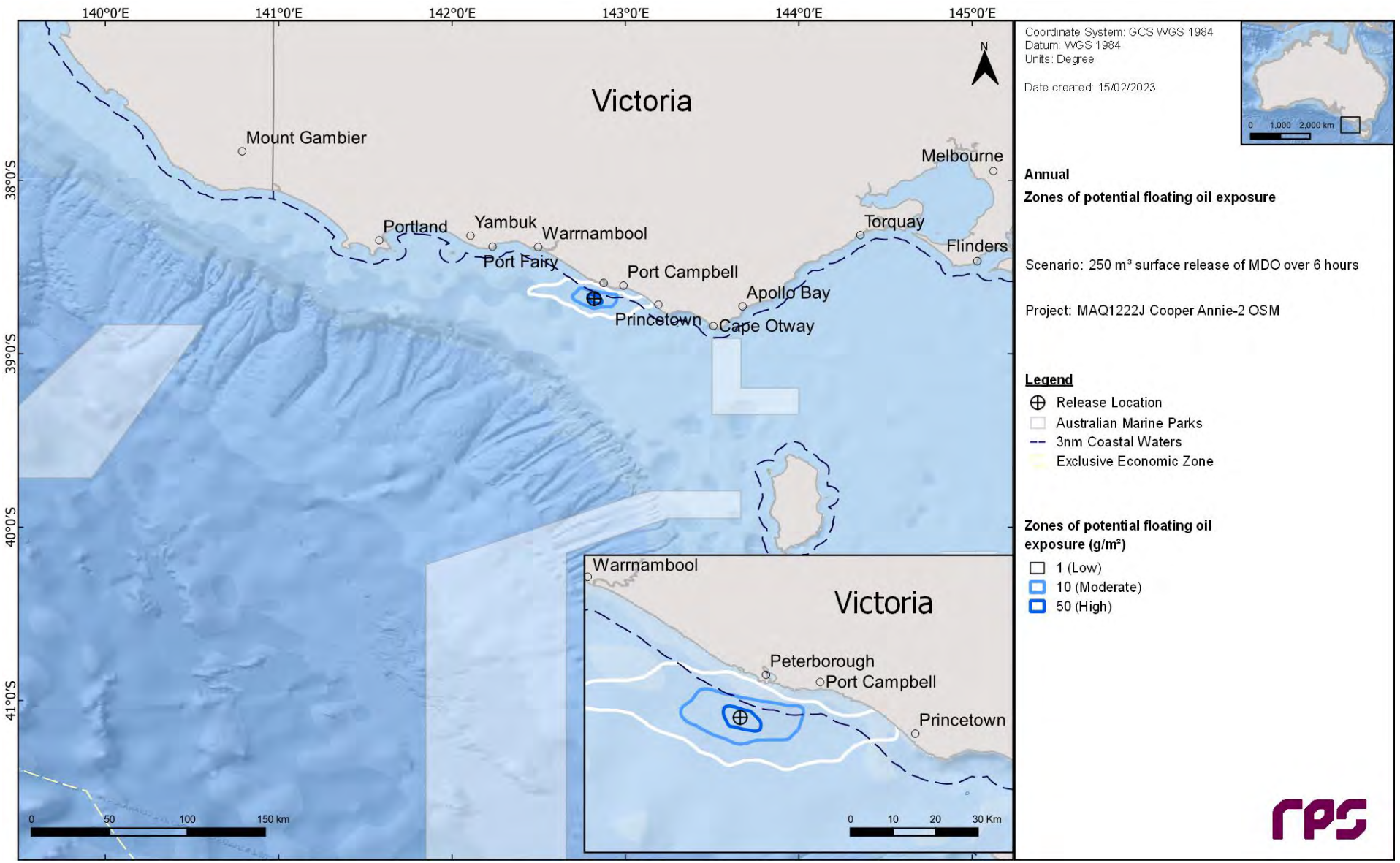

Figure 10.2 Zones of potential floating oil exposure in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

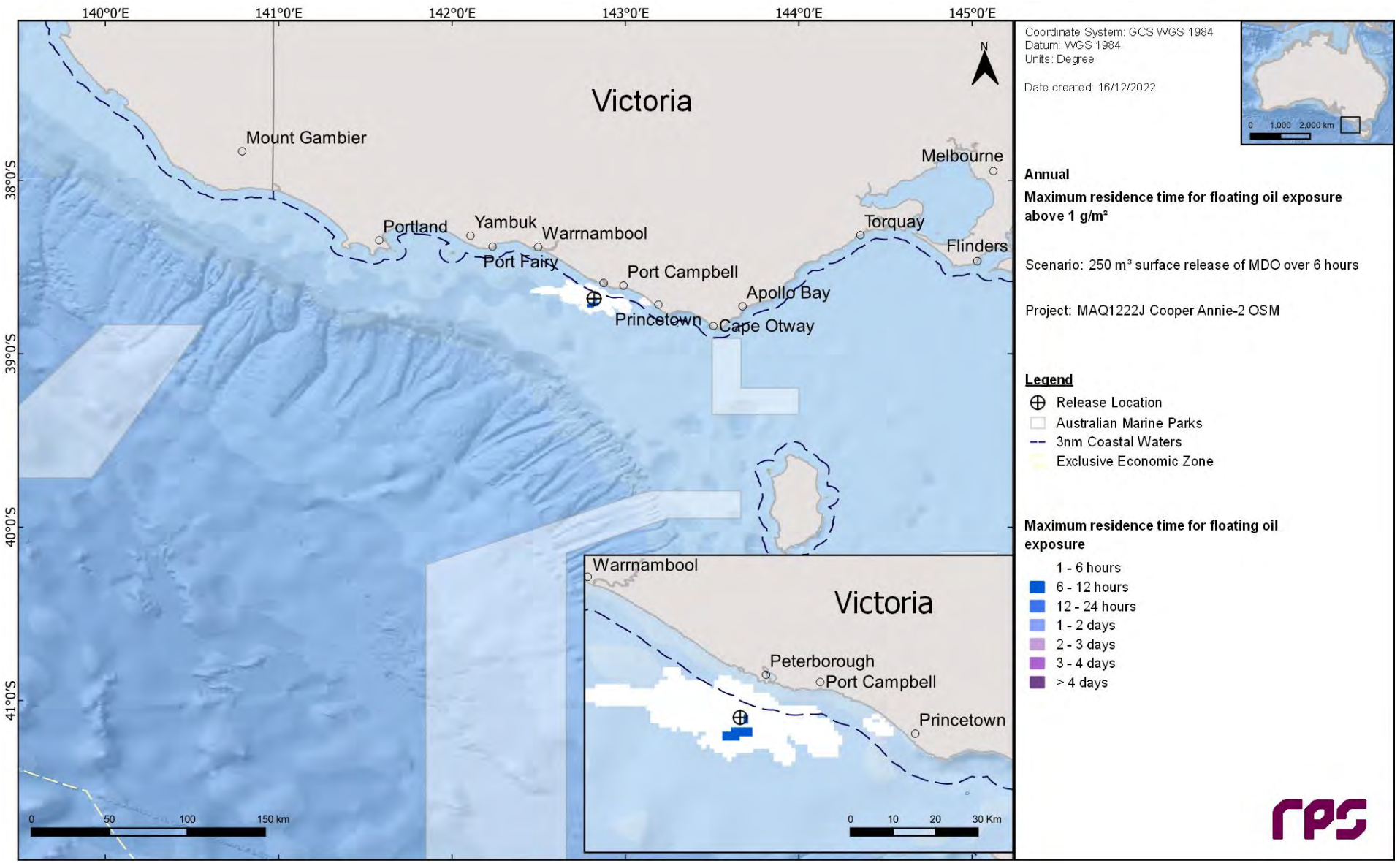

Figure 10.3 Maximum residence time of floating oil exposure above 1 g/m², in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

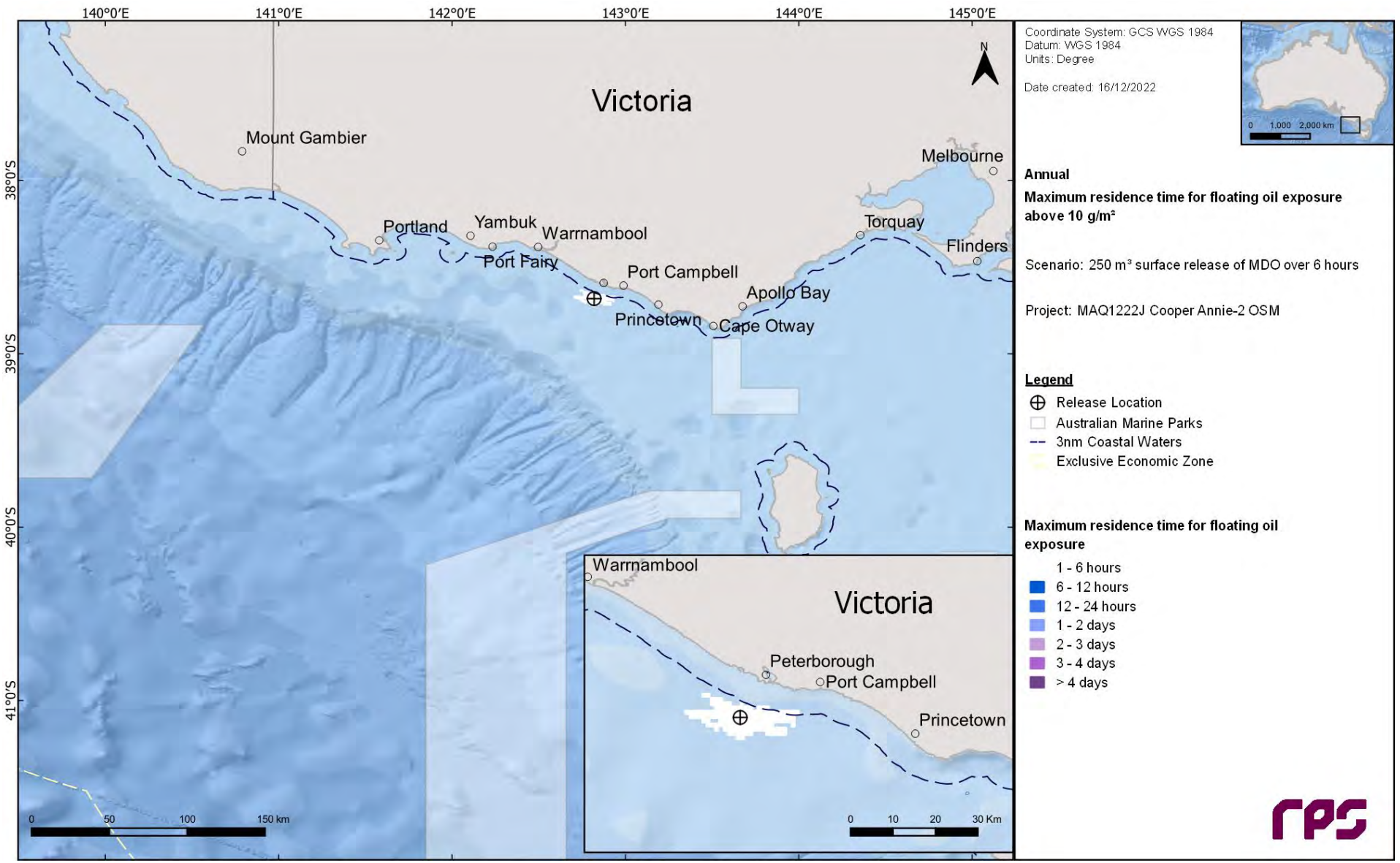

Figure 10.4 Maximum residence time of floating oil exposure above 10 g/m², in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

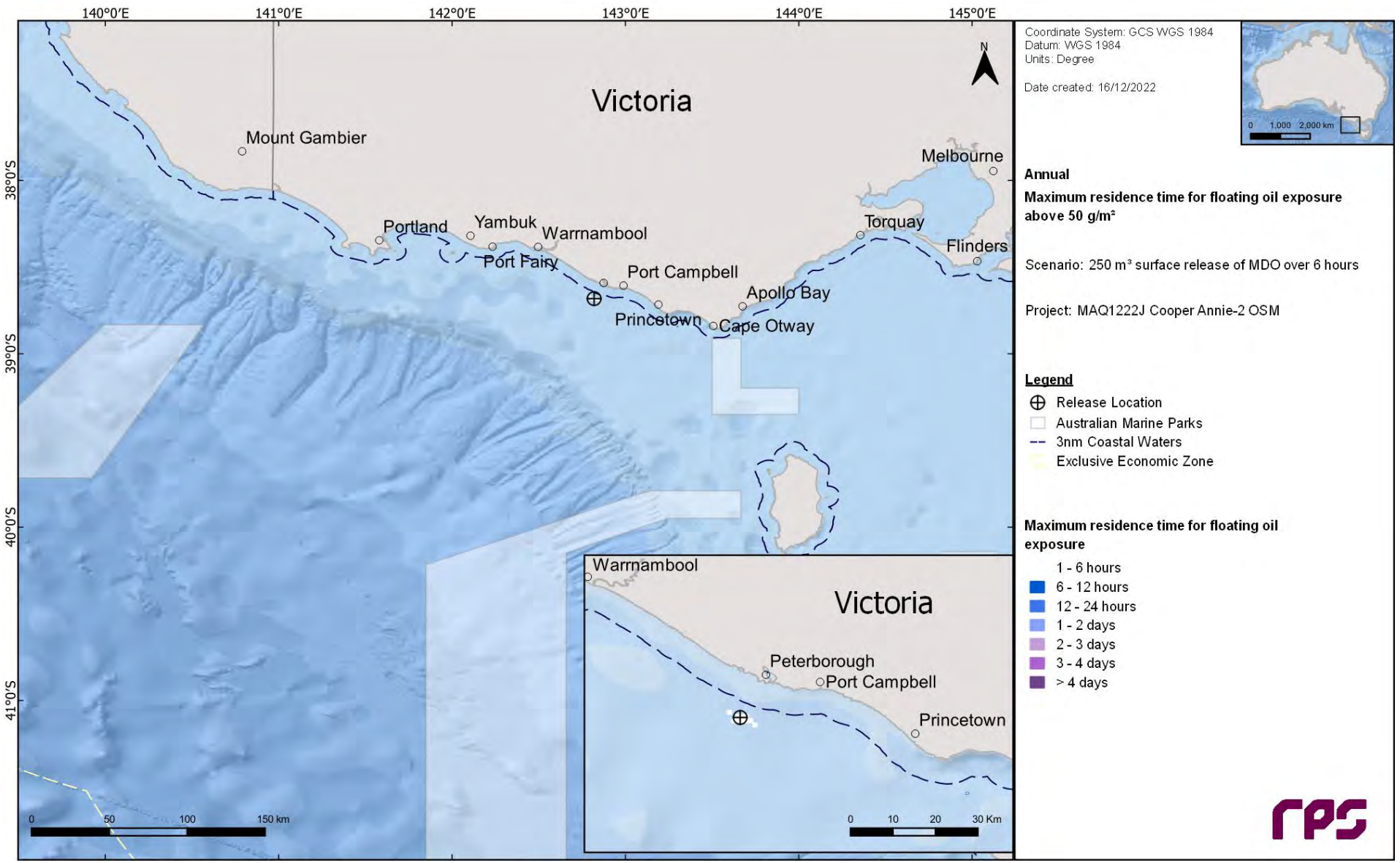

Figure 10.5 Maximum residence time of floating oil exposure above 50 g/m², in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

10.1.3 Shoreline Accumulation

Table 10-4 presents a summary of the potential shoreline accumulation. The probability of accumulation to any shoreline at, or above, the low (10 g/m^2) threshold was 60%. The minimum time before oil accumulation at, or above, the low threshold was 22 hours. The maximum total volume ashore for a single spill trajectory was 43.2 m^3, and the maximum length of shoreline with accumulation above the low, moderate and high thresholds were 32 km, 11 km and 1 km, respectively.

Table 10-5 summarises the shoreline accumulation on individual receptors.

The shoreline segment of Corangamite had the highest probability of accumulation above all three thresholds. The minimum time for low threshold shoreline accumulation was less than 1 day for several shoreline segments and Sub-LGAs.

The maximum potential shoreline loading above each shoreline thresholds is presented in Figure 10.6.

Table 10-4 Summary of oil accumulation across all shorelines. Results are based on a 250 m^3 surface release of MDO over 6 hours. The results were calculated from 100 spill simulations.

Shoreline Statistics	Annual
Probability of accumulation on any shoreline (%)	60
Absolute minimum time for visible oil to shore (hours)	22
Maximum total volume of hydrocarbons ashore (m^3)	43.2
Average total volume of hydrocarbons ashore (m^3)	7.5
Maximum length of the shoreline at **10 g/m^2** (km)	32
Average shoreline length (km) at **10 g/m^2** (km)	13
Maximum length of the shoreline at **100 g/m^2** (km)	11
Average shoreline length (km) at **100 g/m^2** (km)	4.8
Maximum length of the shoreline at **1,000 g/m^2** (km)	1
Average shoreline length (km) at **1,000 g/m^2** (km)	1

Table 10-5 Summary of oil accumulation on individual shoreline receptors. Results are based on a 250 m^3 surface release of MDO over 6 hours. The results were calculated from 100 spill simulations.

Shoreline Receptor		Maximum probability of shoreline loading (%)			Minimum time before shoreline accumulation (days)			Load on shoreline (g/m^2)		Volume on shoreline (m^3)		Mean length of shoreline accumulation (km)			Maximum length of shoreline accumulation (km)		
		Low	Mod	High	Low	Mod	High	Mean	Peak	Mean	Peak	Low	Mod	High	Low	Mod	High
LGA	Colac Otway	26	5	-	2	3	-	5	272	1.3	25.1	8.1	3.3	-	24.5	7.3	-
	Corangamite	47	28	1	1	1	4	19	1,015	5.4	43.1	10.1	4.3	0.9	24.5	10	0.9
	Glenelg	1	-	-	8	-	-	< 1	13	< 0.1	0.3	0.9	-	-	0.9	-	-
	Mornington Peninsula	1	-	-	13	-	-	< 1	15	< 0.1	0.8	0.9	-	-	0.9	-	-
	Moyne	6	2	-	1	2	-	4	160	0.2	6.8	3.9	2.3	-	8.2	3.6	-
Sub-LGA	Apollo Bay	2	-	-	5	-	-	< 1	33	< 0.1	0.5	0.9	-	-	0.9	-	-
	Bay of Islands	6	2	-	1	2	-	4	160	0.2	6.8	3.9	2.3	-	8.2	3.6	-
	Cape Nelson	1	-	-	8	-	-	< 1	13	< 0.1	0.3	0.9	-	-	0.9	-	-
	Cape Otway West	26	5	-	2	3	-	5	272	1.3	24.8	8	3.3	-	24.5	7.3	-
	Moonlight Head	43	23	-	1	1	-	18	793	4	40.9	8.4	3.9	-	17.3	8.2	-
	Mornington Peninsula (S)	1	-	-	13	-	-	1	15	< 0.1	0.5	0.9	-	-	0.9	-	-
	Port Campbell	16	8	1	1	2	4	16	1,015	1.4	34.7	7.1	3.7	0.9	16.4	7.3	0.9

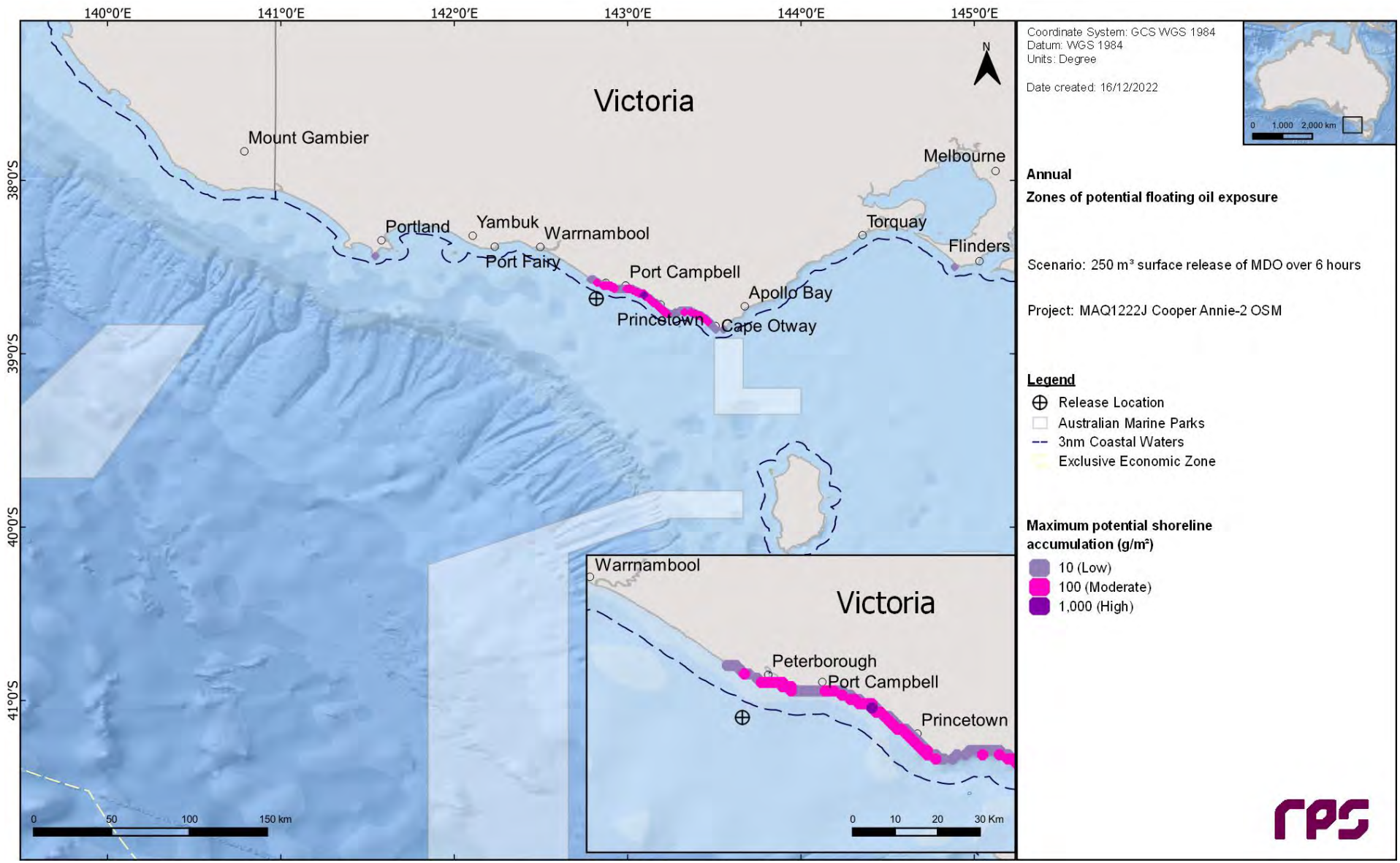

Figure 10.6 Maximum potential shoreline loading in the event of a 250 m^3 of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

10.1.4 In-water exposure

10.1.4.1 Dissolved Hydrocarbons

Table 10-6 summarises the potential in-water exposure to individual receptors from dissolved hydrocarbons in the 0-10 m layer.

A total of 15 BIAs were predicted to be exposed to dissolved hydrocarbon at, or above, the low threshold. Excluding the 13 BIAs that the release location resides within (see Section 9.3), the highest probability of low exposure ranged between 1% (Short-tailed Shearwater - Foraging) and 2% (Southern Right Whale - Aggregation).

Additionally, the Twelve Apostles MNP recorded a probability of low dissolved hydrocarbon exposure of 1%.

The maximum dissolved hydrocarbon concentration at any given receptor(s) was shown to be 77 ppb.

Table 10.7 presents the predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors, in the 0-10 m depth layer, for all thresholds assessed.

Figure 10.7 presents the zones of potential dissolved hydrocarbon exposure for the 0-10 m depth layer whilst Figure 10.8 to Figure 10.9 present the maximum residence time of dissolved hydrocarbon exposure for the NOPSEMA thresholds.

Table 10-6 Probability of dissolved hydrocarbons exposure to marine based receptors in the 0–10 m depth. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days. The results were calculated from 100 spill simulations.

Receptor		Maximum dissolved hydrocarbon exposure (ppb)	Probability of dissolved hydrocarbon exposure		
			Low	Moderate	High
BIA	Antipodean Albatross – Foraging*	77	29	3	-
	Black-browed Albatross – Foraging*	77	29	3	-
	Buller's Albatross – Foraging*	77	29	3	-
	Campbell Albatross – Foraging*	77	29	3	-
	Common Diving-petrel – Foraging*	77	29	3	-
	Indian Yellow-nosed Albatross – Foraging*	77	29	3	-
	Pygmy Blue Whale – Distribution *	77	29	3	-
	Pygmy Blue Whale – Foraging	20	1	-	-
	Pygmy Blue Whale – Foraging (annual high use area) *	77	29	3	-
	Short-tailed Shearwater - Foraging	12	1	-	-
	Shy Albatross – Foraging*	77	29	3	-
	Southern Right Whale – Aggregation	18	2	-	-
	Southern Right Whale – Migration and resting on migration	77	29	3	-
	Wandering Albatross – Foraging*	77	29	3	-
	Wedge-tailed Shearwater – Foraging*	77	29	3	-
	White Shark – Distribution*	77	29	3	-
IMCRA	Otway*	77	29	3	-
MNP	Twelve Apostles	12	1	-	-
State Waters	Victoria State Waters*	18	2	-	-

*The release location resides within the receptor boundaries.

Table 10.7 Predicted minimum time to dissolved hydrocarbon exposure and maximum residence time for dissolved hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days. The results were calculated from 100 spill simulations.

Receptor		Minimum time before dissolved hydrocarbon exposure (hours)			Maximum residence time for dissolved hydrocarbon exposure (hours)		
		Low	Moderate	High	Low	Moderate	High
BIA	Antipodean Albatross – Foraging*	2	5	-	16	3	-
	Black-browed Albatross – Foraging*	2	5	-	16	3	-
	Buller's Albatross – Foraging*	2	5	-	16	3	-
	Campbell Albatross – Foraging*	2	5	-	16	3	-
	Common Diving-petrel – Foraging*	2	5	-	16	3	-
	Indian Yellow-nosed Albatross – Foraging*	2	5	-	16	3	-
	Pygmy Blue Whale – Distribution *	2	5	-	16	3	-
	Pygmy Blue Whale – Foraging	39	-	-	1	-	-
	Pygmy Blue Whale – Foraging (annual high use area) *	2	5	-	16	3	-
	Short-tailed Shearwater - Foraging	39	-	-	1	-	-
	Shy Albatross – Foraging*	2	5	-	16	3	-
	Southern Right Whale – Aggregation	34	-	-	16	3	-
	Southern Right Whale – Migration and resting on migration	2	5	-	16	3	-
	Wandering Albatross – Foraging*	2	5	-	16	3	-
	Wedge-tailed Shearwater – Foraging*	2	5	-	16	3	-
	White Shark – Distribution*	2	5	-	16	3	-
IMCRA	Otway*	2	5	-	16	3	-
MNP	Twelve Apostles	34	-	-	1	-	-
State Waters	Victoria State Waters*	18	-	-	2	-	-

*The release location resides within the receptor boundaries.

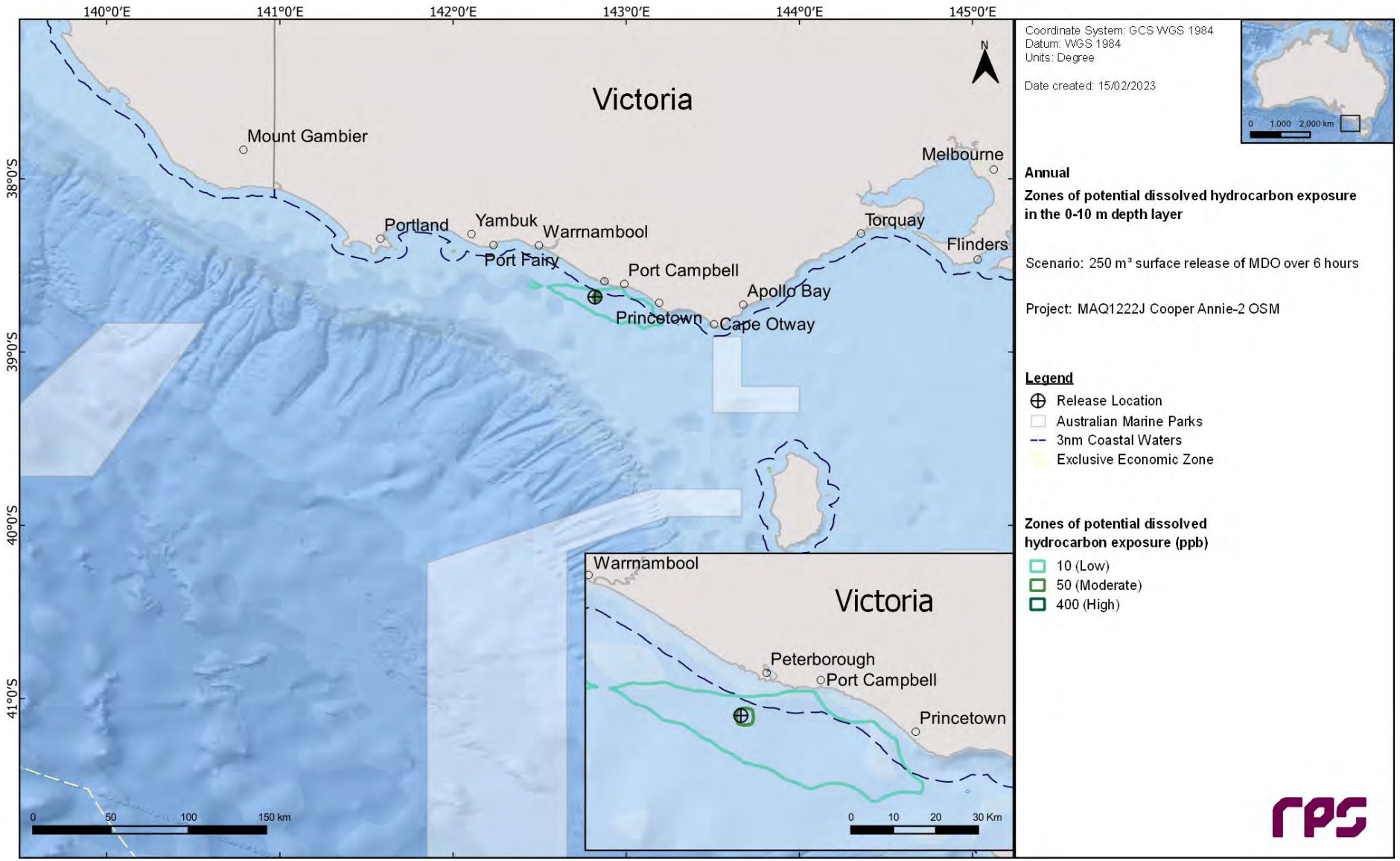

Figure 10.7 Zones of potential dissolved hydrocarbon exposure at 0-10 m below the sea in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

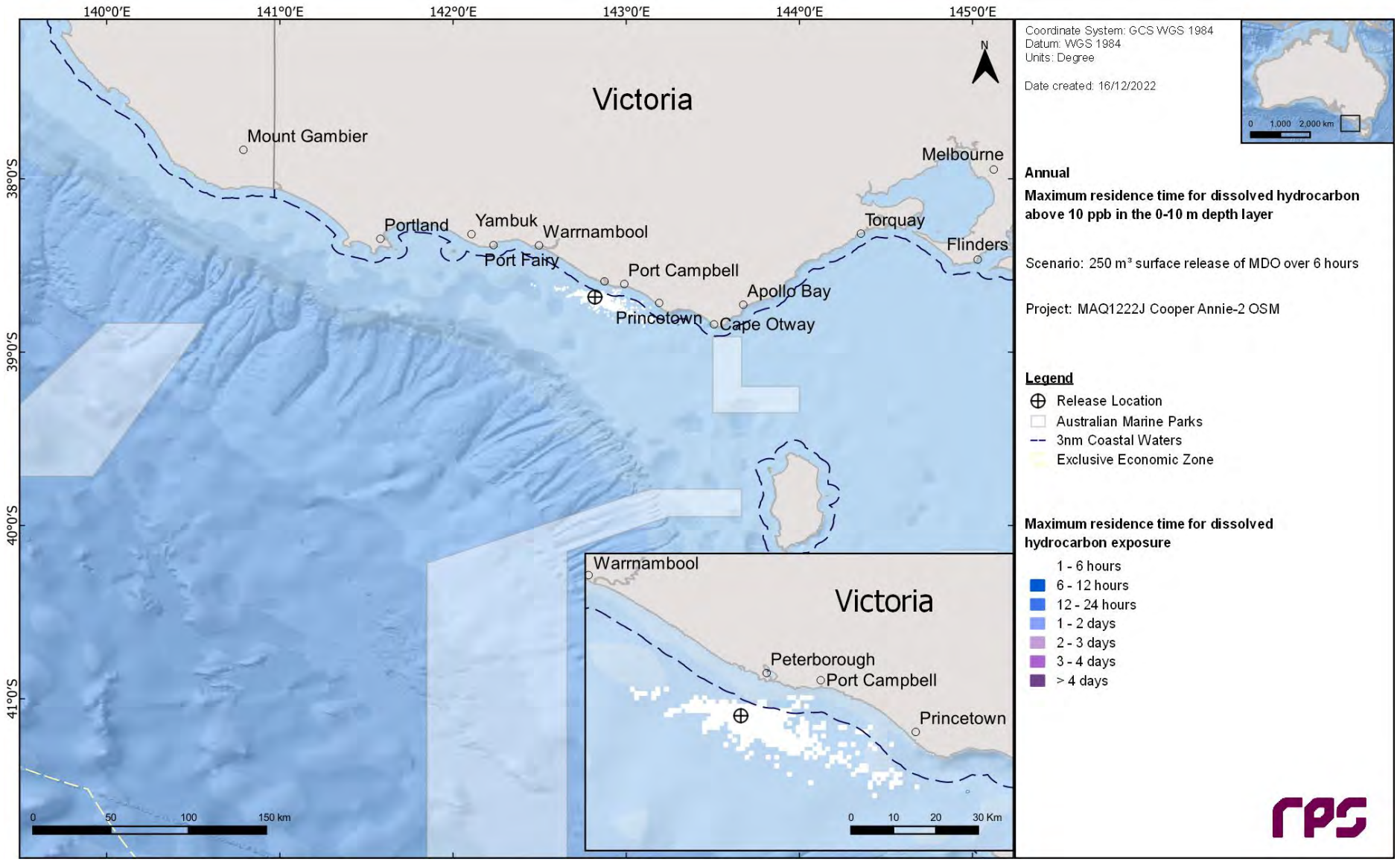

Figure 10.8 Maximum residence time for dissolved hydrocarbon exposure above 10 ppb, at 0-10 m below the sea surface in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

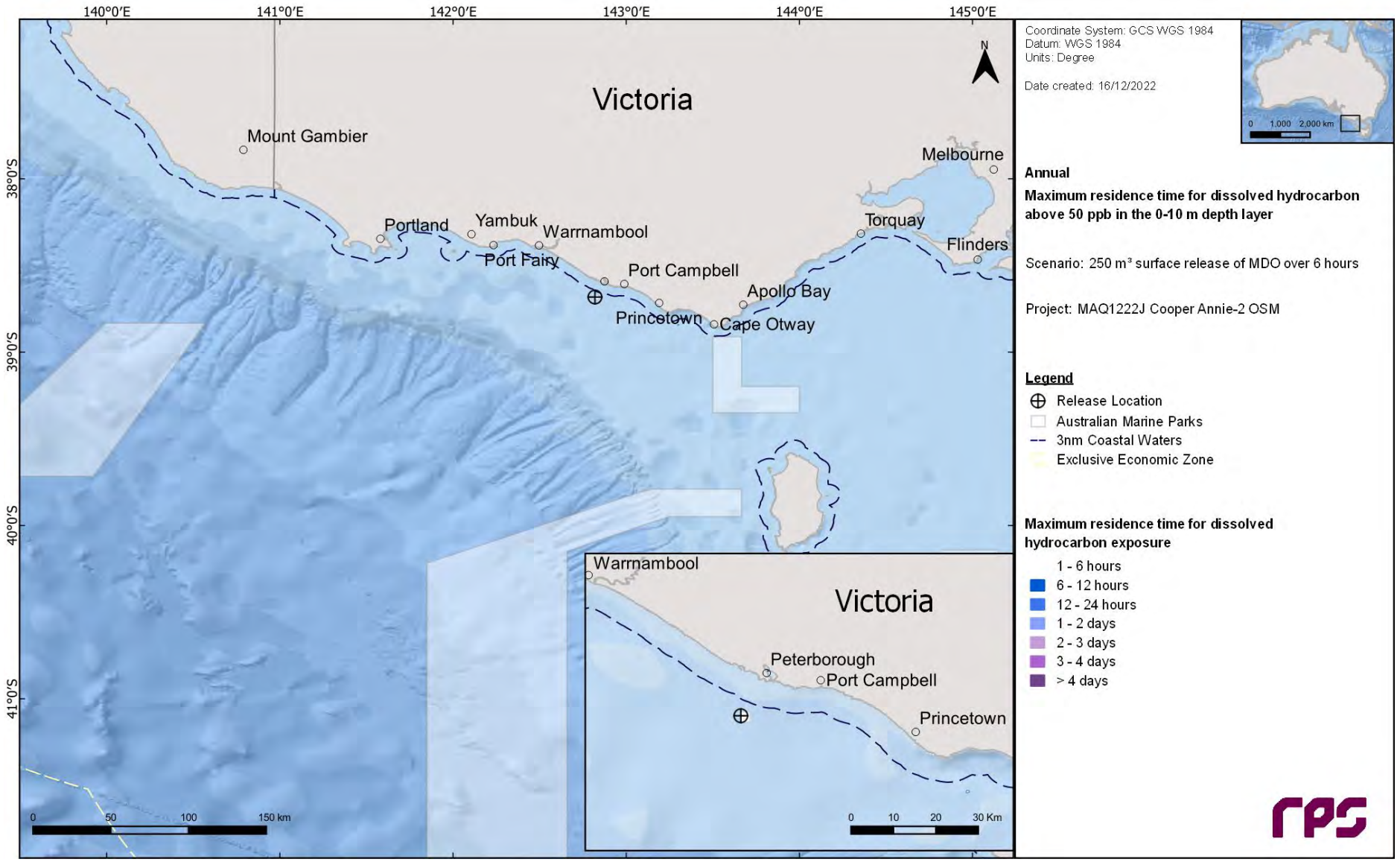

Figure 10.9 Maximum residence time for dissolved hydrocarbon exposure above 50 ppb, at 0-10 m below the sea surface in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

10.1.4.2 Entrained Hydrocarbons

Table 10-8 summarises the potential in-water exposure to individual receptors from entrained hydrocarbons in the 0-10 m depth layer.

Many receptors were exposed above the low and high thresholds, however the majority of these receptors coincided with the release location.

The highest probability of low entrained hydrocarbon exposure was recorded for the Twelve Apostles MNP (65%) and Short-tailed Shearwater – Foraging BIA (64%). Additional receptors including LGAs, sub-LGAs, and AMPs were predicted with entrained hydrocarbon exposure (refer to Table 10-8).

Table 10.9 presents the predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer, for all thresholds assessed.

Figure 10.10 presents the zones of potential entrained hydrocarbon exposure for the 0-10 m depth layer whilst Figure 10.11 and Figure 10.12 present the maximum residence time of entrained hydrocarbon exposure for the NOPSEMA thresholds.

Table 10-8 Probability of entrained hydrocarbons exposure to marine based receptors in the 0–10 m depth layer. Results are based on a 250 m^3 surface release of MDO over 6 hours. The results were calculated from 100 spill simulations.

Receptor		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High
AMP	Apollo	80	25	-
BIA	Antipodean Albatross – Foraging*	5,819	94	75
	Australasian Gannet - Foraging	56	9	-
	Black-browed Albatross – Foraging*	5,819	94	75
	Buller's Albatross – Foraging*	5,819	94	75
	Campbell Albatross – Foraging*	5,819	94	75
	Common Diving-petrel – Foraging*	5,819	94	75
	Indian Yellow-nosed Albatross – Foraging*	5,819	94	75
	Pygmy Blue Whale – Distribution *	5,819	94	75
	Pygmy Blue Whale – Foraging	666	68	21
	Pygmy Blue Whale – Foraging (annual high use area) *	5,819	94	75
	Short-tailed Shearwater - Foraging	463	64	15
	Shy Albatross – Foraging*	5,819	94	75
	Southern Right Whale – Aggregation	644	20	11
	Southern Right Whale – Migration and resting on migration	5,819	94	75
	Wandering Albatross – Foraging*	5,819	94	75
	Wedge-tailed Shearwater – Foraging*	5,819	94	75
	White Shark – Distribution*	5,819	94	75
	White Shark - Foraging	109	12	1
	White-faced Storm-petrel - Foraging	101	25	1
IMCRA	Central Bass Strait	55	12	-
	Central Victoria	95	25	-
	Otway*	5,819	94	75
KEF	Bonney Coast Upwelling	55	8	-
MNP	Twelve Apostles	843	65	29
RSB	Bravenes Rock	162	40	2
Nearshore Waters (LGA)	Colac Otway	326	41	5
	Corangamite	685	61	18

Receptor		Maximum entrained hydrocarbon exposure (ppb)	Probability of entrained hydrocarbon exposure (%)	
			Low	High
	Glenelg	14	1	-
	Moyne	282	14	3
Nearshore Waters (Sub-LGA)	Apollo Bay	76	17	-
	Bay of Islands	282	14	3
	Cape Nelson	14	1	-
	Cape Otway West	324	41	5
	Childers Cove	12	1	-
	Moonlight Head	666	61	18
	Port Campbell	685	38	10
State Waters	Victoria State Waters*	2,164	68	30

*The release location resides within the receptor boundaries.

Table 10.9 Predicted minimum time to entrained hydrocarbon exposure and maximum residence time for entrained hydrocarbon exposure to individual receptors in the 0-10 m depth layer. Results are based on a 250 m^3 surface release of MDO over 6 hours. The results were calculated from 100 spill simulations.

Receptor		Minimum time before entrained hydrocarbon exposure (hours)		Maximum residence time for entrained hydrocarbon exposure (hours)	
		Low	High	Low	High
AMP	Apollo	50	-	67	-
BIA	Antipodean Albatross – Foraging*	1	1	333	86
	Australasian Gannet - Foraging	92	-	67	-
	Black-browed Albatross – Foraging*	1	1	333	86
	Buller's Albatross – Foraging*	1	1	354	86
	Campbell Albatross – Foraging*	1	1	333	86
	Common Diving-petrel – Foraging*	1	1	420	117
	Indian Yellow-nosed Albatross – Foraging*	1	1	333	86
	Pygmy Blue Whale – Distribution *	1	1	420	117
	Pygmy Blue Whale – Foraging	14	15	388	117
	Pygmy Blue Whale – Foraging (annual high use area) *	1	1	420	117
	Pygmy Blue Whale – Known Foraging Area	59	60	106	1
	Short-tailed Shearwater - Foraging	16	17	420	68
	Shy Albatross – Foraging*	1	1	420	117
	Southern Right Whale – Aggregation	13	15	388	117
	Southern Right Whale – Migration and resting on migration	1	1	420	117
	Wandering Albatross – Foraging*	1	1	333	86
	Wedge-tailed Shearwater – Foraging*	1	1	420	117
	White Shark – Distribution*	1	1	333	86
	White Shark - Foraging	59	78	120	5
	White-faced Storm-petrel - Foraging	60	61	106	1
IMCRA	Central Bass Strait	82	-	106	-
	Central Victoria	60	-	64	-
	Otway*	1	1	420	117
KEF	Bonney Coast Upwelling	89	-	71	-
MNP	Twelve Apostles	11	13	388	110

Receptor		Minimum time before entrained hydrocarbon exposure (hours)		Maximum residence time for entrained hydrocarbon exposure (hours)	
		Low	High	Low	High
RSB	Bravenes Rock	27	47	144	9
Nearshore Waters (LGA)	Colac Otway	23	38	420	67
	Corangamite	13	17	388	117
	Glenelg	131	-	5	-
	Moyne	20	25	317	40
Nearshore Waters (Sub-LGA)	Apollo Bay	59	-	86	-
	Bay of Islands	20	25	317	40
	Cape Nelson	131	-	5	-
	Cape Otway West	23	39	420	67
	Childers Cove	193	-	19	-
	Moonlight Head	17	19	388	117
	Port Campbell	13	17	314	89
State Waters	Victoria State Waters*	4	4	420	117

*The release location resides within the receptor boundaries.

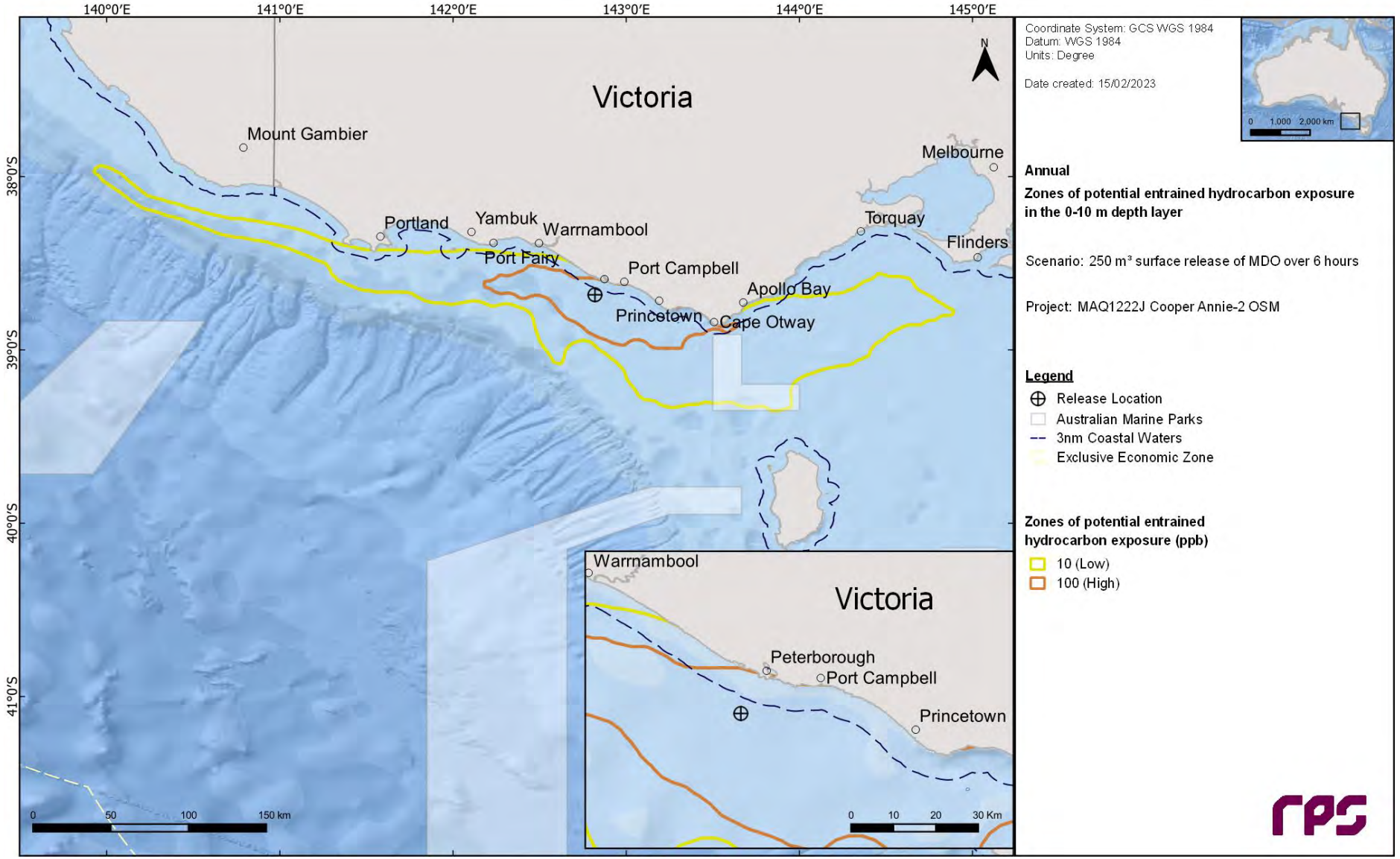

Figure 10.10 Zones of potential entrained hydrocarbon exposure at 0-10 m below the sea surface in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

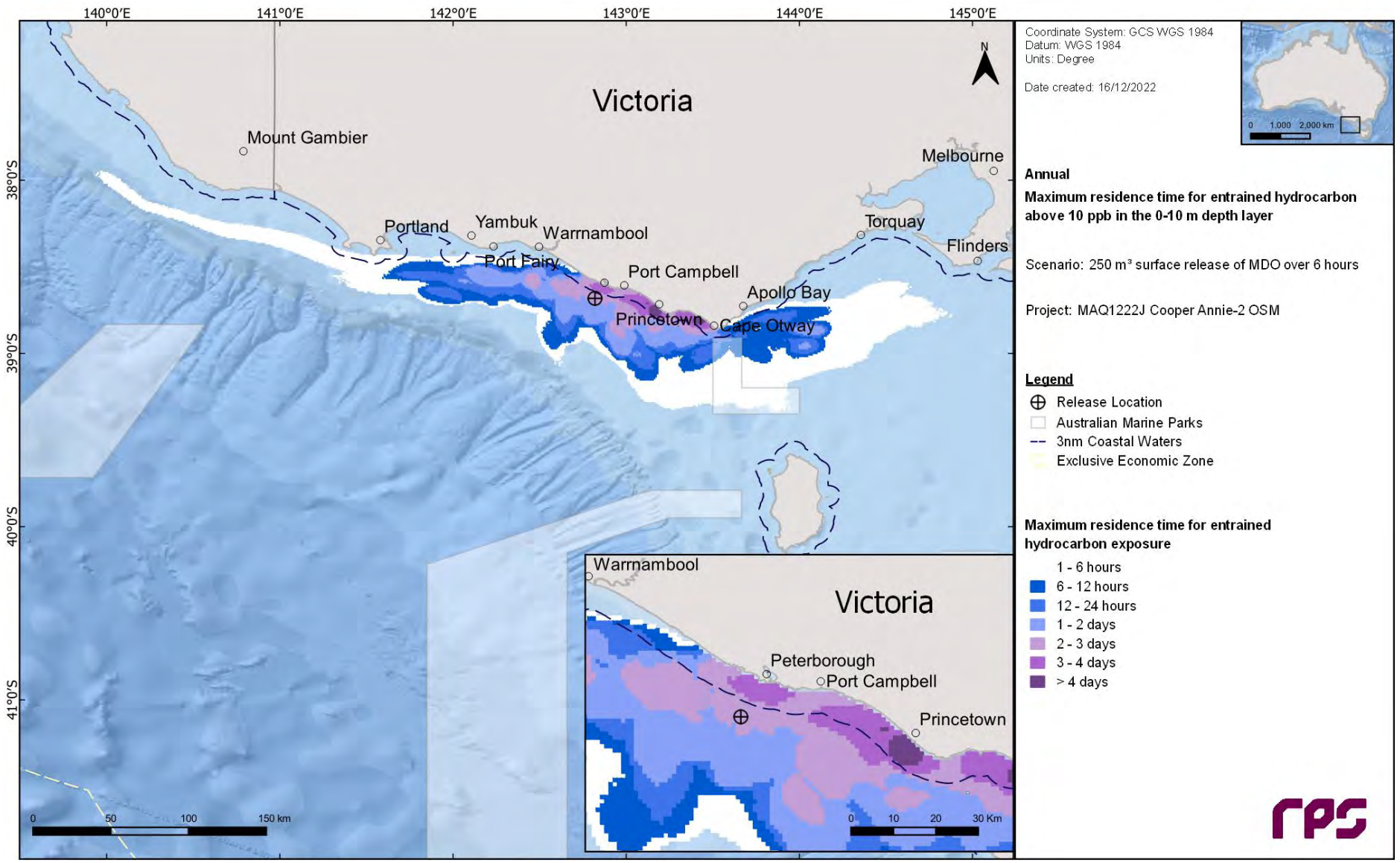

Figure 10.11 Maximum residence time for entrained hydrocarbon exposure above 10 ppb, at 0-10 m below the sea in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

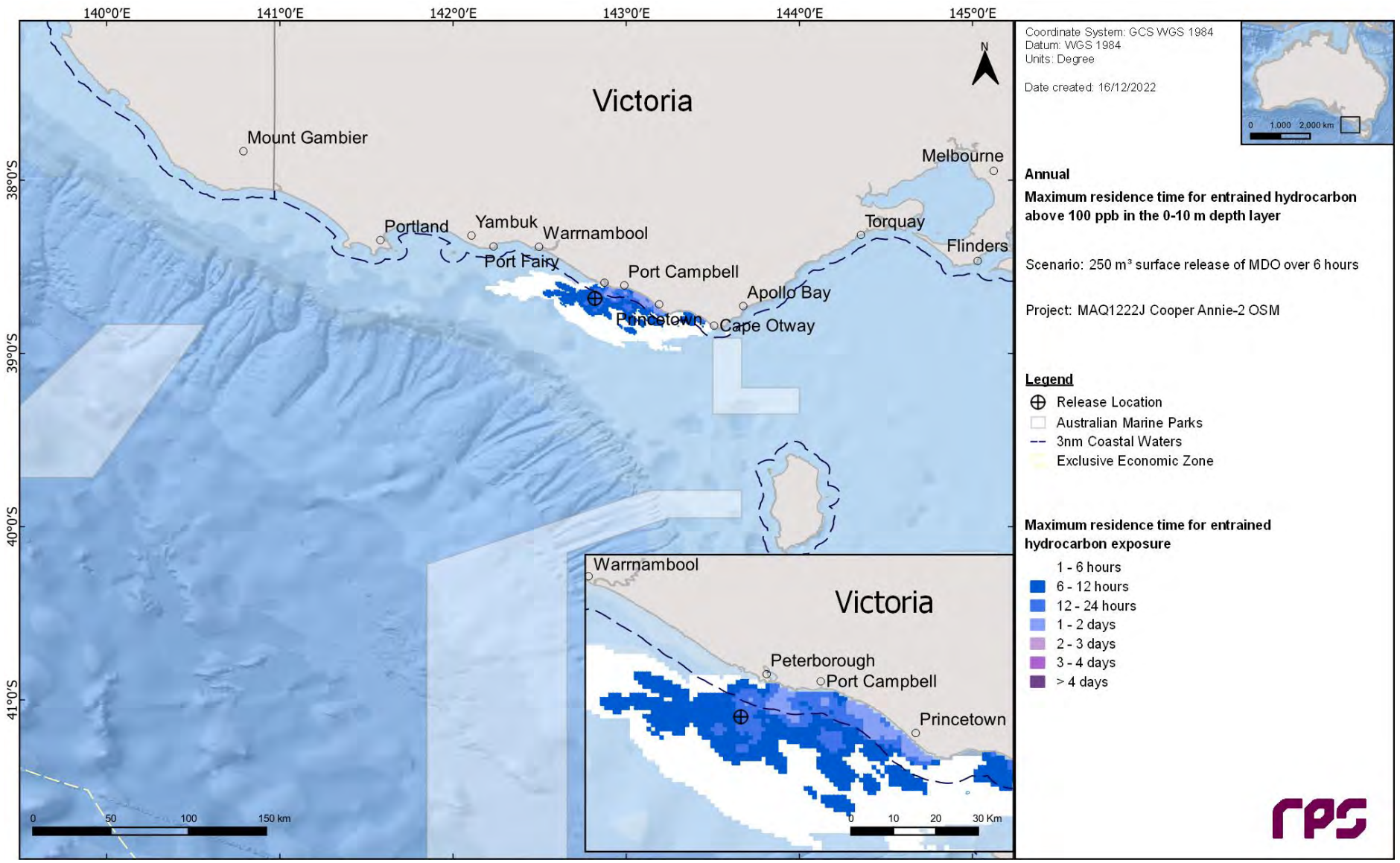

Figure 10.12 Maximum residence time for entrained hydrocarbon exposure above 100 ppb, at 0-10 m below the sea in the event of a 250 m³ of MDO containment loss over 6 hours tracked for 30 days. The results were calculated from 100 spill simulations.

10.2 Deterministic Analysis

The stochastic modelling results were assessed, and the “worst case” deterministic runs were identified and are presented below for the following criteria:

a. Largest swept area for surface oil above 10 g/m^2
b. Largest swept area for surface oil above 50 g/m^2
c. Largest (total) volume of oil ashore
d. Longest length of shoreline with oil accumulation above 100 g/m^2
e. Largest area of entrained hydrocarbon exposure above 100 ppb
f. Largest area of dissolved hydrocarbon exposure above 50 ppb

Table 10-10 presents a summary of sea surface and in-water exposure and shoreline accumulation at the assessed thresholds for the identified deterministic simulations.

Table 10-10 Summary of the worst-case deterministic analysis based on the scenario presented in the Stochastic Analysis Section.

Variable	Threshold	Deterministic Analysis Criteria					
		Largest swept area of floating oil >10 g/m²	Largest swept area of floating oil >50 g/m²	Largest volume of oil ashore	Longest length of shoreline with accumulation >100 g/m²	Largest area of entrained hydrocarbon exposure >100 ppb	Largest area of dissolved hydrocarbon exposure >50 ppb
Run Number		**91**	**20**	**50**	**50**	**36**	**39**
Total area of floating Oil exposure (km²)	1 g/m²	149	57	4	4	8	18
	10 g/m²	**29**	27	1	1	2	2
	50 g/m²	2	**5**	0	0	0	1
Total length of shoreline accumulation (km)	10 g/m²	0	14	24	24	0	0
	100 g/m²	0	1	11	**11**	0	0
	1,000 g/m²	0	0	0	0	0	0
Minimum time before accumulation on any shoreline (hours)	10 g/m²	-	55	45	45	-	-
	100 g/m²	-	185	59	59	-	-
	1,000 g/m²	-	-	0	0	-	-
Total volume of oil ashore (m³)		1	9	**43**	43	-	1
Total area of entrained hydrocarbon exposure (km²)	10 ppb	1,062	513	383	383	2,044	1,066
	100 ppb	83	236	165	165	**636**	215
Total area of dissolved hydrocarbon exposure (km²)	10 ppb	-	-	-	-	43	18
	50 ppb	-	-	-	-	-	**2**
	400 ppb	-	-	-	-	-	-
Start Date		21 July 2012	9 January 2017	11 May 2012	11 May 2012	28 June 2016	18 September 2016

NC = No contact at, or above the specified shoreline accumulation threshold.

10.2.1 Deterministic Case: Largest swept area of floating oil above 10 g/m^2

The deterministic trajectory that resulted in the largest swept area of floating oil above 10 g/m^2 was identified as run number 91, which started on 21st July 2012.

Figure 10.13 illustrates the floating oil exposure and shoreline accumulation over the 30-day simulation.

Figure 10.14 displays the time series of the area of sea surface exposure above the low (1 g/m^2), moderate (10 g/m^2) and high (50 g/m^2) thresholds over the 30-day simulation.

Figure 10.15 presents the fates and weathering graph for the corresponding single spill trajectory and Table 10.11 summarises the mass balance peaks and at the end of the simulation.

Table 10.11 Summary of the mass balance for the trajectory with the largest swept area of floating oil above 10 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 30
Surface (m^3)	168.6	0.3	0.0
Entrained (m^3)	124.4	2.8	41.1
Dissolved (m^3)	0.3	4.7	0.0
Evaporation (m^3)	123.8	29.7	123.8
Decay (m^3)	86.8	30.0	86.8
Ashore (m^3)	0.5	11.2	0.1

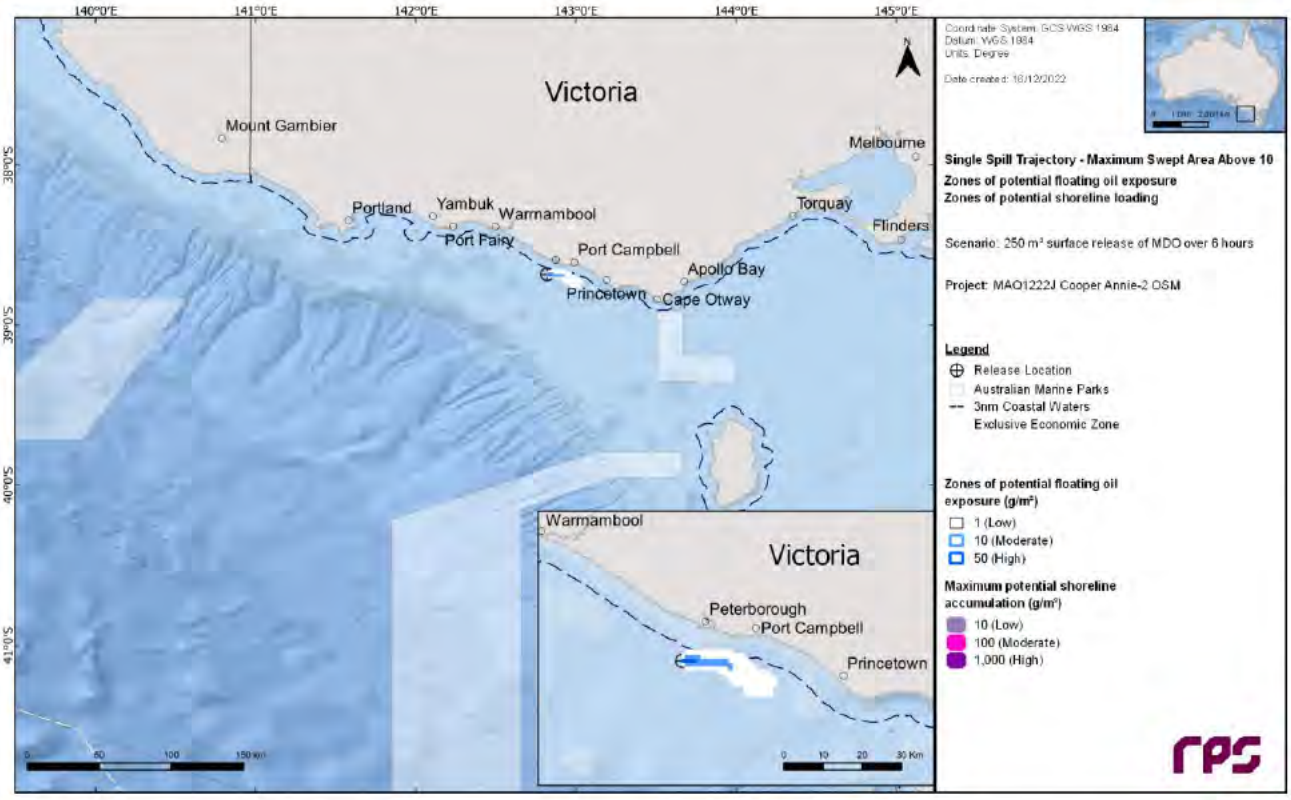

Figure 10.13 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest swept area of floating oil above 10 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

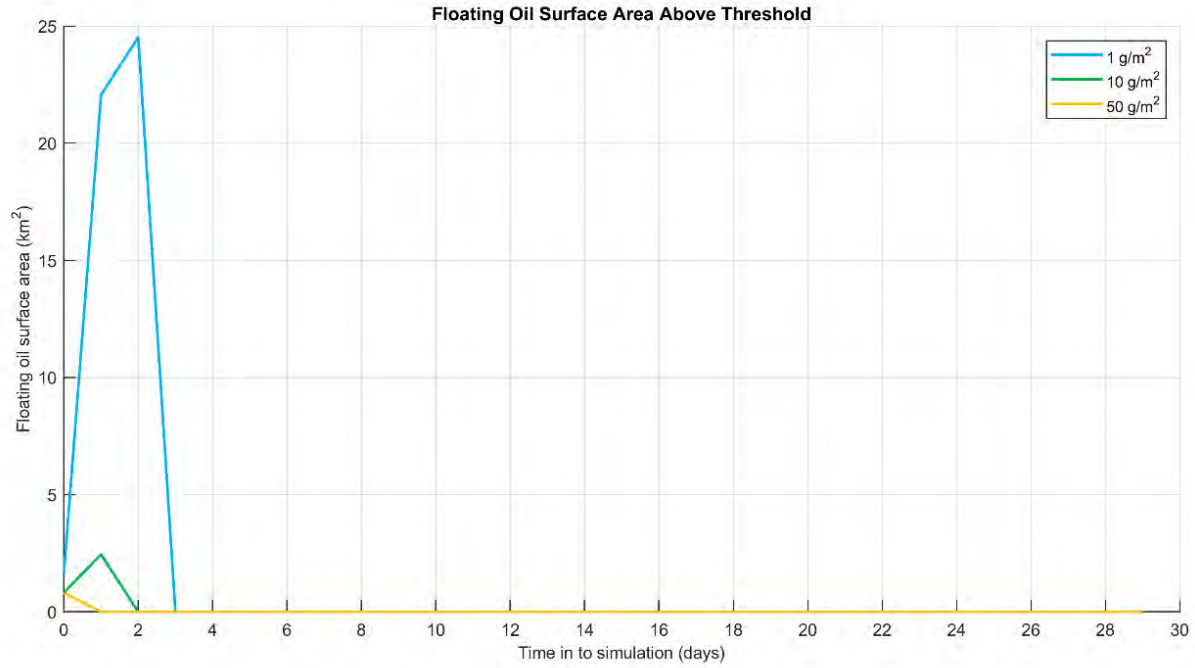

Figure 10.14 Time series of the sea surface exposure above each threshold for the trajectory with the largest swept area of floating oil above 10 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

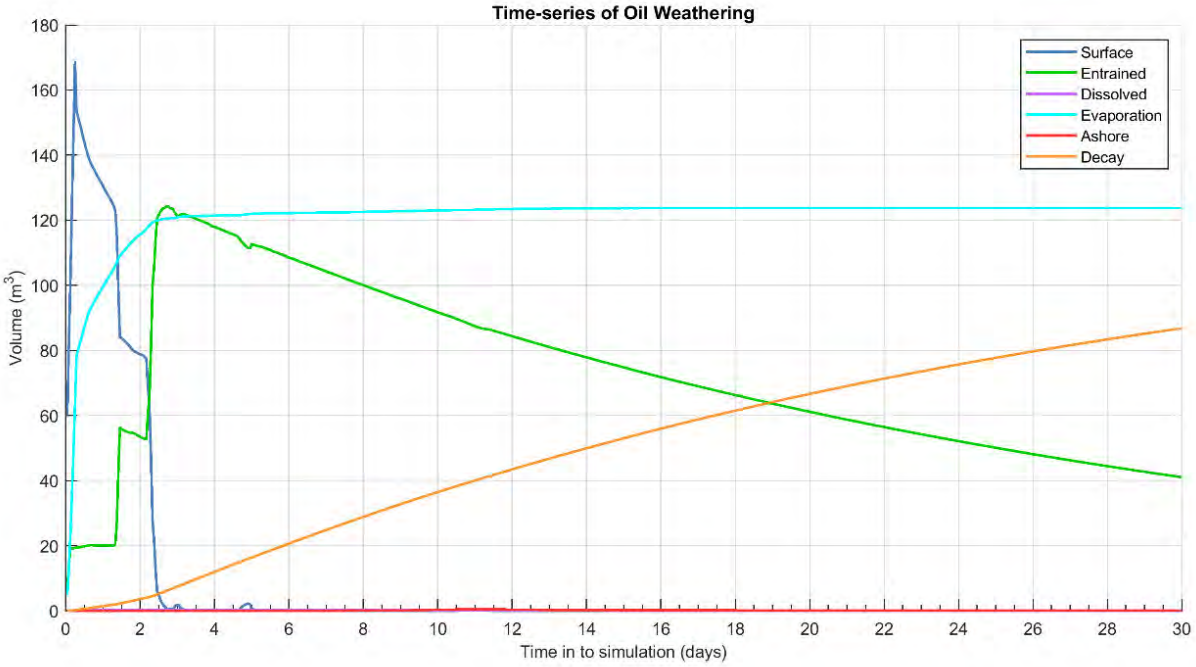

Figure 10.15 Predicted weathering and fates graph for the trajectory with the largest swept area of floating oil above 10 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

10.2.2 Deterministic Case: Largest swept area of floating oil above 50 g/m^2

The deterministic trajectory that resulted in the largest swept area of floating oil above 50 g/m^2 was identified as run number 20, which started on 9th January 2017.

Figure 10.13 illustrates the floating oil exposure and shoreline accumulation over the 30-day simulation.

Figure 10.14 displays the time series of the area of sea surface exposure above the low (1 g/m^2), moderate (10 g/m^2) and high (50 g/m^2) thresholds over the 30-day simulation.

Figure 10.15 presents the fates and weathering graph for the corresponding single spill trajectory and Table 10.11 summarises the mass balance peaks and at the end of the simulation.

Table 10.12 Summary of the mass balance for the trajectory with the largest swept area of floating oil above 50 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 30
Surface (m^3)	183	0	0
Entrained (m^3)	140	1	40
Dissolved (m^3)	0	5	0
Evaporation (m^3)	120	30	120
Decay (m^3)	88	30	88
Ashore (m^3)	7	8	3

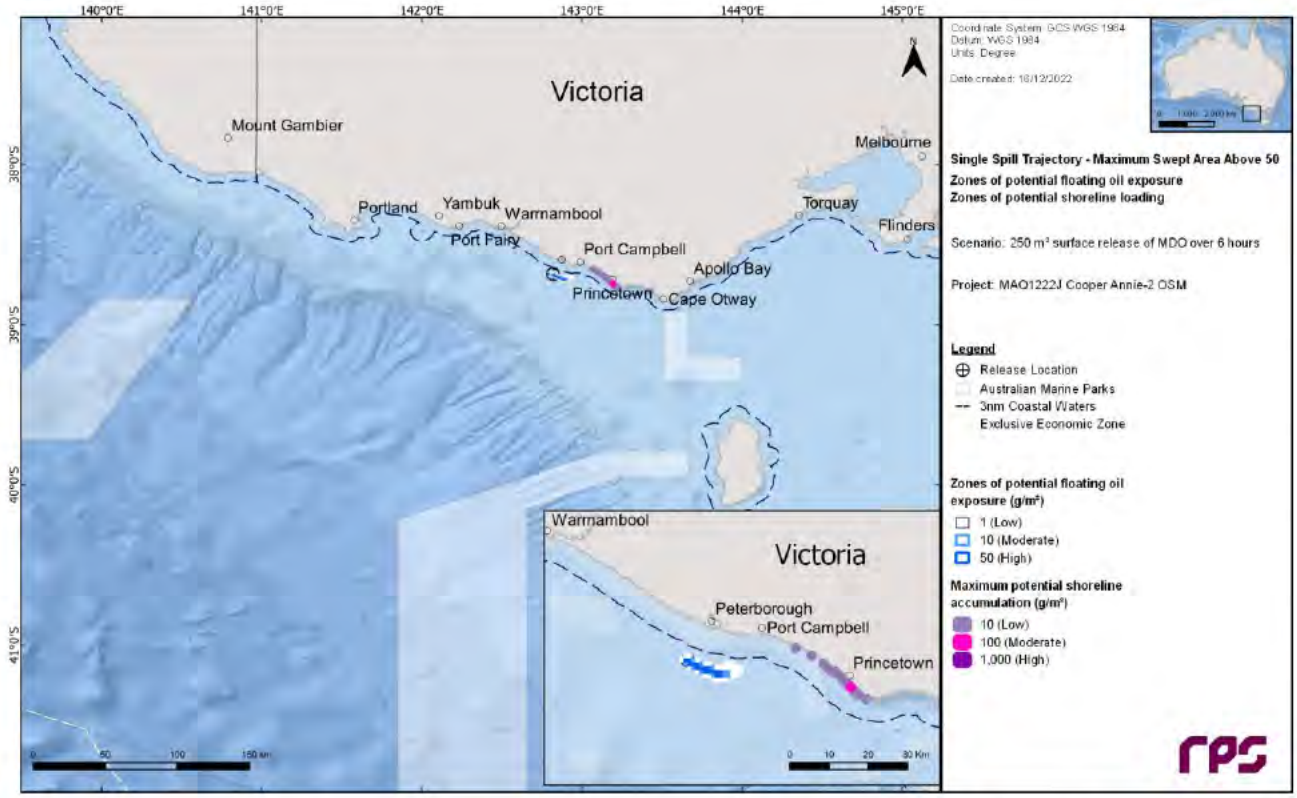

Figure 10.16 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest swept area of floating oil above 50 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

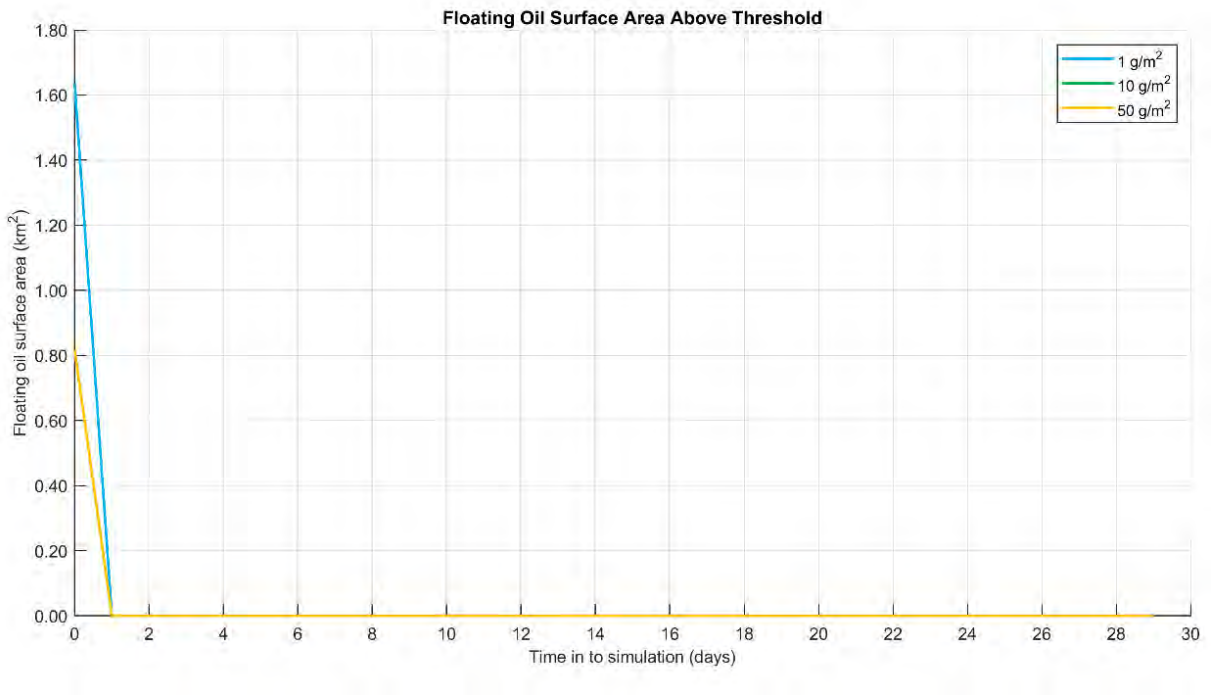

Figure 10.17 Time series of the sea surface exposure above each threshold for the trajectory with the largest swept area of floating oil above 50 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

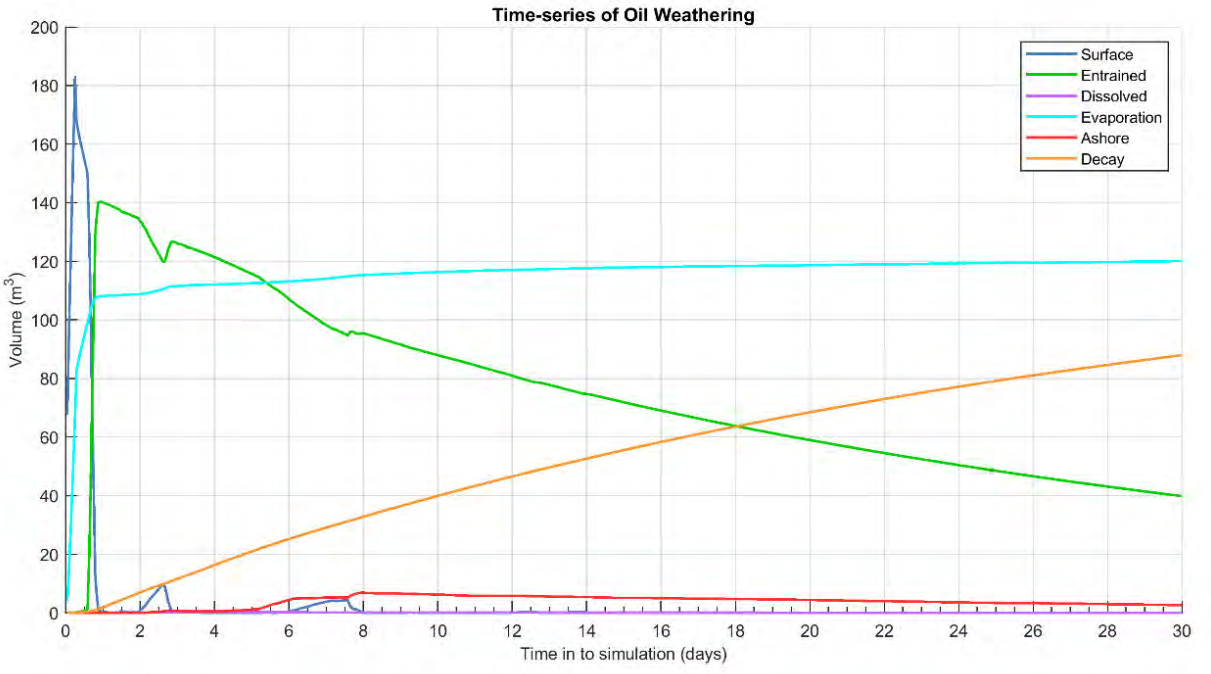

Figure 10.18 Predicted weathering and fates graph for the trajectory with the largest swept area of floating oil above 50 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

10.2.3 Deterministic Case: Largest volume of oil ashore and longest length of shoreline with accumulation above 100 g/m^2

The deterministic trajectory that resulted in the largest volume ashore and longest length of shoreline with accumulation above 100 g/m^2 was identified as run number 50, which started on 11th May 2012.

Figure 10.19 illustrates the floating oil exposure and shoreline accumulation over the 30-day simulation.

Figure 10.20 displays the time series of the length of shoreline with accumulation at the low (10 g/m^2), moderate (100 g/m^2) and high (1,000 g/m^2) thresholds over the 30-day simulation.

Figure 10.22 presents the fates and weathering graph for the corresponding single spill trajectory and Table 10.13 summarises the mass balance peaks and at the end of the simulation.

Table 10.13 Summary of the mass balance for the trajectory with the largest volume ashore and longest length of shoreline with accumulation above 100 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 30
Surface (m^3)	39	0	0
Entrained (m^3)	193	0	36
Dissolved (m^3)	0	2	0
Evaporation (m^3)	92	30	92
Decay (m^3)	96	30	96
Ashore (m^3)	37	9	28

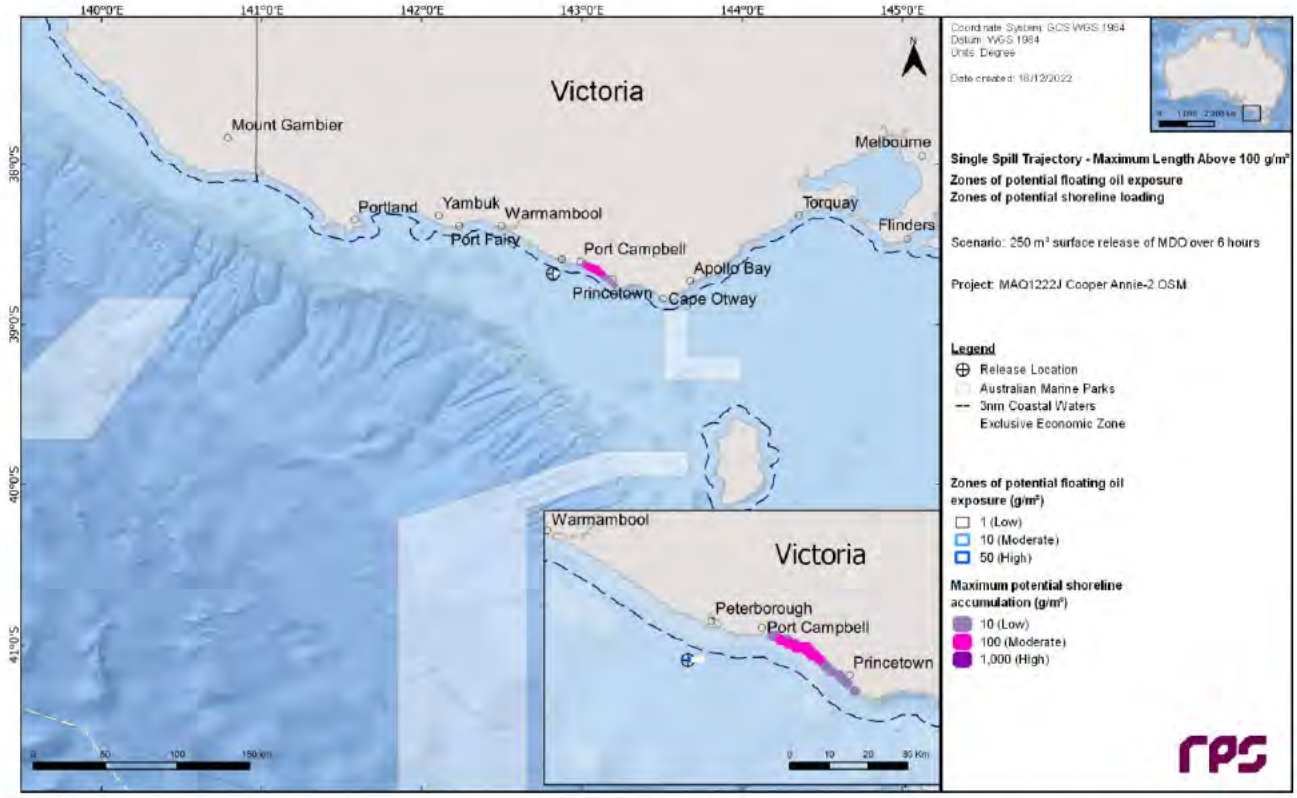

Figure 10.19 Zones of potential floating oil exposure and shoreline accumulation, for the trajectory with the largest volume ashore and longest length of shoreline with accumulation above 100 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

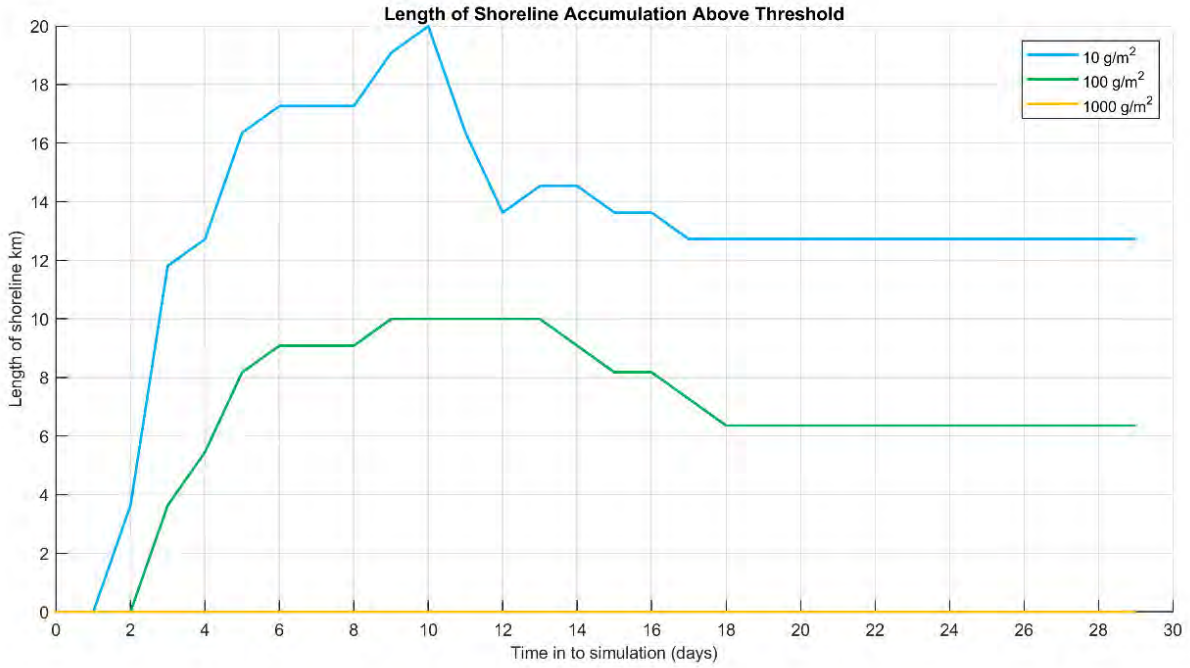

Figure 10.20 Time series of the length of shoreline with accumulation above each threshold for the trajectory with the largest volume ashore and longest length of shoreline with accumulation above 100 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

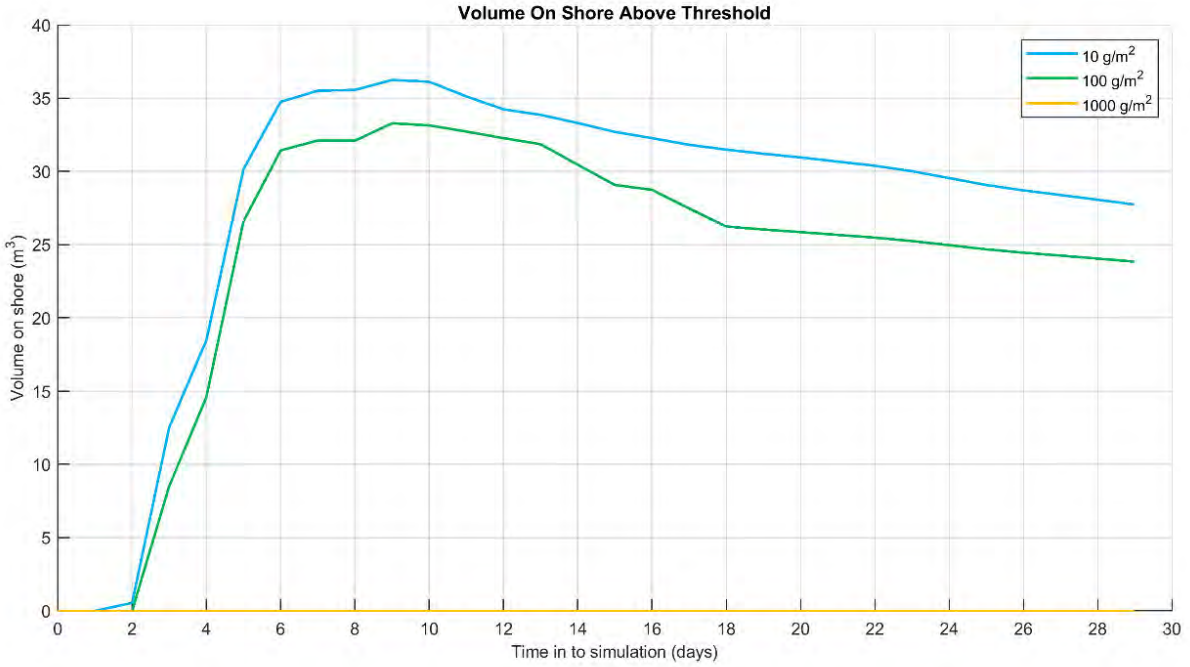

Figure 10.21 Time series of oil accumulation on the shoreline above each threshold for the trajectory with the largest volume ashore and longest length of shoreline with accumulation above 100 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

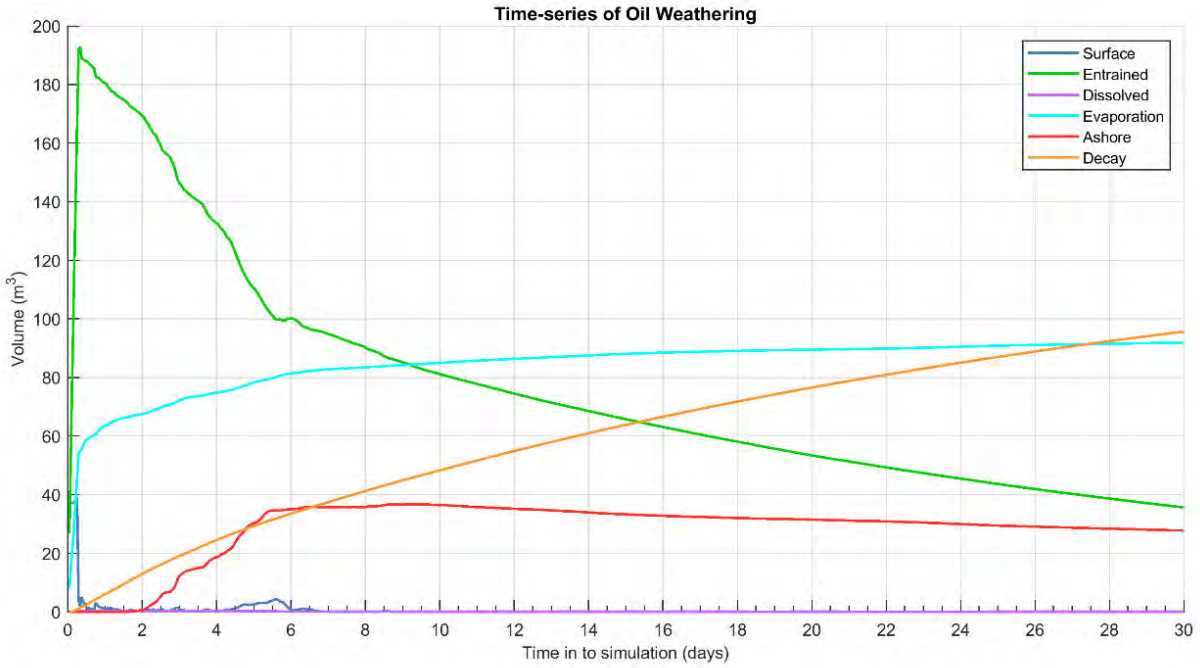

Figure 10.22 Predicted weathering and fates graph for the trajectory with the largest volume ashore and longest length of shoreline with accumulation above 100 g/m^2. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

10.2.4 Deterministic Case: Largest area of entrained hydrocarbon exposure above 100 ppb

The deterministic trajectory that resulted in the largest area of entrained hydrocarbon exposure above 100 ppb was identified as run number 36, which started on 28th June 2016.

Figure 10.23 illustrates the floating oil exposure and shoreline accumulation over the 30-day simulation.

Figure 10.24 displays the time series of the area of entrained hydrocarbon exposure at the low (10 ppb) and high (100 ppb) thresholds over the 30-day simulation.

Figure 10.25 presents the fates and weathering graph for the corresponding single spill trajectory and Table 10.14 summarises the mass balance peaks and at the end of the simulation.

Table 10.14 Summary of the mass balance for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 30
Surface (m^3)	59	0	0
Entrained (m^3)	209	0	52
Dissolved (m^3)	2	0	0
Evaporation (m^3)	65	30	65
Decay (m^3)	134	30	134
Ashore (m^3)	0	5	0

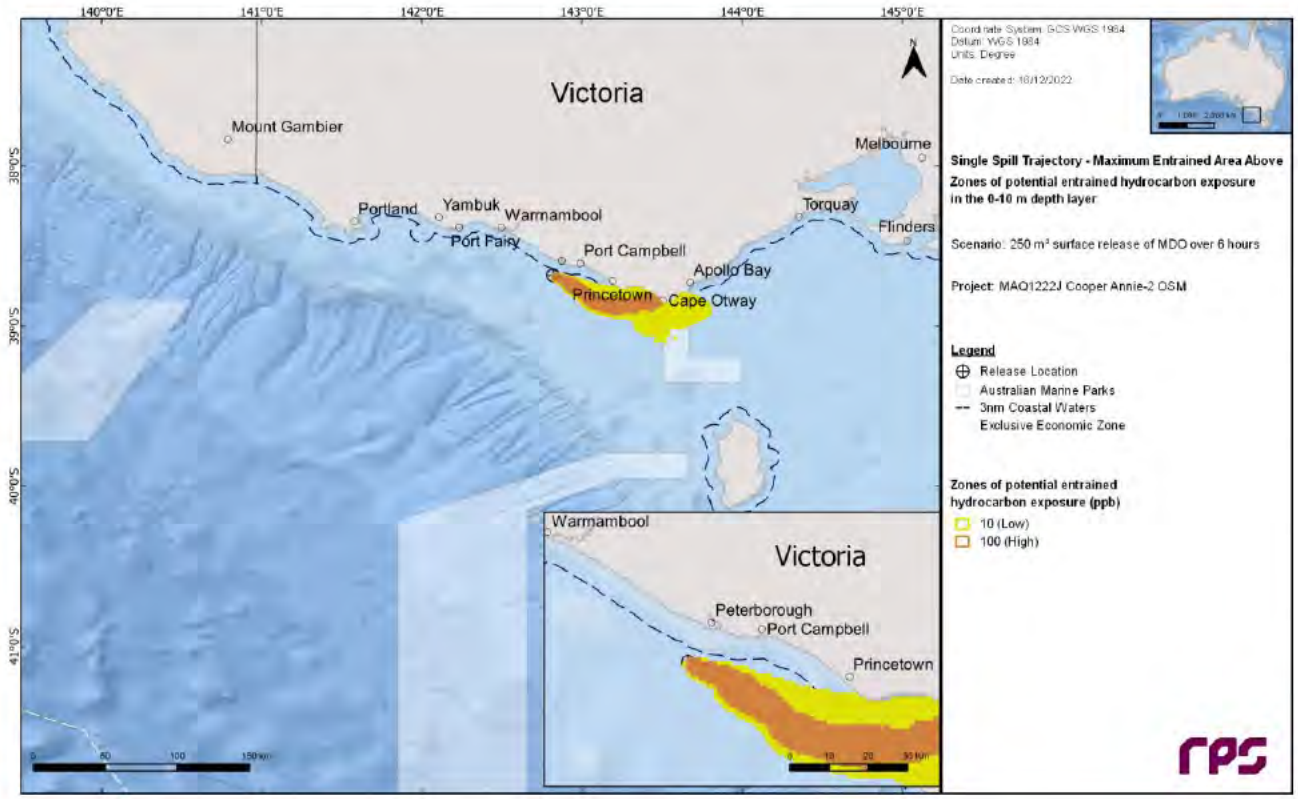

Figure 10.23 Zones of potential entrained hydrocarbon exposure, for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

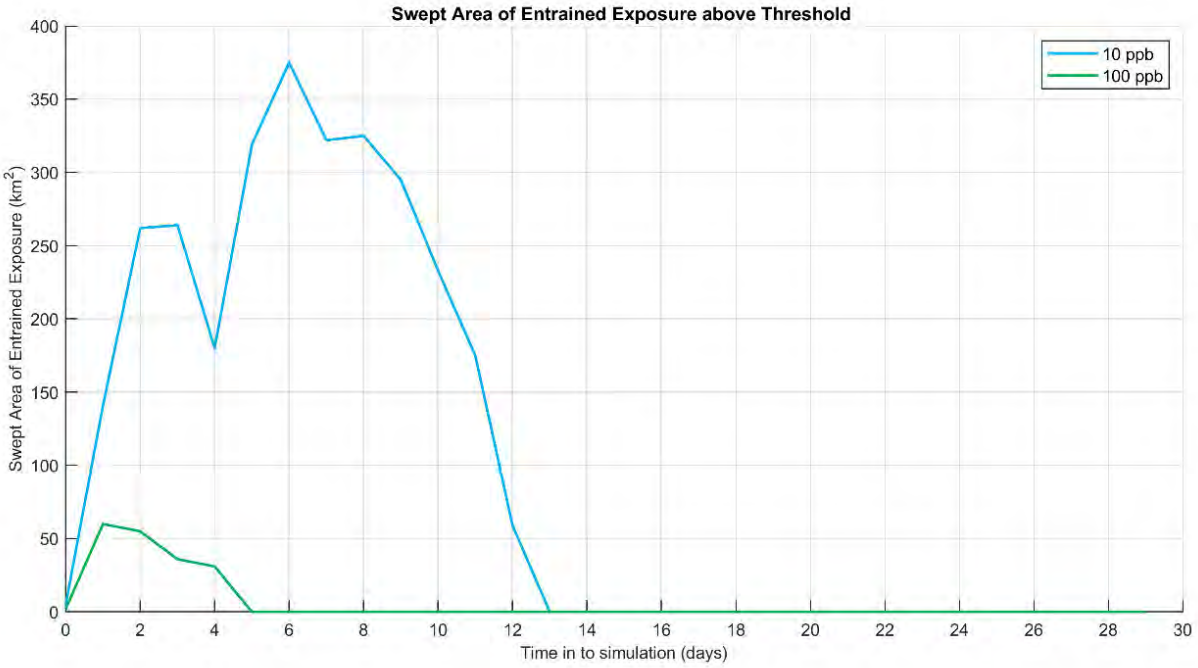

Figure 10.24 Time series of the entrained hydrocarbon exposure area above each threshold for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

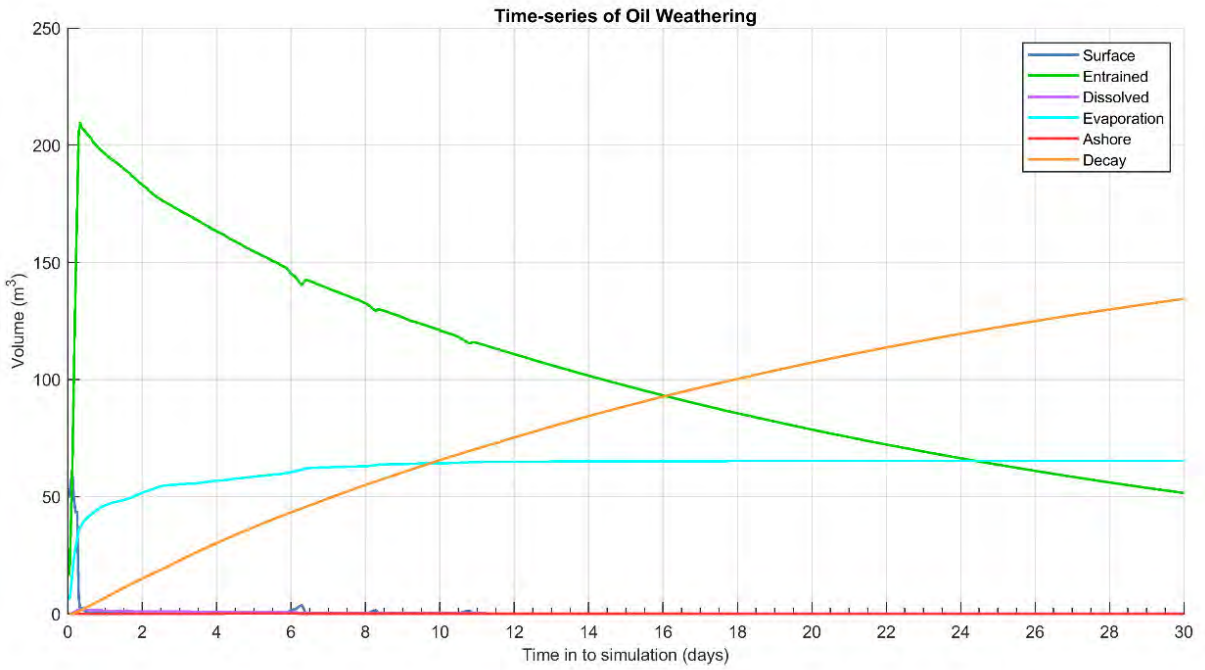

Figure 10.25 Predicted weathering and fates graph for the trajectory with the largest area of entrained hydrocarbon exposure above 100 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

10.2.5 Deterministic Case: Largest area of dissolved hydrocarbon exposure above 50 ppb

The deterministic trajectory that resulted in the largest area of dissolved hydrocarbon exposure above 50 ppb was identified as run number 39, which started on 18th September 2016.

Figure 10.26 illustrates the floating oil exposure and shoreline accumulation over the 30-day simulation.

Figure 10.27 displays the time series of the area of dissolved hydrocarbon exposure at the low (10 ppb), moderate (50 ppb) and high (400 ppb) thresholds over the 30-day simulation.

Figure 10.28 presents the fates and weathering graph for the corresponding single spill trajectory and Table 10.15 summarises the mass balance peaks and at the end of the simulation.

Table 10.15 Summary of the mass balance for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours.

Exposure Metrics	Peak Volume	Day of occurrence	Volume at day 30
Surface (m^3)	61	0	0
Entrained (m^3)	210	0	49
Dissolved (m^3)	2	0	0
Evaporation (m^3)	83	30	83
Decay (m^3)	120	30	120
Ashore (m^3)	0	10	0

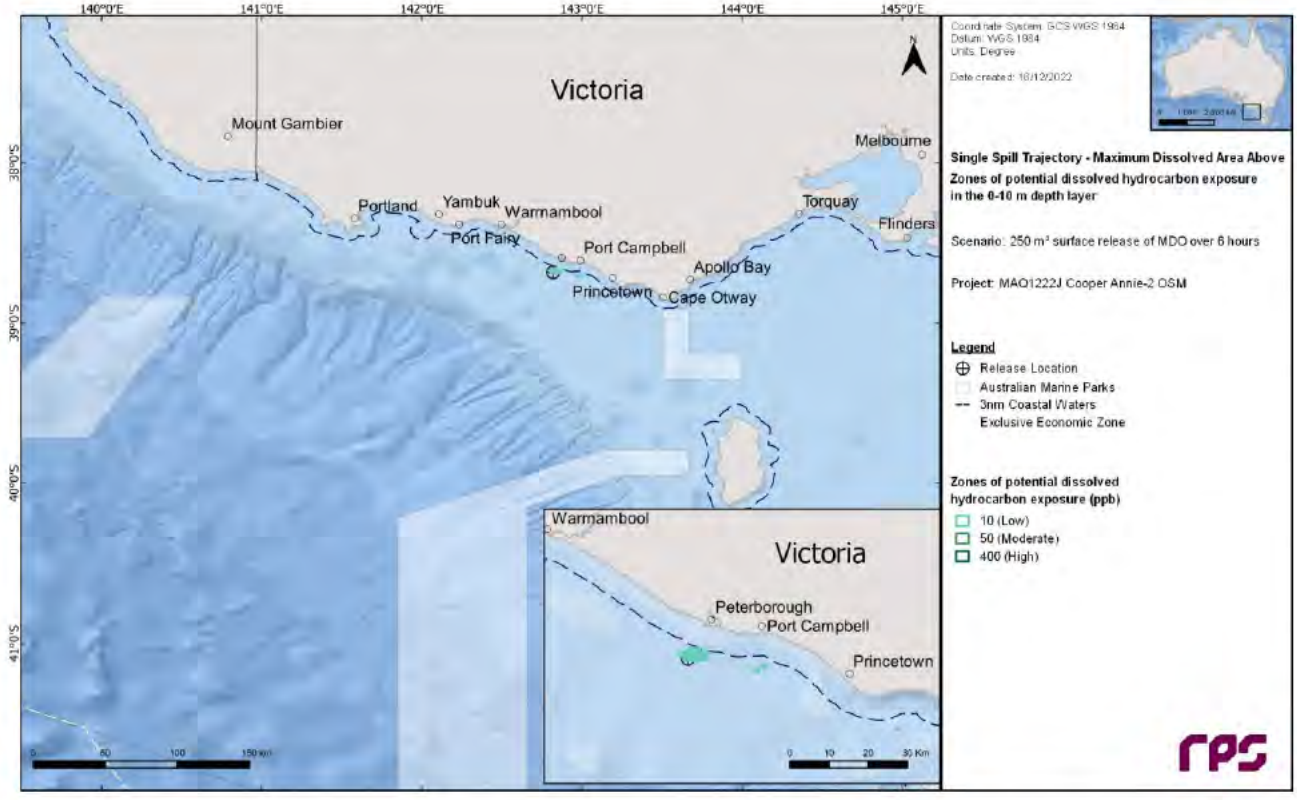

Figure 10.26 Zones of potential dissolved hydrocarbon exposure, for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

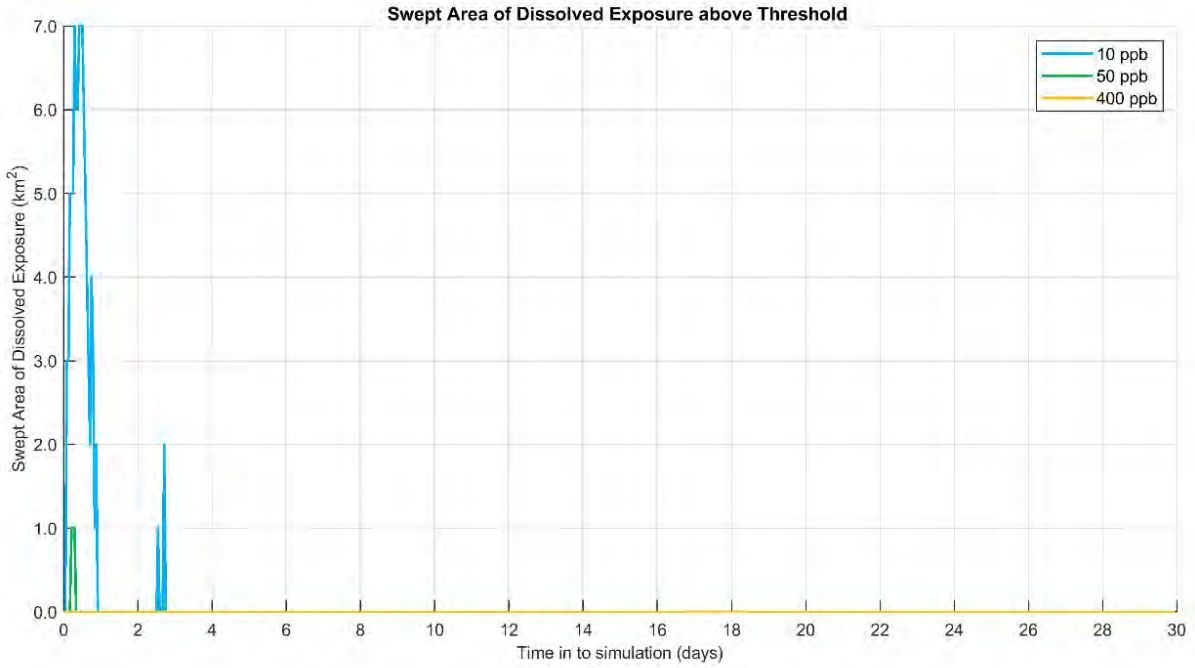

Figure 10.27 Time series of the dissolved hydrocarbon exposure area above each threshold for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

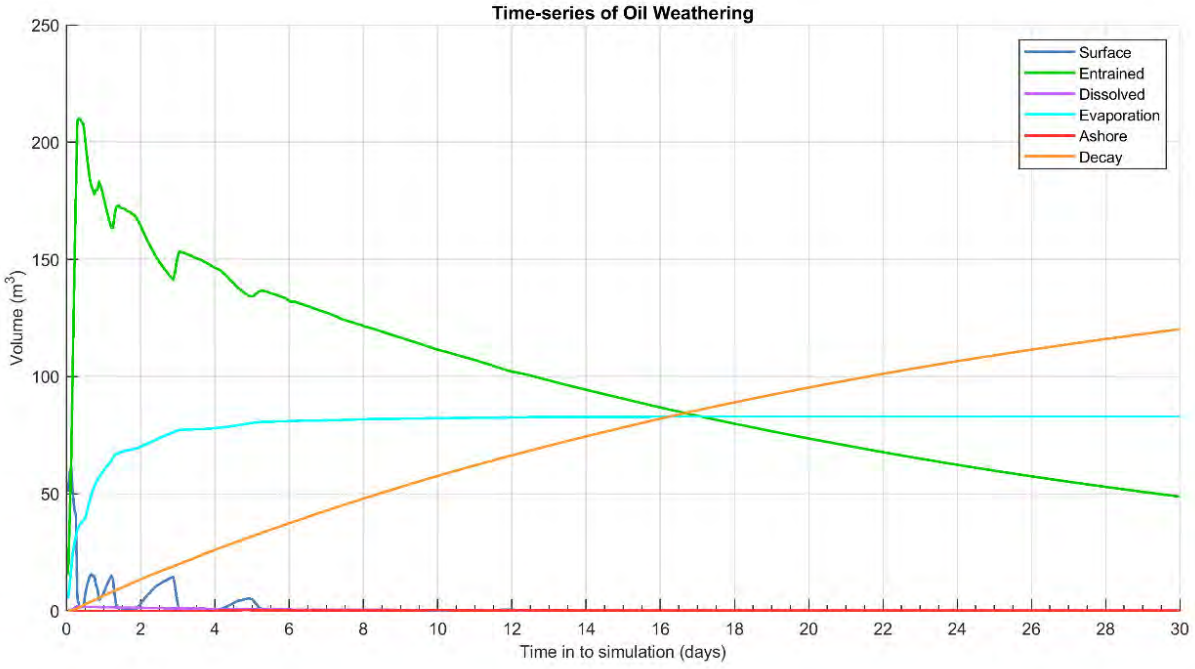

Figure 10.28 Predicted weathering and fates graph for the trajectory with the largest area of dissolved hydrocarbon exposure above 50 ppb. Results are based on a 250 m^3 surface release of MDO over 6 hours, tracked for 30 days.

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Appendix 7 - Subsea Noise Modelling

Amplitude Energy Otway Subsea Noise Modelling

Acoustic Modelling for Assessing Marine Fauna Sound Exposures

JASCO Applied Sciences (Australia) Pty Ltd

27 May 2025

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Executive Summary

JASCO Applied Sciences (JASCO) performed a modelling study of underwater sound levels associated with Amplitude Energy's Otway current and potential future offshore activities.

The modelling study considers the activities associated with drilling and vessel operations. These operations include a Mobile Offshore Drilling Unit (MODU) under dynamic positioning (DP), an anchored MODU conducting drilling operations, and an associated Anchor Handling Tug and Supply Vessel (AHTS), conducting re-supply of the MODU under DP, and standing by near the MODU, as well as pre-lay, pipelaying and dive support scenarios. This study considered scenarios to represent operations, which could occur within Amplitude Energy's Title holdings. The representative modelled scenarios are located at the Annie-2 and Elanora-1 locations along with pipelay between Annie-2 and Casino-5. A concurrent operations scenario was also considered involving simultaneous drilling activities at Elanora-1 and pipelay operations between Annie-2 and Casino-5.

The study assessed distances from operations to where underwater sound levels reached thresholds corresponding to various levels of potential impact to marine fauna. The animals considered here included marine mammals, turtles, and fish. Due to the variety of species considered, there are several different thresholds for evaluating effects, including: mortality, injury, temporary reduction in hearing sensitivity, and behavioural disturbance.

The modelling methodology considered scenario specific source levels and range-dependent environmental properties. Estimated underwater acoustic levels for non-impulsive (continuous) noise sources presented as sound pressure levels (SPL, L_p), and as accumulated sound exposure levels (SEL, L_E) as appropriate for different noise effect criteria. In this report, the duration of the SEL accumulation is defined as integrated over an 8- or 24-hour period.

The SPL metric is the root-mean-square pressure level over a stated frequency band over a specified time window. In this study, for continuous noise, a time window of 1 s was used. An animal travelling within the threshold can be exposed to a sound level could be exposed to behavioural disturbance. The SEL_{24h} is a cumulative metric that reflects the dosimetric impact of noise levels within 24 hours based on the assumption that an animal is consistently exposed to such noise levels at a fixed position. The corresponding SEL_{24h} radii represent an unlikely worst-case scenario. More realistically, marine mammals (as well as fish and turtles) would not stay in the same location for 24 hours. Therefore, a reported radius for SEL_{24h} criteria does not mean that marine fauna travelling within this radius of the source will be injured, but rather that an animal could be exposed to the sound level associated with impairment if it remained in that location for 24 hours.

Maps are provided in the report to assist with contextualising tabulated distances. The key results of this modelling study are summarised in Tables 1 and 6.

Marine mammals:

The maximum distances to the (NOAA) (2024) marine mammal behavioural response criterion of 120 dB re 1 µPa (SPL) are presented in Table 1. The results for the criteria from NMFS (2024) for marine mammal Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) for MODU and vessel operations are assessed at in-field, the maximum distances and total ensonified areas are presented in Table 2. PTS is a form of auditory injury as it is referred to in NMFS (2024) (using the acronym AUD INJ), however in this report for consistency with previous work the term PTS is used.

Table 1. Maximum (R_{max}) and 95% ($R_{95\%}$) horizontal distances (in km) to the marine mammal behavioural response criterion of 120 dB re 1 µPa (SPL) from the most appropriate location for considered sources per scenario. MODU: Mobile Offshore Drilling Unit, OSV: Offshore Supply Vessel

Location	Operation	Description	R_{max} (km)	$R_{95\%}$ (km)
Annie-2	Drilling Prelays	1x anchor handler within 2km of location DP/slow transit	0.44	0.41
	Mooring	Moored MODU idle (no noise) 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	7.87	7.32
	MODU Drilling	Anchored MODU Drilling	1.10	1.02
	MODU Drilling + OSV Under Standby	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust)	1.13	1.03
	MODU Drilling Operations with Standby OSV and resupply	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust) 1x anchor Handler at rig doing resupply	7.46	7.11
	MODU on DP	MODU on DP	5.36	4.83
	Mooring with MODU on DP	MODU on DP 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	8.02	7.46
Elanora-1	Drilling Prelays	1x anchor handler within 2km of location DP/slow transit	0.75	0.72
	Mooring	Moored Semi Sub idle (no noise) 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	21.7	18.8
	MODU Drilling	Anchored MODU Drilling	1.89	1.79
	MODU Drilling + OSV Under Standby	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust)	2.91	2.58
	MODU Drilling Operations with Standby OSV and resupply	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust) 1x anchor Handler at rig doing resupply	21.7	18.7
	MODU on DP	MODU on DP	12.0	11.3
	Mooring with MODU on DP	MODU on DP 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	24.8	21.7
Between Annie-2 & Casino-5†	Pipeline/Umbilical installation (ISV) Annie EHU	Laying Pipes and umbilicals - 600m/hour	5.97	5.41
Annie-2	Installation (DSV)	DSV + HRV (no noise) stationary on location	2.56	2.30
Between Annie-2 & Casino-5, with Elanora-1†	MODU Drilling Operations, Standby OSV, OSV resupply and Pipeline/Umbilical installation (ISV) Annie EHU	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust) 1x anchor Handler at rig doing resupply Laying Pipes and umbilicals - 600m/hour	30.7	28.2

† These scenarios consider several source locations, the presented distances in the summary table are the largest. Results in Section 4.1 provide additional detail.

Table 2. Summary: Maximum (R_{max}) horizontal distances (in km) and ensonified area (km^2) for the frequency-weighted LF-cetacean SEL_{24h} TTS threshold of 177 dB re 1 µPa^2·s from the most appropriate location for the considered scenario. MODU: Mobile Offshore Drilling Unit, OSV: Offshore Supply Vessel

Location	Operation	Description	R_{max} (km)	Area (km^2)
Annie-2	Drilling Prelays	1x anchor handler within 2km of location DP/slow transit	–	–
	Mooring	Moored Semi Sub idle (no noise) 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	3.60	28.2
	MODU Drilling	Anchored MODU Drilling	0.48	0.66
	MODU Drilling + OSV Under Standby	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust)	0.48	0.66
	MODU Drilling Operations with Standby OSV and resupply	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust) 1x anchor Handler at rig doing resupply	2.16	7.61
	MODU on DP	MODU on DP	1.73	8.50
	Mooring with MODU on DP	MODU on DP 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	3.88	39.7
Elanora-1	Drilling Prelays	1x anchor handler within 2km of location DP/slow transit	–	–
	Mooring	Moored Semi Sub idle (no noise) 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	7.54	131
	MODU Drilling	Anchored MODU Drilling	0.59	0.99
	MODU Drilling + OSV Under Standby	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust)	0.63	1.00
	MODU Drilling Operations with Standby OSV and resupply	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust) 1x anchor Handler at rig doing resupply	3.84	37.6
	MODU on DP	MODU on DP	2.85	23.9
	Mooring with MODU on DP	MODU on DP 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	7.92	176
Between Annie-2 & Casino-5	Installation (ISV) Annie EHU	Laying Pipes and umbilicals - 600m/hour	0.63	11.5
Annie-2	Installation (DSV)	DSV + HRV (no noise) stationary on location	0.94	2.53
Between Annie-2 & Casino-5, with Elanora-1†	MODU Drilling Operations, Standby OSV, OSV resupply and Pipeline/Umbilical installation (ISV) Annie EHU†	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (not DP, minimal thrust) 1x anchor Handler at rig doing resupply Laying Pipes and umbilicals - 600m/hour	7.50	148

† This scenario is a combination of Scenario 5 at Elanora-1 and Scenario 6 to represent concurrent operations.

Sea Turtles:

The threshold criteria from Accomando et al. (2025) was used to assess PTS and TTS for sea turtles. Similar to marine mammals, PTS is a form of auditory injury as it is referred to in Accomando et al. (2025) (using the acronym AINJ), however in this report for consistency with previous work the term PTS is used. Across all scenarios the maximum distance to threshold for Annie and Elanora is shown in Table 3.

Table 3. Summary, SEL_{24h}: Maximum (R_{max}) horizontal distances (in km) to sound pressure level (SPL) criteria (Accomando et al. 2025) from most appropriate location for considered sources per scenario.

Location	Maximum (R_{max}) distance to threshold (km)	
	TTS	PTS
Annie-2	2.26	0.50
Elanora-1	4.45	0.49

Fish:

Sound produced by the MODU and/or vessel operations reach the sound levels associated with physiological effects, recoverable injury, and TTS for some fish species in close proximity to the sound sources (Table 4), but in order for the thresholds to be exceeded, the fish must remain at those distances for either 12 or 48 h.

Table 4. Summary: *SPL*: Maximum (R_{max}) horizontal distances (in km) to sound pressure level (SPL) criteria (Popper et al. 2014) from most appropriate location for considered sources per scenario.

Location	Maximum (R_{max}) distance to threshold (km)	
	TTS (12 h)	Recoverable injury (48 h)
Annie-2	0.13	0.03
Elanora-1	0.13	0.03

1. Introduction

JASCO Applied Sciences (JASCO) performed a modelling study of underwater acoustic noise levels associated with Amplitude Energy's Otway activities. The modelling study specifically predicted the distances from operations at which underwater sound levels reached noise effect thresholds and criteria. The corresponding marine mammal thresholds include levels associated with behavioural response, permanent threshold shift (PTS) and temporary threshold shift (TTS). The marine mammal functional hearing groups considered were low-, high-, very high-frequency cetaceans, and otariid seals. Estimated underwater acoustic levels are presented as sound pressure levels (SPL, L_p), and accumulated sound exposure levels (over 24 hours) (SEL_{24h}, $L_{E,24h}$), as appropriate for non-impulsive (continuous) noise sources.

This report is further structured as follows, the remainder of Section 1 provides details on the scenarios considered for modelling, Section 2 explains the metrics used to represent underwater acoustic fields and the effect criteria considered. Section 3 details the methodology for predicting the source levels and modelling the sound propagation, including the specifications of the considered sound sources and the environmental parameters. Section 4.1 presents the acoustic results as tabulated ranges to thresholds, Section 4.2 provides sound level contour maps. The acoustic modelling results are then discussed in Section 5.

1.1. Modelling Scenarios

Three well locations, Elanora-1, Annie-2, and Casino-5, were considered in this report to capture, and be representative of, the different geographic locations where activities may occur. Figure 1 displays an overview of the modelling area showing locations, the southern right whale BIA, the pygmy blue whale BIA, and the regional bathymetry. This study considered the following sound-producing activities:

- Drilling noise from an anchored Mobile Offshore Drilling Unit (MODU),
- Thruster noise from a MODU under dynamic positioning (DP),
- Vessel noise from an Anchor Handling Tug Supply (AHTS) on slow transit in prelay and hookup operations which was modelled as following a random track in a 2x2 km box centred around either Annie-2 or Elanora-1,
- Vessel noise from an Anchor Handling Tug Supply (AHTS) on slow transit in standby operation which was modelled as following a random track and was confined to a 2x4 km area approximately 2 km from either Annie-2 or Elanora-1,
- Vessel noise from an AHTS conducting resupply operations under DP,
- Vessel noise from an Infield Support Vessel (ISV) conducting pipelay operations following a track and making headway at a rate 600 m/hr,
- Vessel noise from a Dive Support Vessel (DSV) under DP and a Hyperbaric Rescue Vessel (HRV). . After reviewing the vessel specifications, the HRV was considered to be significantly quieter than the DSV such that noise from the DSV would dominate the sound field. Hence the HRV is listed here for completeness but was not modelled.
- Concurrent operations involving drilling activities at Elanora-1 and pipelay operations between Annie-2 and Casino-5.

These activities are typical and representative of operations that may be conducted within Amplitude Energy's Title areas. Table 5 and Table 6 outline the modelling locations and scenarios. The scenario

numbering in Table 6 refers to a unique activity, which may occur at a stated location. Hence results are presented with the scenario number together with a location as a unique identifier.

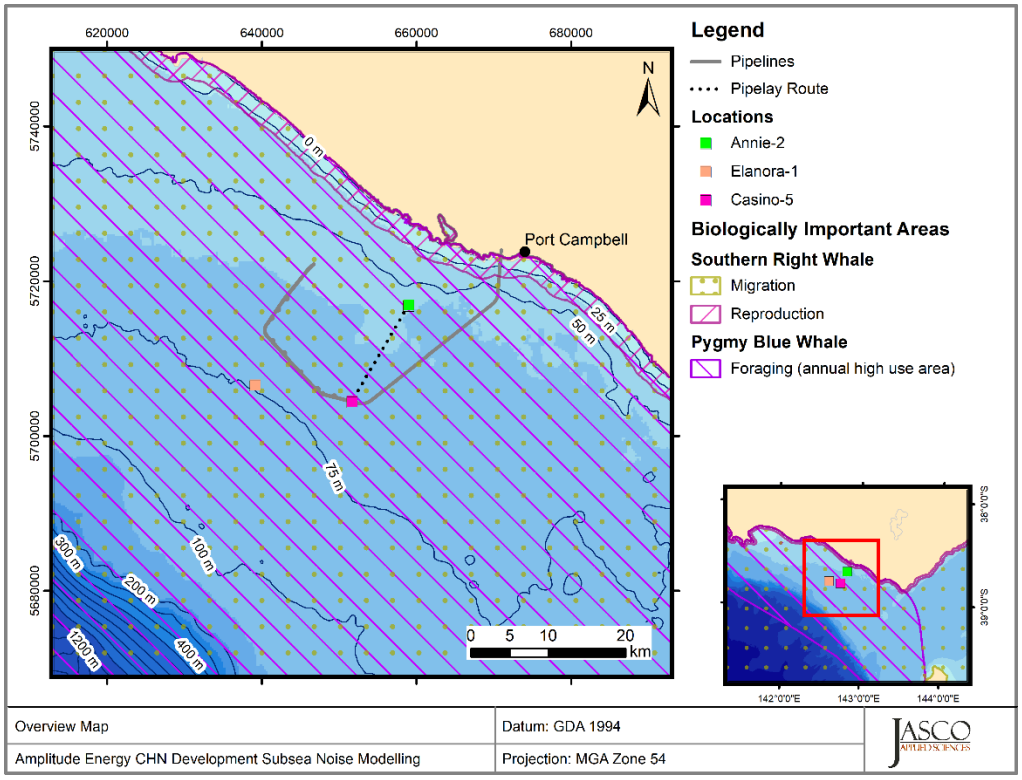

Figure 1. Overview map of the relevant features of the Amplitude Energy Otway Offshore Facilities.

Table 5. Modelled site locations and source information.

Site	Source/Vessel	Location	Latitude (°S)	Longitude (°E)	MGA[1] Zone 54		Water depth (m)
					X (m)	Y (m)	
1	AHTS (Transit)	Annie-2	38° 40' 57.62"	142° 48' 16.37"	656960	5716892	55.8
2	AHTS (DP)		38° 41' 12.43"	142° 49' 39.68"	658964	5716395	59.2
3	AHTS (Transit)		38° 40' 53.76"	142° 51' 01.78"	660959	5716931	61.8
4	MODU (Drilling)		38° 40' 56.22"	142° 49' 39.10"	658960	5716895	57.9
5	AHTS (Transit)		38° 40' 57.62"	142° 48' 16.37"	656960	5716892	55.8
6	AHTS (DP)		38° 40' 57.19"	142° 49' 39.15"	658961	5716865	58.0
7	AHTS (Transit)	Elanora-1	38° 46' 43.61"	142° 34' 41.43"	637085	5706589	77.0
8	AHTS (DP)		38° 46' 58.70"	142° 36' 04.82"	639089	5706089	75.7
9	AHTS (Transit)		38° 46' 40.93"	142° 37' 27.11"	641085	5706602	74.0
10	MODU (Drilling)		38° 46' 42.49"	142° 36' 04.28"	639085	5706589	75.0
11	AHTS (Transit)		38° 46' 43.61"	142° 34' 41.43"	637085	5706589	77.0
12	AHTS (DP)		38° 46' 43.46"	142° 36' 04.29"	639085	5706559	75.0
13	ISV (Pipelay)	Between Annie-2 & Casino-5	38° 44' 19.97"	142° 47' 12.03"	655284	5710684	61.0
14	ISV (Pipelay)	Annie-2	38° 40' 56.22"	142° 49' 39.10"	658960	5716895	57.9
15	ISV (Pipelay)	Casino-5	38° 46' 42.49"	142° 36' 04.28"	639085	5706589	75.0
16	DSV (Standby)	Annie-2	38° 40' 56.22"	142° 49' 39.10"	658960	5716895	58.0
17	MODU (DP)	Annie-2	38° 40' 56.22"	142° 49' 39.10"	658960	5716895	57.9
18	MODU (DP)	Elanora-1	38° 46' 42.49"	142° 36' 04.28"	639085	5706589	75.0

[1] Map Grid of Australia (MGA)

Table 6. Description of modelled scenarios.

Scenario	Site(s)	Location	Operation Name	Operation Description	Operation Time	Vessel(s)
1	1	Annie-2	Drilling Prelays	1x anchor handler within 2km of location DP/slow transit	24h	Anchor Handler
	7	Elanora-1			24h	Anchor Handler
2	1,2,3	Annie-2	Mooring	Moored Semi Sub idle (no noise) 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	24h	Ocean Onyx Anchor Handler x3
	7,8,9	Elanora-1			24h	Ocean Onyx Anchor Handler x3
3	4	Annie-2	MODU Drilling	Anchored MODU Drilling	24h	Ocean Onyx
	10	Elanora-1	MODU Drilling	Anchored MODU Drilling	24h	Ocean Onyx
4	4,5	Annie-2	MODU Drilling + OSV Under Standby	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (under minimal thrust)	24h	Ocean Onyx Anchor Handler
	10,11	Elanora-1			24h	Ocean Onyx Anchor Handler
5	4,5,6	Annie-2	MODU Drilling Operations with Standby OSV and resupply	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (under minimal thrust) 1x anchor Handler at rig doing resupply (under DP)	MODU: 24hr OSV Standby: 24h OSV Resupply: 8h	Ocean Onyx Anchor Handler x2
	10,11,12	Elanora-1			MODU: 24hr OSV Standby: 24h OSV Resupply: 8h	Ocean Onyx Anchor Handler x2
6	13,14,15	Between Annie-2 & Casino-5	Pipeline/Umbilical installation (ISV) Annie EHU	Laying Pipes and umbilicals – 600 m/hr	24h	ISV
7	16	Annie-2	Installation (DSV + HRV)	DSV + HRV stationary on location	24h	DSV+HRV
8†	10,11,12, 13,14,15	Between Annie-2 & Casino-5, with Elanora-1	MODU Drilling Operations, Standby OSV, OSV resupply and Pipeline/Umbilical installation (ISV) Annie EHU†	Anchored MODU Drilling 1x Anchor Handler on standby within 2km (under minimal thrust) 1x anchor Handler at rig doing resupply (under DP) & Laying Pipes and umbilicals – 600 m/hr	MODU: 24hr OSV Standby: 24h OSV Resupply: 8h Pipelay: 24h	Ocean Onyx Anchor Handler x2 ISV
9	17	Annie-2	MODU on DP	MODU on DP	24h	Transocean Equinox
	18	Elanora-1				
10	1,2,3,17	Annie-2	Mooring with MODU on DP	MODU on DP 1x anchor handler on bridle 2x anchor handle within 2km of location (hooking up anchors)	24h	Transocean Equinox Anchor Handler x3
	7,8,9,18	Elanora-1				

† This scenario is a combination of Scenario 5 at Elanora-1 and Scenario 6 to represent concurrent operations.

2. Noise Effect Criteria

To assess the potential effects of a sound-producing activity, it is necessary to first establish exposure criteria (thresholds) for which sound levels may be expected to have an adverse effect on animals. Whether acoustic levels might injure or disturb marine fauna is an active research topic. Since 2007, several expert groups have developed SEL-based assessment approaches for evaluating auditory injury, with key works including Southall et al. (2007), Finneran and Jenkins (2012a), Popper et al. (2014), United States National Marine Fisheries Service (NMFS 2018), Southall et al. (2019), and NMFS (2024). The number of studies that investigate the level of behavioural disturbance to marine fauna by anthropogenic sound has also increased substantially.

Two sound level metrics, SPL and SEL, are commonly used to evaluate non-impulsive noise and its effects on marine life. In this report, the duration of the SEL accumulation is defined as integrated over a 24-hour period. Appropriate subscripts indicate any frequency weighting applied (see Appendix 0). The acoustic metrics in this report reflect the ANSI and ISO standards for acoustic terminology, ANSI S1.1 (S1.1-2013) and ISO 18405:2017 (2017).

The following thresholds and guidelines for this study were chosen because they represent the best available science:

- Frequency-weighted accumulated sound exposure levels (SEL; $L_{E,24h}$) from NMFS (2024) for the onset of temporary threshold shift (TTS) and permanent threshold shift (PTS) in marine mammals for non-impulsive sound sources. PTS is a form of auditory injury as it is referred to in NMFS (2024) (using acronym AUD INJ), however in this report for consistency with previous work the term PTS is used.
- Marine mammal behavioural threshold based on the current US National Oceanic and Atmospheric Administration (NOAA) (2024) criterion for marine mammals of 120 dB re 1 µPa (SPL; L_p) for non-impulsive sound sources.
- Sound exposure guidelines for fish, fish eggs, and larvae (Popper et al. 2014).
- Frequency-weighted accumulated sound exposure levels (SEL; $L_{E,24h}$) from (Accomando et al. 2025) for the onset of temporary threshold shift (TTS) and permanent threshold shift (PTS) (a form of auditory injury referred to as AINJ in Accomando et al. (2025)) in sea turtles.

Section 2.1, along with Appendices A.3 and A.4, expand on the relevant thresholds, guidelines, and sound levels applicable to marine mammals. Section 2.2 expands on the guidelines for fish and sea turtles.

2.1. Marine Mammals

The criteria applied in this study to assess possible effects of non-impulsive noise sources on marine mammals are summarised in Table 7. Cetaceans and otariids were identified as the marine mammals requiring assessment. As discussed within Accomando et al. (2025) and NMFS (2024), intense noise exposures can cause auditory injury (represented by either AUD INJ or AINJ) without PTS occurring. In this report, the terms PTS and auditory injury can be considered to be used interchangeably, however it is acknowledged that auditory injury may occur without PTS. Details on thresholds related to auditory threshold shifts or hearing loss and behavioural response are provided in Appendix A.3, with frequency weighting explained in detail in Appendix A.4.

Table 7. Criteria for effects of non-impulsive noise exposure, including vessel noise, for marine mammals: unweighted SPL and weighted SEL_{24h} thresholds.

Hearing group	NOAA (2024)	NMFS (2024)	
	Behaviour	TTS onset thresholds (received level)	PTS onset thresholds (received level)
	SPL (L_p; dB re 1 µPa)	Weighted SEL24h (LE,24h; dB re 1 µPa²·s)	Weighted SEL24h (LE,24h; dB re 1 µPa²·s)
Low-frequency (LF) cetaceans	120	177	197
High-frequency (HF) cetaceans		181	201
Very High-frequency (VHF) cetaceans		161	181
Otariid Seals		179	199

L_p denotes sound pressure level and has a reference value of 1 µPa.
L_E denotes cumulative sound exposure over a 24 h period and has a reference value of 1 µPa²·s.

2.1.1. Behavioural Response

The NOAA continuous noise criterion was selected for this assessment because it represents the most commonly applied behavioural response criterion by regulators. The distances at which behavioural responses could occur are therefore determined by areas ensonified above an unweighted SPL of 120 dB re 1 µPa (NOAA 2024). Appendix A.3 provides more information about the development of this criterion.

2.1.2. Injury and Hearing Sensitivity Changes

There are two categories of auditory threshold shifts or hearing loss: temporary threshold shift (TTS), a temporary reduction in an animal's hearing sensitivity as the result of receptor hair cells in the cochlea becoming fatigued; and permanent threshold shift (PTS), a physical injury to an animal's hearing organs.

To assist in assessing the potential for effect on marine mammals, this report applies the criteria recommended by NMFS (2024), considering both TTS and PTS (see Table 7). Appendix A.3 provides more information about the NMFS (2024) criteria.

2.2. Fish, Sea Turtles, Fish Eggs, and Fish Larvae

In 2006, the Working Group on the Effects of Sound on Fish and Turtles was formed to continue developing noise exposure criteria for fish and sea turtles based on work began by a NOAA panel two years earlier. The Working Group developed guidelines with specific thresholds for different levels of effects for several species groups (Popper et al. 2014). The guidelines define quantitative thresholds for three types of immediate effects:

- Mortality, including injury leading to death;
- Recoverable injury, including injuries unlikely to result in mortality, such as hair cell damage and minor haematoma;
- TTS.

Masking and behavioural effects can be assessed qualitatively, by assessing relative risk rather than by specific sound level thresholds. However, as these depend upon activity-based subjective ranges,

these effects are not addressed in this report, and are included in Table 8 for completeness only. Because the presence or absence of a swim bladder has a role in hearing, fish susceptibility to injury from noise exposure depends on the species and the presence and possible role of a swim bladder in hearing. Thus, different thresholds were proposed for fish without a swim bladder (also appropriate for sharks), fish with a swim bladder not used for hearing, and fish that use their swim bladders for hearing. Sea turtles, fish eggs, and fish larvae are considered separately.

Table 8 lists the relevant effects thresholds from Popper et al. (2014) for shipping and continuous noise. Some evidence suggests that fish sensitive to acoustic pressure show a recoverable loss in hearing sensitivity, or injury when exposed to high levels of noise (Scholik and Yan 2002, Amoser and Ladich 2003, Smith et al. 2006); this is reflected in the SPL thresholds for fish with a swim bladder involved in hearing (shaded cells in Table 8). Accomando et al. (2025) presented revised thresholds for sea turtle TTS and PTS onset from continuous noise sources, considering frequency weighted SEL, which have been applied in this study (Table 9).

Table 8. Criteria for vessel noise exposure for fish, adapted from Popper et al. (2014).

Type of animal	Mortality and Potential mortal injury	Impairment			Behaviour
		Recoverable injury	TTS	Masking	
Fish: No swim bladder (particle motion detection)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: Swim bladder not involved in hearing (particle motion detection)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: Swim bladder involved in hearing (primarily pressure detection)	(N) Low (I) Low (F) Low	170 dB SPL for 48 h	158 dB SPL for 12 h	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low
Sea Turtles	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) High (I) Moderate (F) Low
Fish eggs and fish larvae	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low

Sound pressure level dB re 1 µPa.
Relative risk (high, moderate, low) is given for animals at three distances from the source defined in relative terms as near (N) – tens of metres, intermediate (I) – hundreds of metres, and far (F) – thousands of metres.

Table 9. Acoustic effects of continuous noise on sea turtles, weighted SEL_{24h}, Accomando et al. (2025).

TTS onset thresholds (received level)	PTS onset thresholds (received level)
Weighted SEL_{24h} ($L_{E,24h}$; dB re 1 µPa^{2}s)	Weighted SEL_{24h} ($L_{E,24h}$; dB re 1 µPa^{2}s)
178	198

L_E denotes cumulative sound exposure over a 24 h period and has a reference value of 1 µPa^{2}s.

3. Methods and Parameters

The modelled sites for the operations considered in this study were located on the continental shelf of south-eastern Australian (refer to wide regional bathymetry in Appendix B.1.1). The modelled sites were situated in water depths of approximately 56 – 77 m and represent or are considered representative of Amplitude Energy's Otway activity locations.

To allow for operational flexibility, the sound speed profile considered for modelling was selected through a sensitivity analysis considering all months. The month of August was found to be the most favourable for sound propagation and was selected for modelling. Additional detail can be found in Appendix B.1.2.

The seabed beneath the modelled sites will likely consist of variably cemented calcarenite (Port Campbell Limestone), for some sites a thin veneer of overlying coarse sand on top of the variably cemented calcarenite may be present. The geologic and geoacoustic profiles of the seabed were generated using lithographic descriptions from geotechnical and geophysical reports supplied by the client and considering previous underwater acoustic modelling and measurement studies. Appendix B.1.3 provides additional detail.

The following sections provided a description of the inputs used for this underwater noise modelling study. The sections are divided into subsections detailing the source inputs for the MODU, AHTS, ISV and DSV (Section 3.1) with Sections 3.2–3.3 providing details on the applied modelling techniques and model configuration information.

3.1. Vessel and Drilling Noise Sources

For the MODU on DP, MODU Drilling, AHTS on DP, AHTS standby transiting, the ISV conducting pipelay operations and the DSV and HRV on DP, Figure 2 presents a summary plot of considered source spectra for comparison purposes; additional detail on the sources is provided in Sections 3.1.1–3.1.2.3.

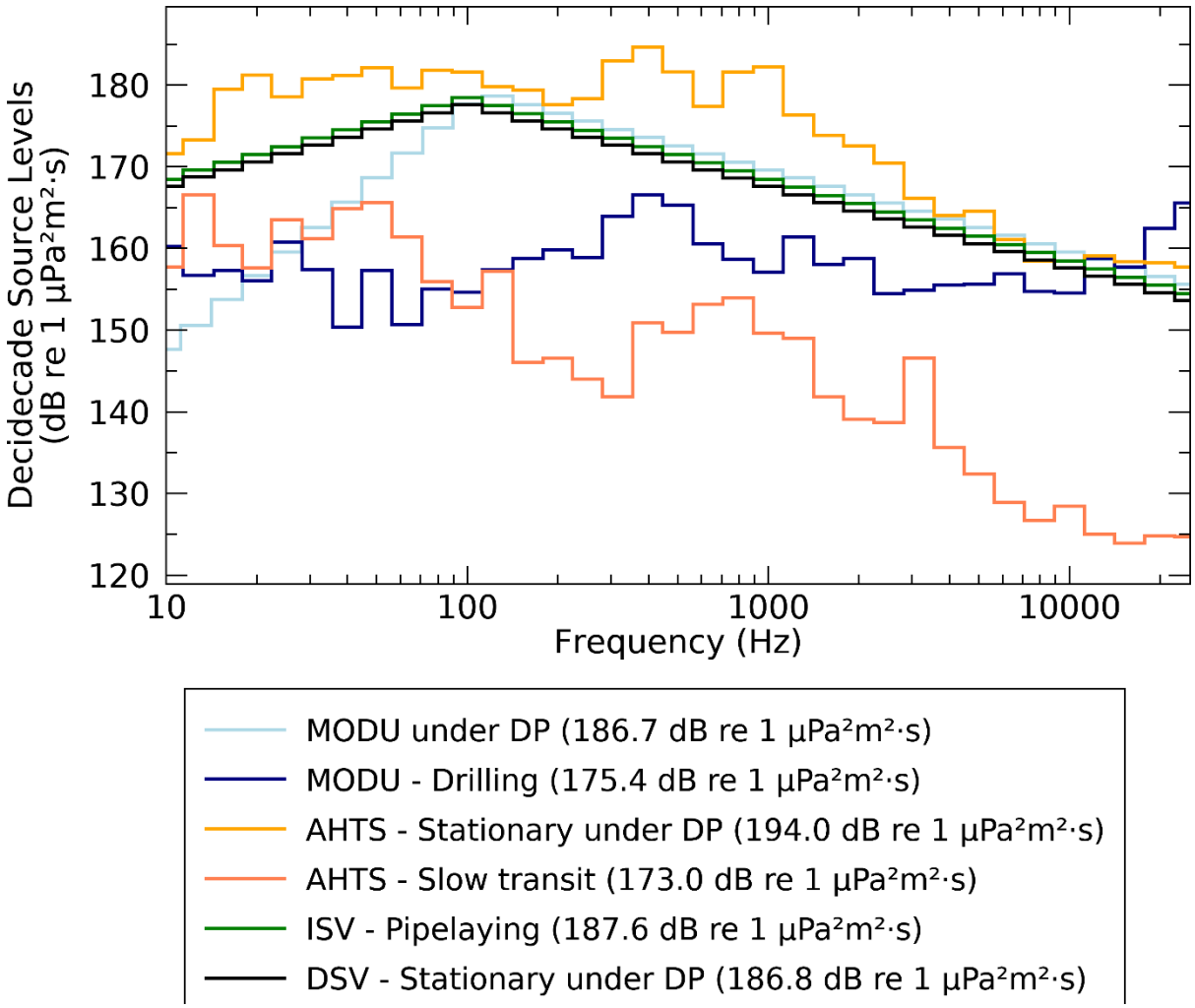

Figure 2. Source level (SL) spectra (in decidecade frequency-band) for all sound sources.

3.1.1. Mobile Offshore Drilling Unit (MODU)

The MODU, or semi-submersible platform, considered in this study is likely similar to the *Transocean Equinox*. While in operation, it will be held in position via anchors and chains, as opposed to using thrusters. Underwater sound from the MODU while drilling is expected to originate primarily from onboard equipment vibrations, while a smaller portion of the sound is expected to be transmitted directly into the water via the rotating drill string (Austin et al. 2018). Since the dominant vibration sources (e.g. pumps, generators, and machinery) are located on or below the main deck of the platform, the modelled depth of the point source representing the MODU was set to 11.6 m.

For drilling operations, the *Ocean Onyx* has been considered as a representative MODU for the *Transocean Equinox*. The *Ocean Onyx* (Figure 3) was measured by JASCO while anchored and drilling (McPherson et al. 2021), and had a broadband (10 Hz to 31 kHz) source level of 175.4 dB re 1 µPa m.

Figure 3. *Ocean Onyx* semi-submersible platform.

3.1.2. Vessel Radiated Noise

Underwater sound that radiates from vessels is produced mainly by propeller and thruster cavitation, with a smaller fraction of noise produced by sound transmitted through the hull, such as by engines, gearing, and other mechanical systems. Sound levels tend to be the highest when thrusters are used to position the vessel and when the vessel is transiting at high speeds. A vessel's sound signature depends on the vessel's size, power output, propulsion system (e.g., conventional propellers vs. Voith Schneider propulsion), and the design characteristics of the given system (e.g., blade shape and size). A vessel produces broadband acoustic energy with most of the energy emitted below a few kilohertz. Sound from onboard machinery, particularly sound below 200 Hz, dominates the sound spectrum before cavitation begins (Spence et al. 2007).

3.1.2.1. MODU under DP

While the MODU is positioning and anchors are being setup it is expected to be under DP where the primary source of noise is expected to originate from thrusters. Estimates of the source levels for the MODU is based on the *Transocean Equinox* from Woodside Energy Limited (2024). This had a broadband (10 Hz to 25 kHz) source level of 186.7 dB re 1 µPa m.

3.1.2.2. Anchor Handling Tug Supply (AHTS)

At this stage, the exact vessel specifications as well as the precise operational scenarios are not known. As such, estimates of the source levels for the Anchor Handling Tug Supply (AHTS) operations were based on a generic design AHTS vessel. The AHTS was based on the Siem VS491 CD design AHTS vessel (Figure 4) and it's specifications (Siem Offshore 2010) were used to form a basis for vessel source level estimation and source depth for acoustic modelling purposes. The general specification of these vessels is that they have a bollard pull of 285-310 t, and an overall length, beam, and draft of 91.0 m, 22.0 m and 7.95 m respectively.

The measured monopole source levels (MSLs) and spectra for the AHTS were taken from McPherson et al. (2021). For scenarios where the AHTS was under dynamic positioning (DP), the spectra from Section 5.5.2 in McPherson et al. (2021) were used.

Figure 4. Photo of an Anchor Handling Tug Supply (AHTS) vessel (Siem Offshore 2010).

3.1.2.3. Infield Support Vessel (ISV) and Dive Support Vessel (DSV)

As with the AHTS, at this stage the exact vessel specifications are not known. As such, estimates of the source levels for the ISV and DSV were based on a generic source spectrum and scaled based on thruster power comparisons.

3.1.2.3.1. Generic Offshore Vessel Source Spectrum

At the time of this study, the ISV and DSV vessels to be used in the project were unconfirmed and generic source spectrum used the estimate of the acoustic source levels for the ISV and DSV. These were estimated by scaling the spectrum based on the maximum utilised thruster power. The modelled source levels or the ISV and DSV were adjusted using Equation (1).

$$\mathrm{SL} = \mathrm{SL}_{\mathrm{ref}} + 10\log_{10}\left(\frac{P}{P_{\mathrm{ref}}}\right) \quad (1)$$

Here the modelled broadband source level (SL) was estimated from the broadband source level of the generic source ($\mathrm{SL}_{\mathrm{ref}}$) and the utilised thruster powers of the modelled ISV (or DSV) and generic sources (P and P_{ref}, respectively). The generic source spectrum for the was determined by the method described in Appendix B.2.

3.1.2.3.2. Infield Support Vessel (ISV)

The estimates of the source levels for the ISV were based on a proxy vessel, the Skandi Acergy (Figure 5) which has a total installed thruster power rating of 16,840 kW, and overall length, beam and draft of 156.9 m, 27.0 m and 8.5 m respectively. The propulsion system of the Skandi Acergy contains the following:

- 2 x 1,920 kW tunnel thrusters,
- 2 x 1,500 kW retractable azimuths,
- 2 x 3,000 kW contra-rotating azimuths,

- 1 x 4,000 kW shaft propeller + rudder.

However, while under DP the single rear main is not likely to be in use; therefore, for power scaling it was omitted. The total maximum thruster power while the ISV was on DP of 12,840 kW was used with Equation (1) for scaling.

Figure 5. Photo of the Skandi Acergy - proxy for an Infield Support Vessel (ISV).

3.1.2.3.3. Dive Support Vessel (DSV)

The estimates of the source levels for the ISV were based on a proxy vessel, the Skandi Singapore (Figure 6) which has a total installed thruster power rating of 10,500 kW, and overall length, beam and draft of 107.1 m, 21.0 m, and 6.6 m respectively. The propulsion system of the Skandi Singapore contains the following:

- 2 x 1500 kW bow tunnel thrusters,
- 1 x 1,500 kW retractable azimuth thruster,
- 2 x 3,000 kW stern azimuths thruster.

The total maximum thruster power while the DSV was on DP of 10,500 kW was used for with Equation (1) for scaling.

Figure 6. Photo of the Skandi Singapore proxy for a Dive Support Vessel (DSV).

3.2. Geometry and Modelled Regions

JASCO's Marine Operations Noise Model (MONM-BELLHOP; see Appendices B.3.2 and B.3.4) was used to predict the acoustic field at frequencies of 10 Hz to 25 kHz for all vessels. To supplement the MONM results, high-frequency results for propagation loss were modelled using Bellhop for frequencies from 1.26 to 25 kHz. The sound field modelling calculated propagation losses up to 80 km from the source, with a horizontal separation of 20 m between receiver points along the modelled radials. The sound fields were modelled with a horizontal angular resolution of $\Delta\theta = 2.5°$ for a total of N = 144 radial planes. Receiver depths were chosen to span the entire water column over the modelled areas, from 2 m to a maximum of 2600 m. To supplement the MONM results, high-frequency results for propagation loss were modelled using BELLHOP (Porter and Liu 1994) for frequencies from 1.25 to 10 kHz. The MONM and BELLHOP results were combined to produce results for the full frequency range of interest. For sites where the seabed geoacoustic model consisted of bare calcarenite, an additional broadband correction was applied to the results from MONM-BELLHOP to better account for the additional propagation loss associated with a limestone (calcarenite) seabed (see Appendix B.3.4).

To produce the maps of received sound level isopleths, and to calculate distances to specified sound level thresholds, the maximum-over-depth level was calculated at each sampling point within the modelled region. The radial grids of maximum-over-depth levels were then resampled (by linear triangulation) to produce a regular Cartesian grid. The contours and threshold ranges were calculated from these grids of the modelled acoustic fields.

3.3. Accumulated SEL

In this study, the sound sources were considered to be continuously operating with new sound energy constantly being introduced to the environment. The reported source levels are usually in terms of sound pressure levels (SPL), representing the average instantaneous acoustic level of a considered source. The evaluation of the cumulative sound field (i.e., in terms of SEL_{24h}) depends on the number of seconds of operation during the accumulation period.

For all stationary source (MODU and vessels), the SPL modelling results were converted to SEL by the duration of the measurement, which is appropriate for a non-impulsive noise source. As SEL was assessed over 24 h and for a stationary vessel over a day, the conversion from SPL was obtained by increasing the levels by $10*\log_{10}(T)$, where T is 86,400 (the number of seconds in 24 h). For scenarios where a vessel was transiting along a track a similar adjustment to the SPL was applied, however the time factor was determined based on the step size along the track and the vessel's speed. See Appendix B.2.2 for detail.

4. Results

The maximum-over-depth sound fields for the modelled scenarios are presented below in two formats: as tables of distances to sound levels and, where the distances are long enough, as contour maps showing the directivity and range to various sound levels.

For the results below, the distances to isopleths/thresholds were reported from either the centroid of several sources or from the most dominant single source. When an isopleth completely envelopes multiple sources the centroid was used. When several closed isopleths exist the most dominant source was used. Maps and are provided in Section 4.2 to assist in with contextualising tabulated distances.

4.1. Tabulated Results

Tables 10–13 present the maximum and 95% distances to SPL. The SPL sound footprints presented represent the instantaneous sound field and do not depend on time accumulation. Tables 14–17 present the maximum distances to frequency-weighted SEL_{24h} thresholds, as well as total ensonified area.

Table 10. *Annie-2, SPL*: Maximum (R_{max}) and 95% ($R_{95\%}$) horizontal distances (in km) to sound pressure level (SPL) from most appropriate location for considered sources per scenario. Scenario descriptions are given in Table 5.

SPL (L_p; dB re 1 µPa)	Annie-2									
	Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5	
	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)
180	–	–	–	–	–	–	–	–	–	–
170[a]	–	–	0.02	0.02	–	–	–	–	0.03	0.03
160	–	–	0.10	0.10	–	–	–	–	0.11	0.11
158[b]	–	–	0.12	0.11	–	–	–	–	0.13	0.12
150	–	–	0.36	0.34	0.02	0.02	0.02	0.02	0.37	0.34
140	0.03	0.03	0.81	0.76	0.11	0.10	0.11	0.10	0.84	0.77
130	0.14	0.13	3.16	2.71	0.42	0.39	0.42	0.39	2.76	2.43
120[c]	0.44	0.41	7.87	7.32	1.10	1.02	1.13	1.03	7.46	7.11
110	0.96	0.92	21.3	18.5	3.54	3.24	4.43	3.99	20.9	18.4
100	2.40	2.13	79.9	61.8	8.30	7.64	9.30	8.18	79.6	61.9

[a] 48 h threshold for recoverable injury for fish with a swim bladder involved in hearing (Popper et al. 2014).
[b] 12 h threshold for TTS for fish with a swim bladder involved in hearing (Popper et al. 2014).
[c] Threshold for LF, HF & VHF-cetacean behavioural response to non-impulsive noise (NOAA 2024).
A dash indicates the level was not reached within the limits of the modelled resolution (20 m).

Table 11. *Elanora-1, SPL*: Maximum (R_{max}) and 95% ($R_{95\%}$) horizontal distances (in km) to sound pressure level (SPL) from most appropriate location for considered sources per scenario. Scenario descriptions are given in Table 5.

SPL (L_p; dB re 1 µPa)	Elanora-1									
	Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5	
	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)
180	–	–	–	–	–	–	–	–	–	–
170[a]	–	–	–	–	–	–	–	–	0.03	0.03
160	–	–	0.06	0.06	0.02	0.02	0.02	0.02	0.07	0.07
158[b]	–	–	0.12	0.12	0.02	0.02	0.02	0.02	0.13	0.13
150	0.02	0.02	0.41	0.39	0.02	0.02	0.02	0.02	0.42	0.40
140	0.03	0.03	1.64	1.53	0.07	0.07	0.07	0.07	1.64	1.54
130	0.17	0.16	6.53	5.88	0.50	0.47	0.50	0.48	6.20	5.77
120[c]	0.75	0.72	21.7	18.8	1.89	1.79	2.91	2.58	21.7	18.7
110	2.09	1.97	81.3	61.2	8.06	7.28	8.83	7.83	81.2	62.4
100	6.31	5.78	>80.0	/	31.4	27.7	31.9	28.1	>80.0	/

[a] 48 h threshold for recoverable injury for fish with a swim bladder involved in hearing (Popper et al. 2014).
[b] 12 h threshold for TTS for fish with a swim bladder involved in hearing (Popper et al. 2014).
[c] Threshold for LF, HF & VHF-cetacean behavioural response to non-impulsive noise (NOAA 2024).
A dash indicates the level was not reached within the limits of the modelled resolution (20 m).
A slash indicates that $R_{95\%}$ radius to threshold is not reported when the R_{max} is greater than the maximum modelling extent.

Table 12. *Pipeline/Umbilical Lay between Annie-2 and Casino-5, ISV, and drilling operations at Elanoa-1, SPL*: Maximum (R_{max}) and 95% ($R_{95\%}$) horizontal distances (in km) to sound pressure level (SPL) from most appropriate location for considered sources per scenario. Scenario descriptions are given in Table 5.

SPL (L_p;dB re 1 µPa)	Annie-2 and Casino-5						Annie-2		Annie-2, Casino-5, and Elanora-1	
	Scenario 6						Scenario 7		Scenario 8[d]	
	Site 13		Site 14		Site 15					
	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)
180	–	–	–	–	–	–	–	–	0.02	0.02
170[a]	–	–	–	–	–	–	–	–	0.03	0.03
160	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.07	0.07
158[b]	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.13	0.13
150	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.15	0.42	0.40
140	0.48	0.43	0.48	0.45	0.69	0.66	0.47	0.44	1.64	1.54
130	1.14	1.07	0.99	0.94	2.08	1.96	0.98	0.93	6.27	5.83
120[c]	2.72	2.61	2.59	2.33	5.97	5.41	2.56	2.30	30.7	28.2
110	7.34	7.11	6.61	6.09	20.2	18.2	6.47	6.08	92.0	69.8
100	21.3	17.9	16.8	15.4	63.7	52.0	17.2	15.6	>80.0	\

[a] 48 h threshold for recoverable injury for fish with a swim bladder involved in hearing (Popper et al. 2014).
[b] 12 h threshold for TTS for fish with a swim bladder involved in hearing (Popper et al. 2014).
[c] Threshold for LF, HF & VHF-cetacean behavioural response to non-impulsive noise (NOAA 2024).
[d] Longest distance to threshold along the entire pipelay route is shown. See Figures 21–23 for contour maps at three points along pipelay route.
A dash indicates the level was not reached within the limits of the modelled resolution (20 m).
A slash indicates that $R_{95\%}$ radius to threshold is not reported when the R_{max} is greater than the maximum modelling extent.

Table 13. *Vessel Scenarios for MODU under DP, SPL*: Maximum (R_{max}) and 95% ($R_{95\%}$) horizontal distances (in km) to sound pressure level (SPL) from most appropriate location for considered sources per scenario. Scenario descriptions are given in Table 5.

SPL (L_p;dB re 1 µPa)	Annie-2		Elanora-1		Annie-2		Elanora-1	
	Scenario 9				Scenario 10			
	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)	R_{max} (km)	$R_{95\%}$ (km)
180	–	–	–	–	–	–	–	–
170[a]	–	–	–	–	–	–	–	–
160	0.03	0.03	0.03	0.03	0.10	0.10	0.06	0.06
158[b]	0.04	0.04	0.04	0.04	0.12	0.11	0.13	0.12
150	0.17	0.16	0.14	0.13	0.60	0.54	0.67	0.60
140	0.55	0.53	0.83	0.79	2.05	0.96	2.08	1.79
130	1.84	1.71	3.15	2.93	3.50	2.98	7.61	6.32
120[c]	5.36	4.83	12.0	11.3	8.02	7.46	24.8	21.7
110	12.9	11.7	43.6	39.5	25.0	21.3	90.3	78.2
100	43.7	38.8	>80.0	\	>80.0	\	>80.0	\

[a] 48 h threshold for recoverable injury for fish with a swim bladder involved in hearing (Popper et al. 2014).
[b] 12 h threshold for TTS for fish with a swim bladder involved in hearing (Popper et al. 2014).
[c] Threshold for LF, HF & VHF-cetacean behavioural response to non-impulsive noise (NOAA 2024).
A dash indicates the level was not reached within the limits of the modelled resolution (20 m).
A slash indicates that $R_{95\%}$ radius to threshold is not reported when the R_{max} is greater than the maximum modelling extent.

Table 14. *Vessel Scenarios at Annie-2, SEL_{24h}:* Maximum (R_{max}) horizontal distances (in km) to frequency-weighted SEL_{24h} PTS and TTS thresholds based on NMFS (2024) and Accomando et al. (2025) from most appropriate location for considered sources per scenario and ensonified area (km^2).

Hearing group	Frequency-weighted SEL_{24h} threshold ($L_{E,24h}$; dB re 1 $\mu Pa^2 \cdot s$)	Annie-2									
		Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5	
		R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)
PTS											
LF cetaceans	197	–	–	0.40	0.43	0.03	/	0.03	/	0.27	0.17
HF cetaceans	201	–	–	0.03	/	–	–	–	–	–	–
VHF cetaceans	181	–	–	0.07	0.01	0.09	0.02	0.09	0.02	0.11	0.03
Otariid Seals	199	–	–	0.03	/	–	–	–	–	–	–
Sea turtles	198	–	–	0.29	0.23	–	–	–	–	0.13	0.04
TTS											
LF cetaceans	177	–	–	3.60	28.2	0.48	0.66	0.48	0.66	2.16	7.61
HF cetaceans	181	–	–	0.47	0.65	0.11	0.04	0.11	0.04	0.35	0.35
VHF cetaceans	161	–	–	0.59	1.06	0.64	1.23	0.64	1.23	0.69	1.44
Otariid Seals	179	–	–	0.44	0.57	0.10	0.03	0.10	0.03	0.33	0.29
Sea turtles	178	–	–	1.73	6.49	0.28	0.23	0.28	0.23	0.99	2.65

A dash indicates the level was not reached within the limits of the modelled resolution (20 m).
A slash indicates that the area is less than an area associated with the modelled resolution (0.0013 km^2).

Table 15. *Vessel Scenarios at Elanora-1, SEL_{24h}:* Maximum (R_{max}) horizontal distances (in km) to frequency-weighted SEL_{24h} PTS and TTS thresholds based on NMFS (2024) and Accomando et al. (2025) from most appropriate location for considered sources per scenario and ensonified area (km^2).

Hearing group	Frequency-weighted SEL_{24h} threshold ($L_{E,24h}$; dB re 1 $\mu Pa^2 \cdot s$)	Elanora-1									
		Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5	
		R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)	R_{max} (km)	Area (km^2)
PTS											
LF cetaceans	197	–	–	0.50	0.56	0.03	/	0.05	/	0.22	0.12
HF cetaceans	201	–	–	0.04	/	–	–	–	–	–	–
VHF cetaceans	181	–	–	0.06	0.01	0.08	0.02	0.10	0.02	0.09	0.02
Otariid Seals	199	–	–	0.03	/	–	–	–	–	–	–
Sea turtles	198	–	–	0.31	0.22	–	–	–	–	0.10	0.02
TTS											
LF cetaceans	177	–	–	7.54	131	0.59	0.99	0.63	1.00	3.84	37.6
HF cetaceans	181	–	–	0.66	1.18	0.09	0.03	0.12	0.03	0.38	0.37
VHF cetaceans	161	–	–	0.81	2.02	0.79	1.92	0.81	1.92	0.88	2.37
Otariid Seals	179	–	–	0.56	0.85	0.08	0.02	0.10	0.02	0.34	0.29
Sea turtles	178	–	–	3.53	33.2	0.25	0.19	0.28	0.19	1.86	10.3

A dash indicates the level was not reached within the limits of the modelled resolution (20 m).
A slash indicates that the area is less than an area associated with the modelled resolution (0.0013 km^2).

Table 16. *Vessel Scenarios for Pipeline/Umbilical Lay between Annie-2 and Casino-5 and ISV at Annie-2, SPL*: Maximum (R_{max}) horizontal distances (in km) to frequency-weighted SEL_{24h} PTS and TTS thresholds based on NMFS (2024) and Accomando et al. (2025) from most appropriate location for considered sources per scenario and ensonified area (km²).

Hearing group	Frequency-weighted SEL_{24h} threshold ($L_{E,24h}$; dB re 1 µPa²·s)	Annie-2 and Casino-5		Annie-2		Annie-2, Casino-5, and Elanora-1	
		Scenario 6		Scenario 7		Scenario 8	
		R_{max} (km)	Area (km²)	R_{max} (km)	Area (km²)	R_{max} (km)	Area (km²)
PTS							
LF cetaceans	197	–	–	0.13	0.05	0.48	0.56
HF cetaceans	201	–	–	–	–	0.03	/
VHF cetaceans	181	–	–	0.05	0.01	0.12	0.03
Otariid Seals	199	–	–	–	–	0.03	/
Sea turtles	198	–	–	0.08	0.02	0.26	0.18
TTS							
LF cetaceans	177	0.63	11.5	0.94	2.53	7.50	148
HF cetaceans	181	–	–	0.17	0.09	0.90	1.20
VHF cetaceans	161	0.08	2.08	0.45	0.62	1.14	6.08
Otariid Seals	179	–	–	0.18	0.10	0.57	0.90
Sea turtles	178	0.37	7.71	0.78	1.77	3.47	41.8

A dash indicates the level was not reached within the limits of the modelled resolution (20 m).
A slash indicates that the area is less than an area associated with the modelled resolution (0.0013 km²).

Table 17. *Vessel Scenarios for MODU under DP, SPL*: Maximum (R_{max}) horizontal distances (in km) to frequency-weighted SEL_{24h} PTS and TTS thresholds based on NMFS (2024) and Accomando et al. (2025) from most appropriate location for considered sources per scenario and ensonified area (km²).

Hearing group	Frequency-weighted SEL_{24h} threshold ($L_{E,24h}$; dB re 1 µPa²·s)	Annie-2		Elanora-1		Annie-2		Elanora-1	
		Scenario 9				Scenario 10			
		R_{max} (km)	Area (km²)	R_{max} (km)	Area (km²)	R_{max} (km)	Area (km²)	R_{max} (km)	Area (km²)
PTS									
LF cetaceans	197	0.15	0.06	0.13	0.05	0.61	0.57	0.67	0.78
HF cetaceans	201	–	–	–	–	0.03	/	0.04	/
VHF cetaceans	181	0.07	0.01	0.05	0.01	0.07	0.03	0.06	0.02
Otariid Seals	199	–	–	–	–	0.03	/	0.03	/
Sea turtles	198	0.12	0.04	0.08	0.02	0.50	0.29	0.49	0.23
TTS									
LF cetaceans	177	1.73	8.50	2.85	23.9	3.88	39.7	7.92	176
HF cetaceans	181	0.24	0.17	0.19	0.12	0.71	0.88	0.88	1.45
VHF cetaceans	161	0.59	1.05	0.71	1.54	0.87	1.94	1.15	3.46
Otariid Seals	179	0.24	0.18	0.19	0.12	0.68	0.79	0.82	1.17
Sea turtles	178	1.31	4.73	2.20	13.1	2.26	12.4	4.45	55.5

A dash indicates the level was not reached within the limits of the modelled resolution (20 m).
A slash indicates that the area is less than an area associated with the modelled resolution (0.0013 km²).

4.2. Sound Field Maps

Maps of the estimated sound fields, threshold contours, and isopleths of interest for SPL and SEL_{24h} sound fields are presented for the modelled vessel scenarios. In some cases, the isopleths had several contours. This can occur as a result of the reflection of the sound field off the seafloor, creating an additional ring around the initial isopleth. The first isopleth is generally axially symmetric since it spreads without the influence of the bathymetry, while the second isopleth is more complex due to the interaction between the sound field and the seabed.

4.2.1. SPL Sound level Contour Maps

Maps of the estimated sound fields, threshold contours, and isopleths of interest for SPL and SEL_{24h} sound fields are presented for the Amplitude Energy Otway subsea noise modelling.

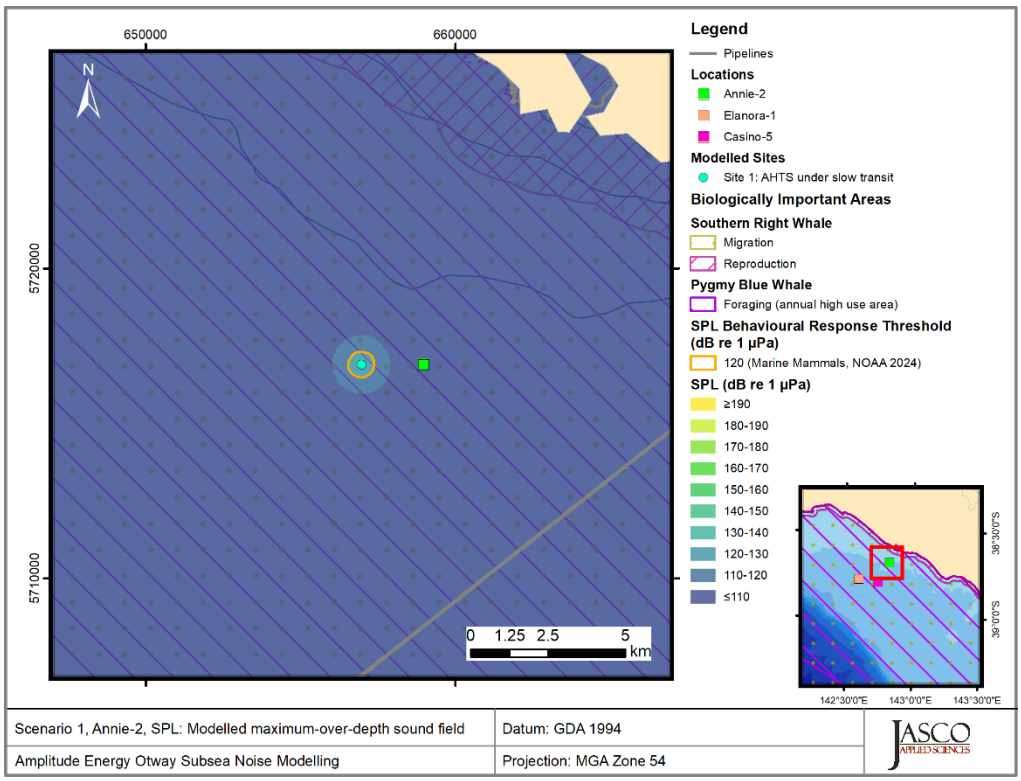

Figure 7. *Scenario 1, Drilling prelays, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

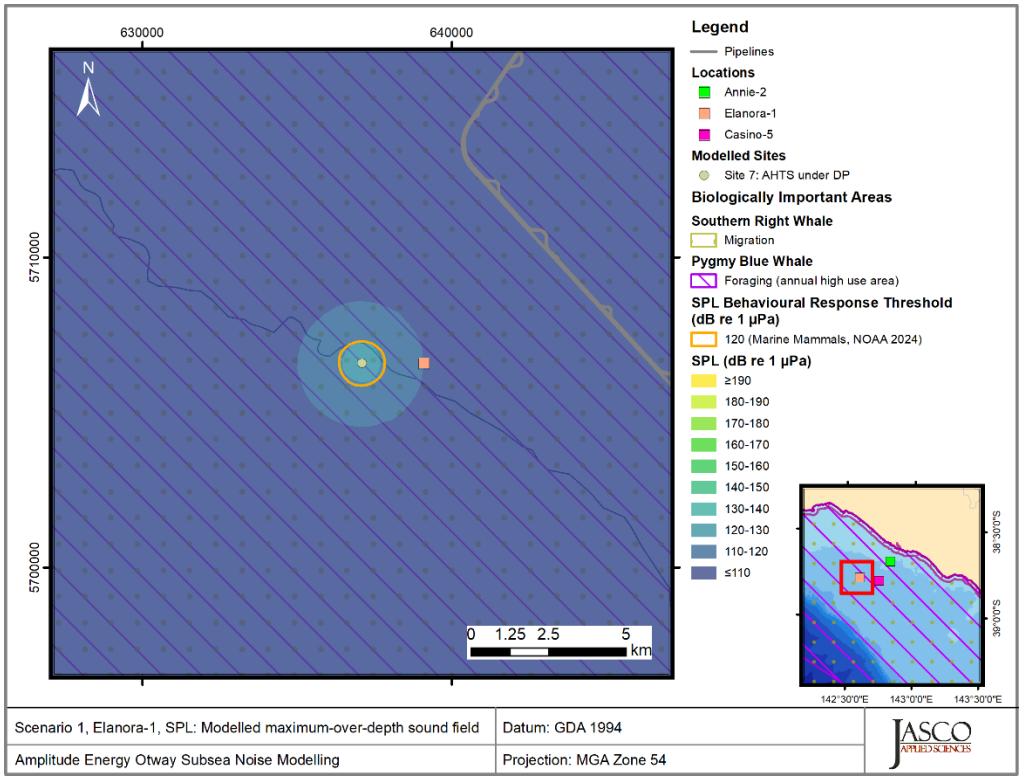

Figure 8. *Scenario 1, Drilling prelays, Elanora-1, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

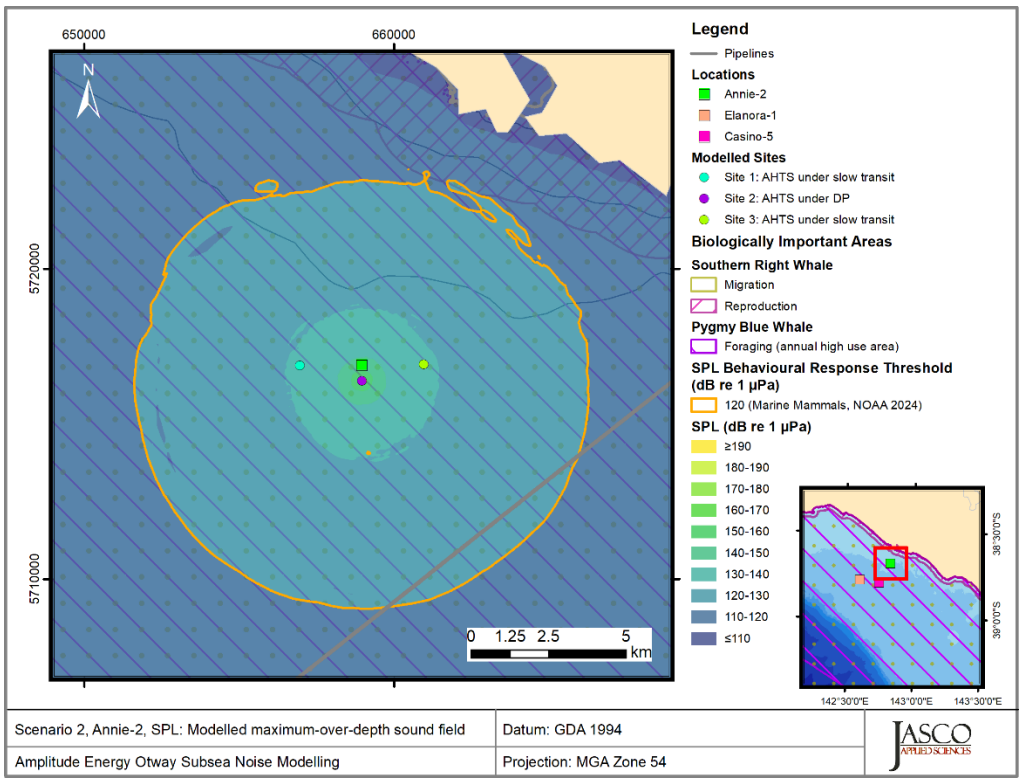

Figure 9. *Scenario 2, Mooring, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

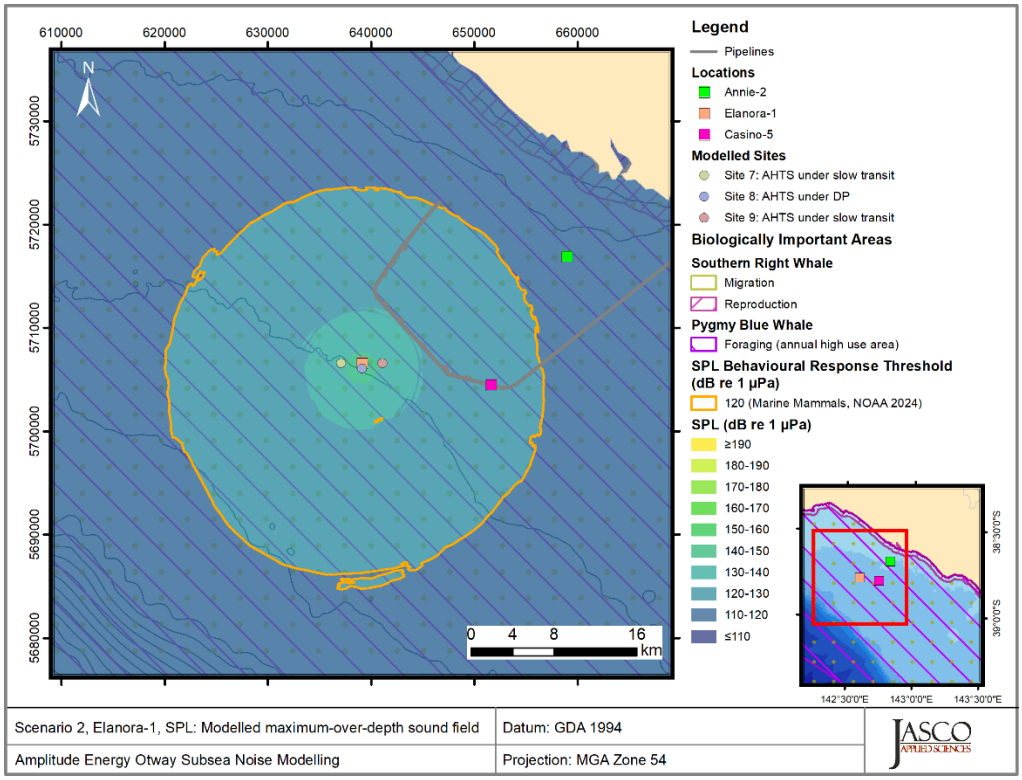

Figure 10. *Scenario 2, Mooring, Elanora-1, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

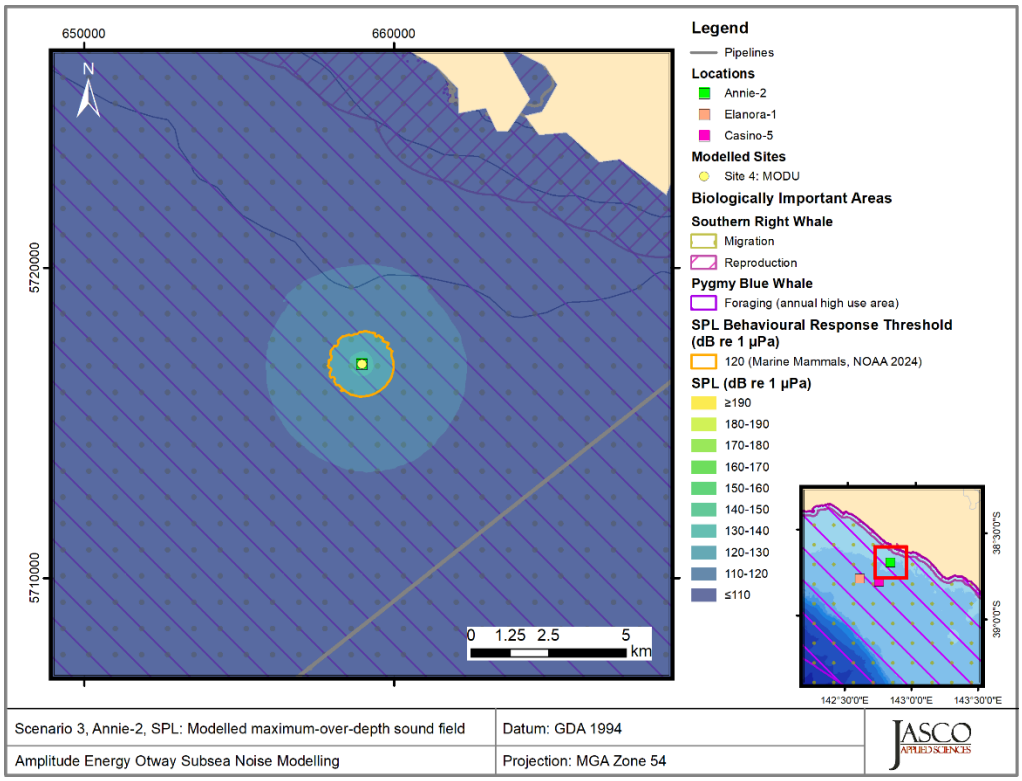

Figure 11. *Scenario 3, MODU Drilling, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

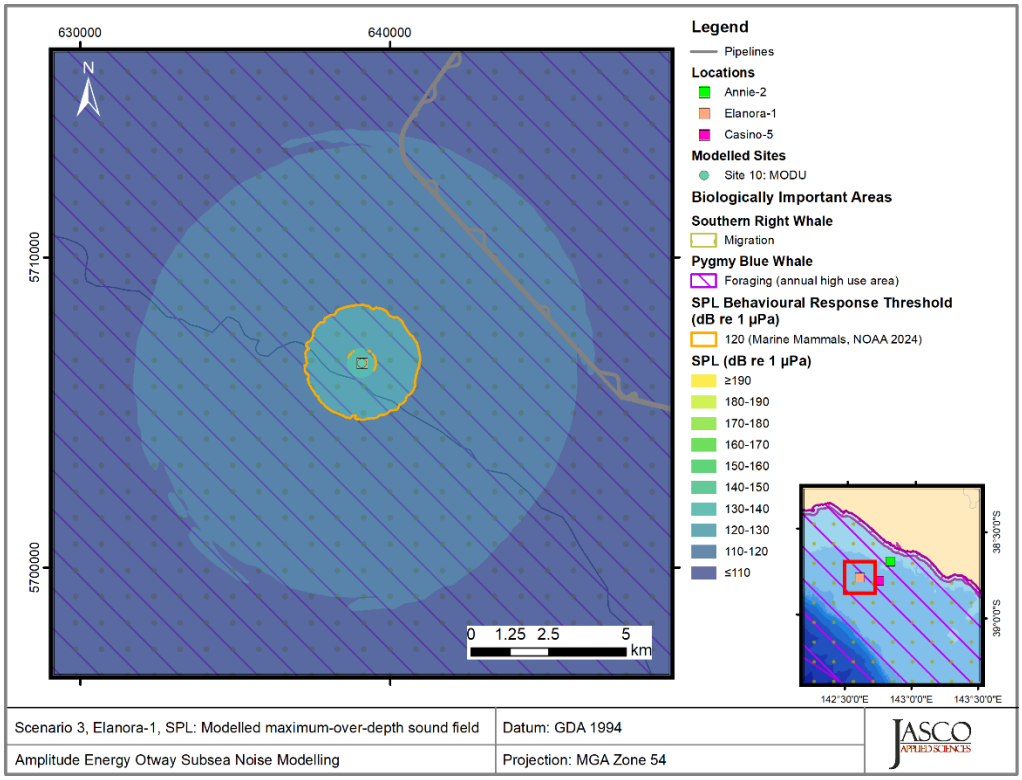

Figure 12. *Scenario 3, MODU Drilling, Elanora-1, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

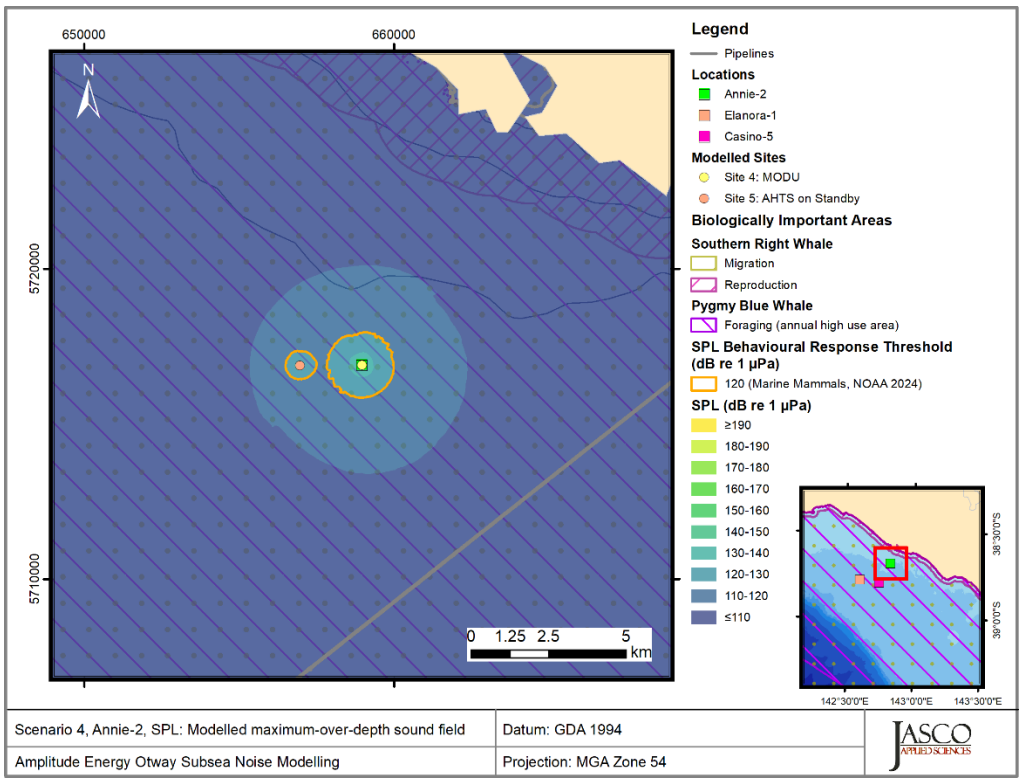

Figure 13. *Scenario 4, Drilling and standby OSV, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

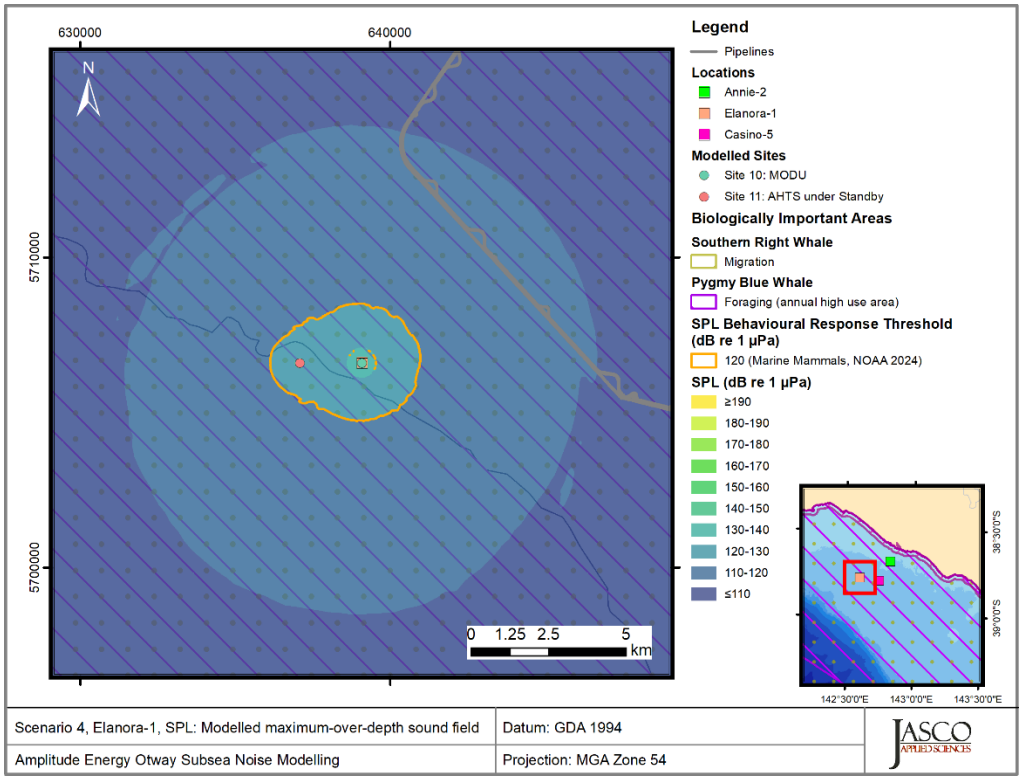

Figure 14. *Scenario 4, Drilling and standby OSV, Elanora-1, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

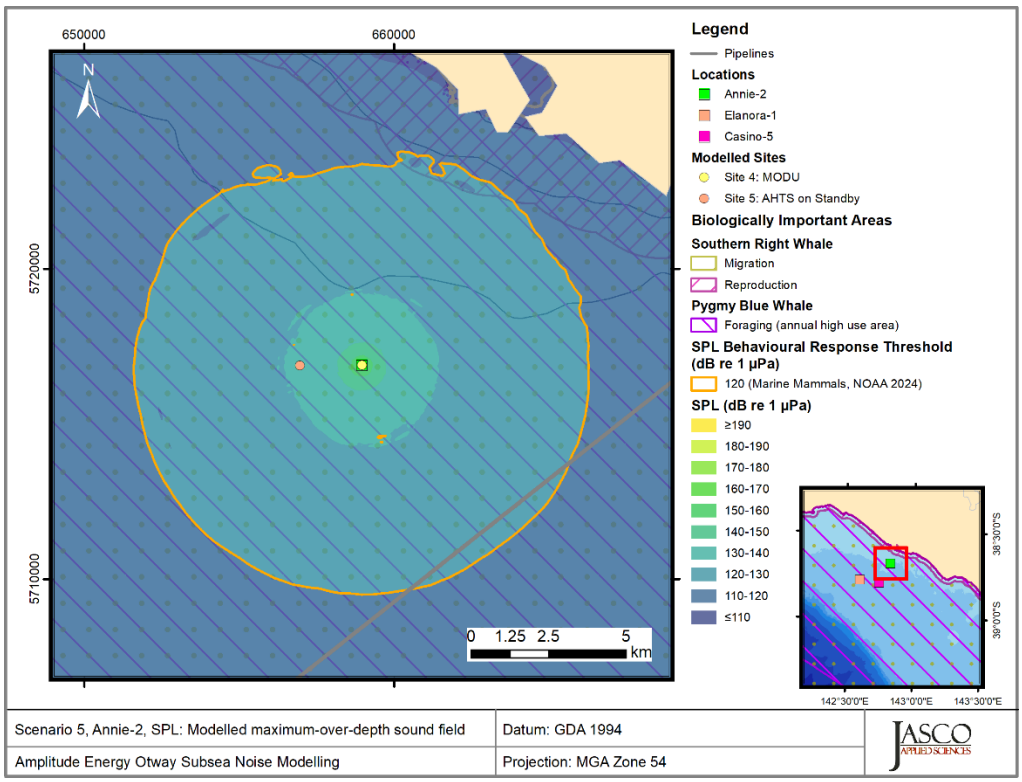

Figure 15. *Scenario 5, Drilling and standby OSV during resupply, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

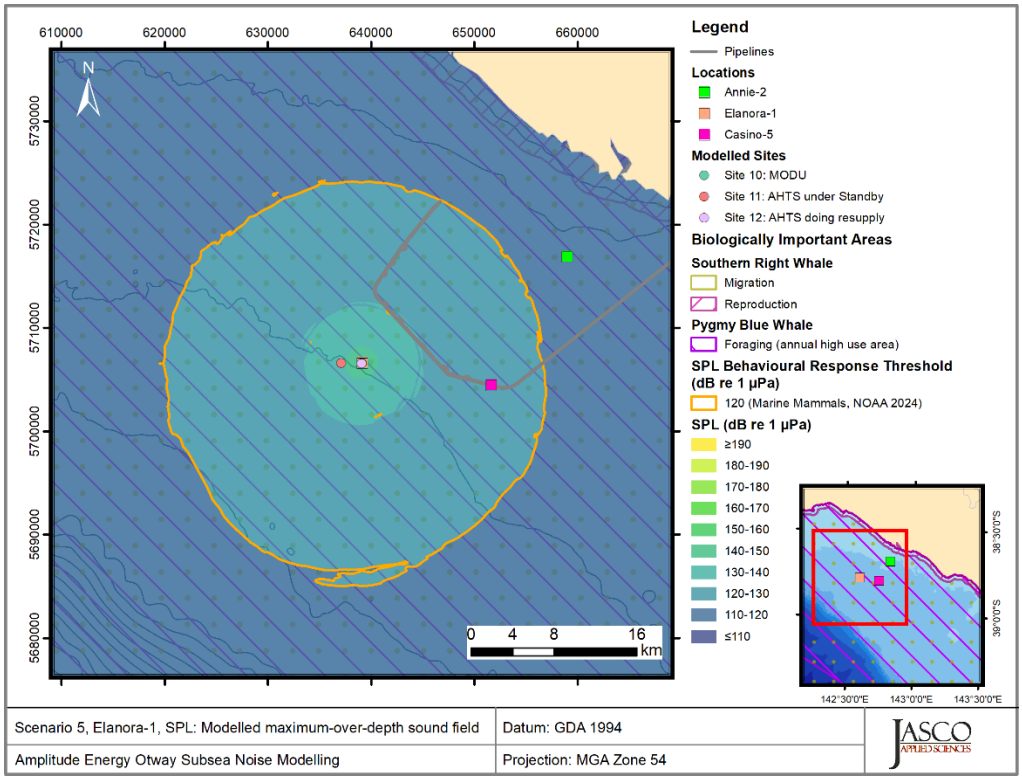

Figure 16. *Scenario 5, Drilling and standby OSV during resupply, Elanora-1, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

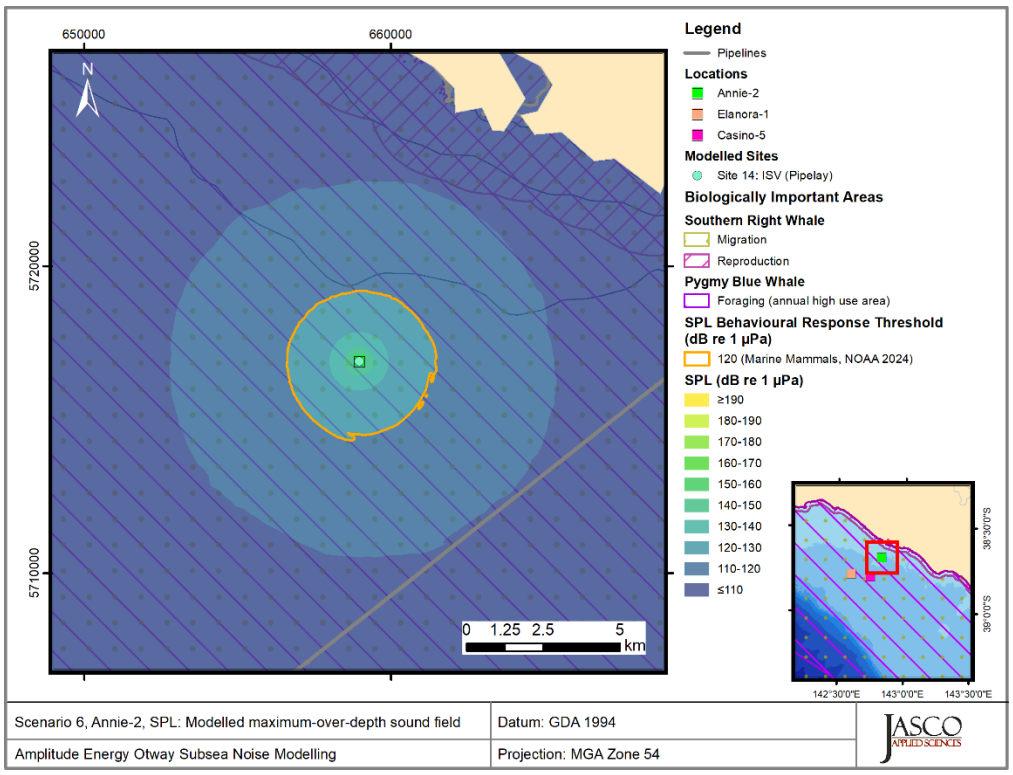

Figure 17. *Scenario 6, Pipelay installation – start, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

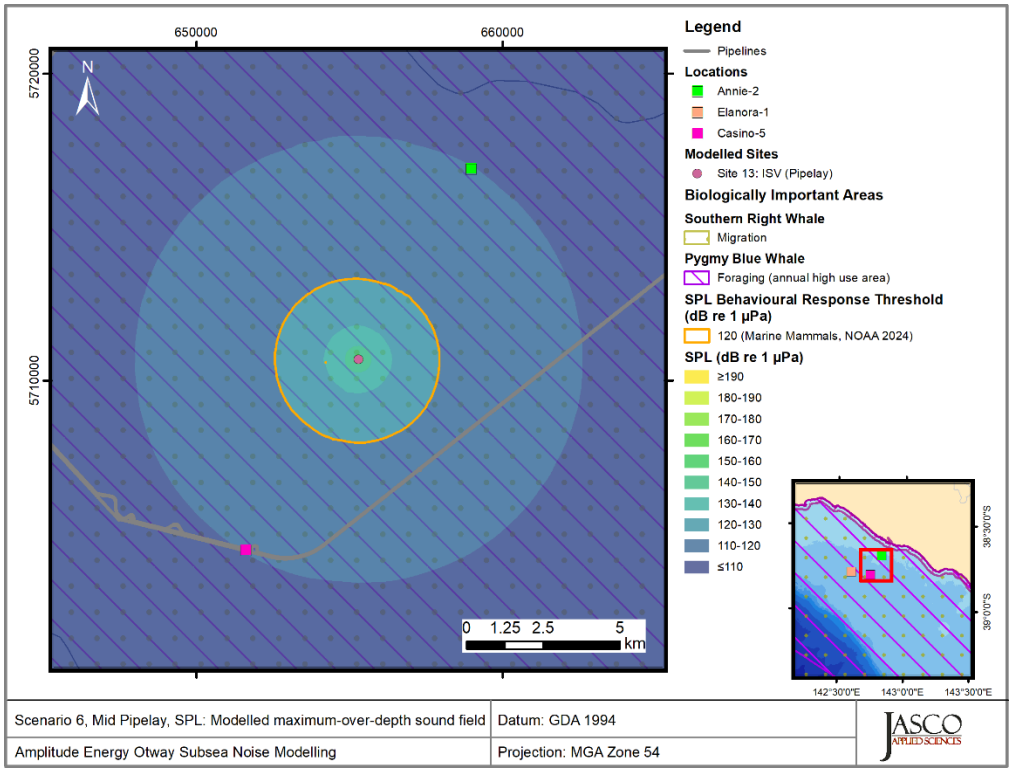

Figure 18. *Scenario 6, Pipelay installation – mid, Annie-2 and Casino-5, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

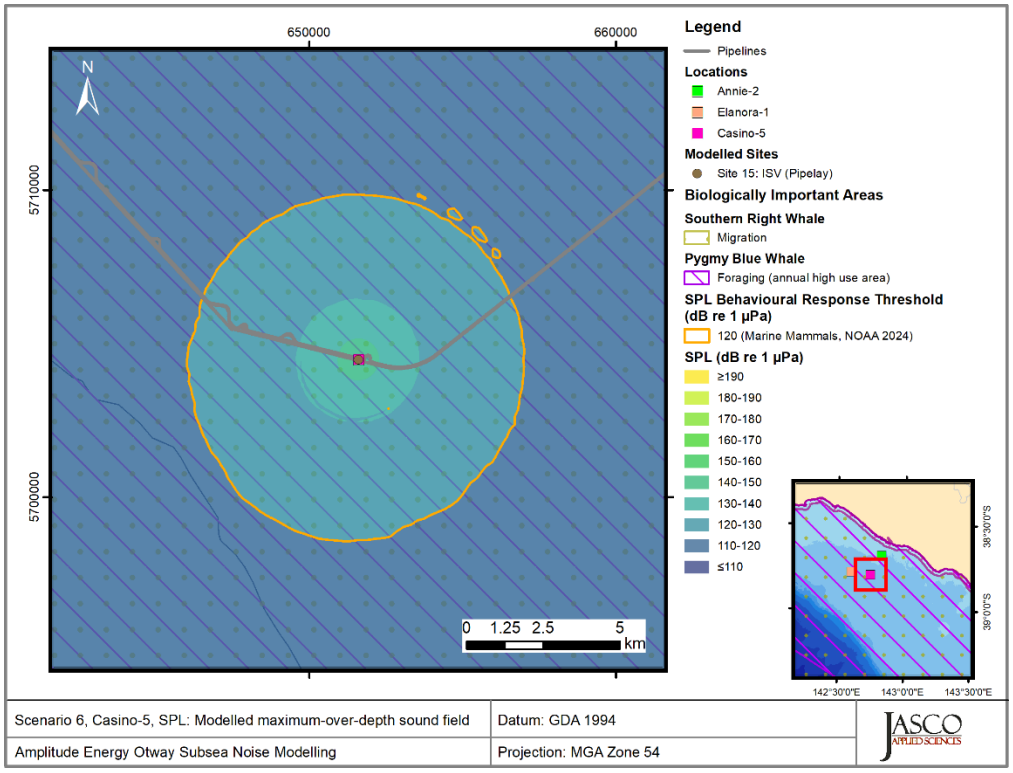

Figure 19. *Scenario 6, Pipelay installation – end, Casino-5, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

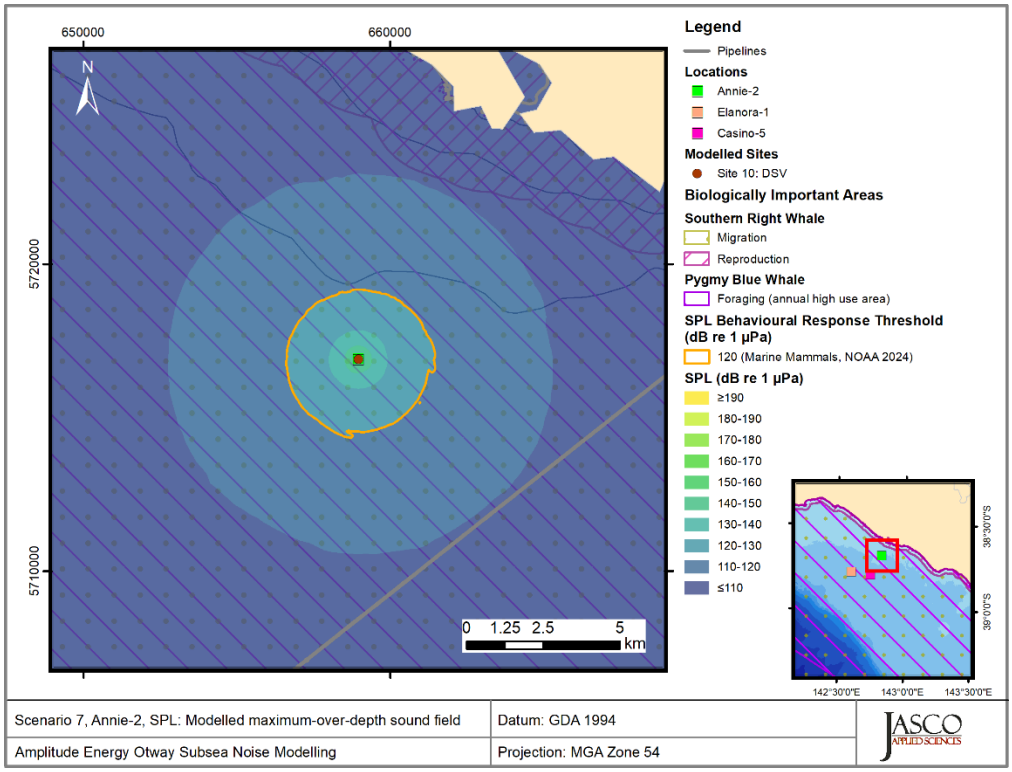

Figure 20. *Scenario 7, Installation, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

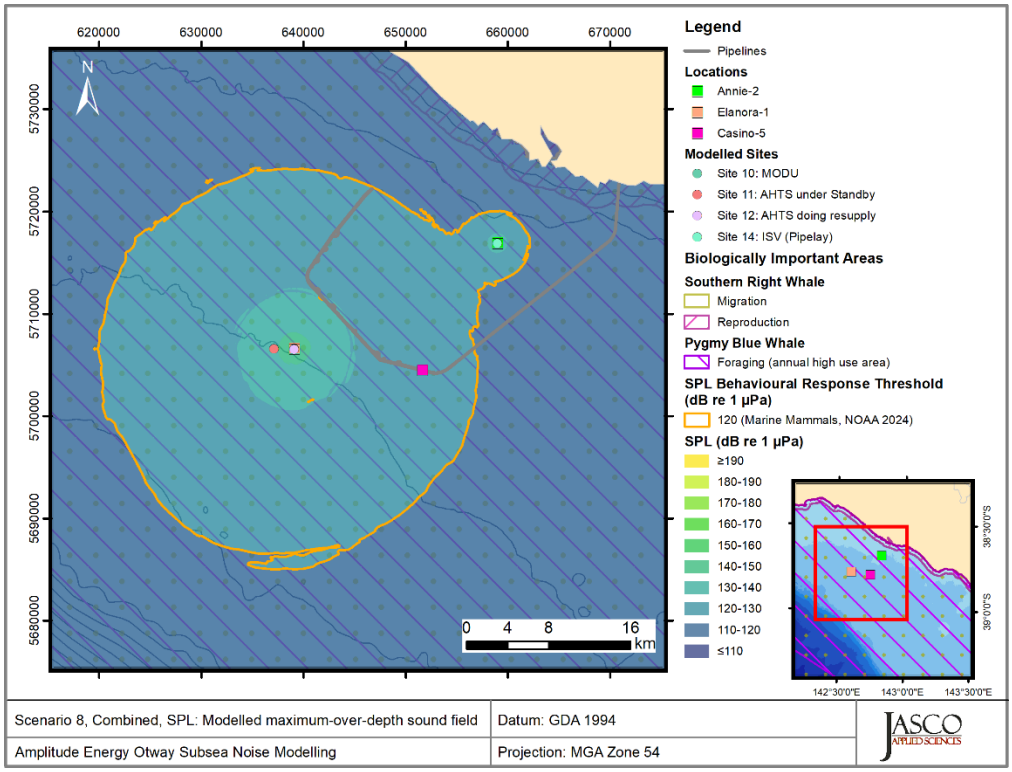

Figure 21. *Scenario 8, Drilling and standby OSV during resupply and pipelay – start, Elanora-1 and Casino-5, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

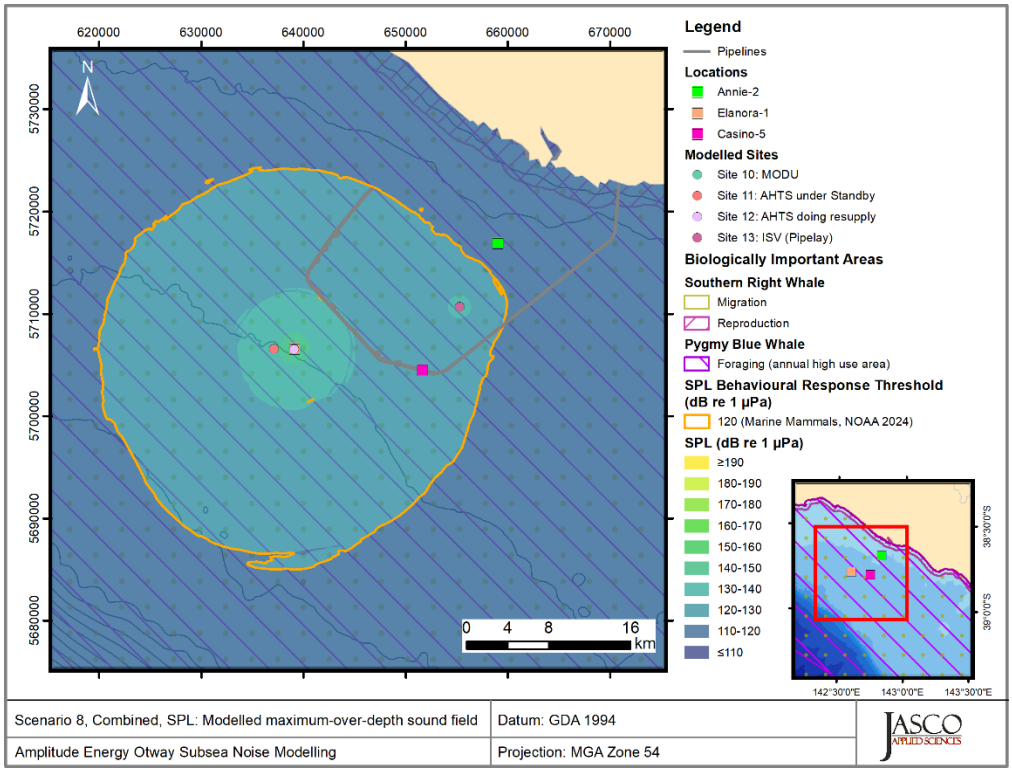

Figure 22. *Scenario 8, Drilling and standby OSV during resupply and pipelay – mid, Elanora-1 and Casino-5, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

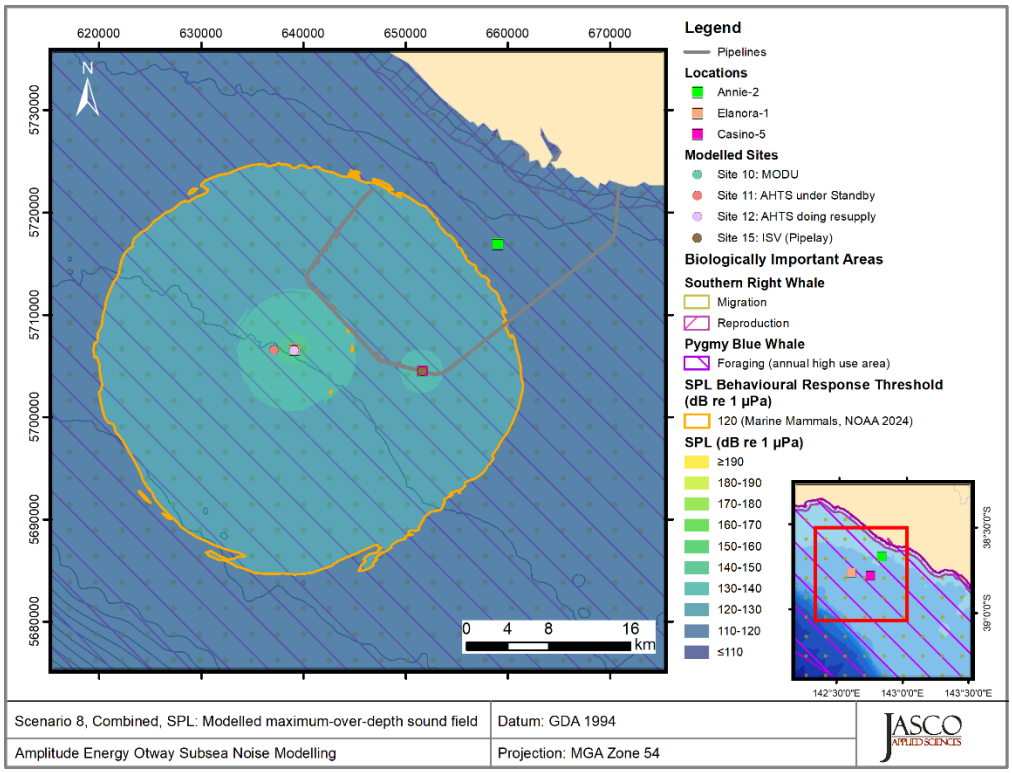

Figure 23. *Scenario 8, Drilling and standby OSV during resupply and pipelay – end, Elanora-1 and Casino-5, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

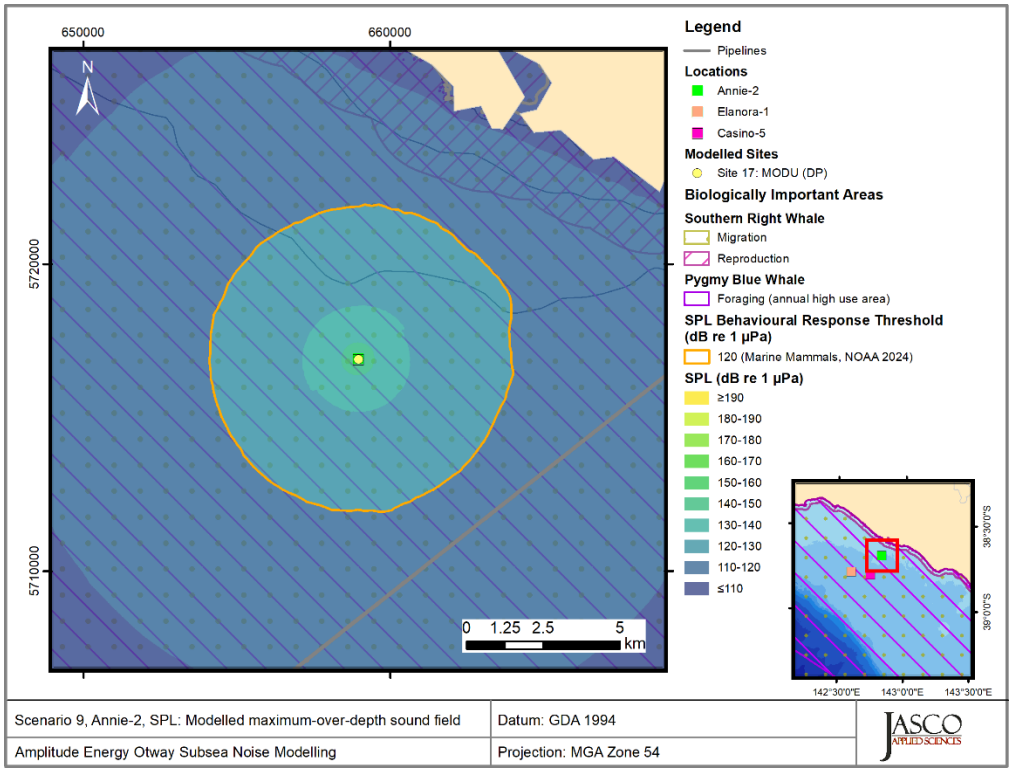

Figure 24. *Scenario 9, Modu on DP, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

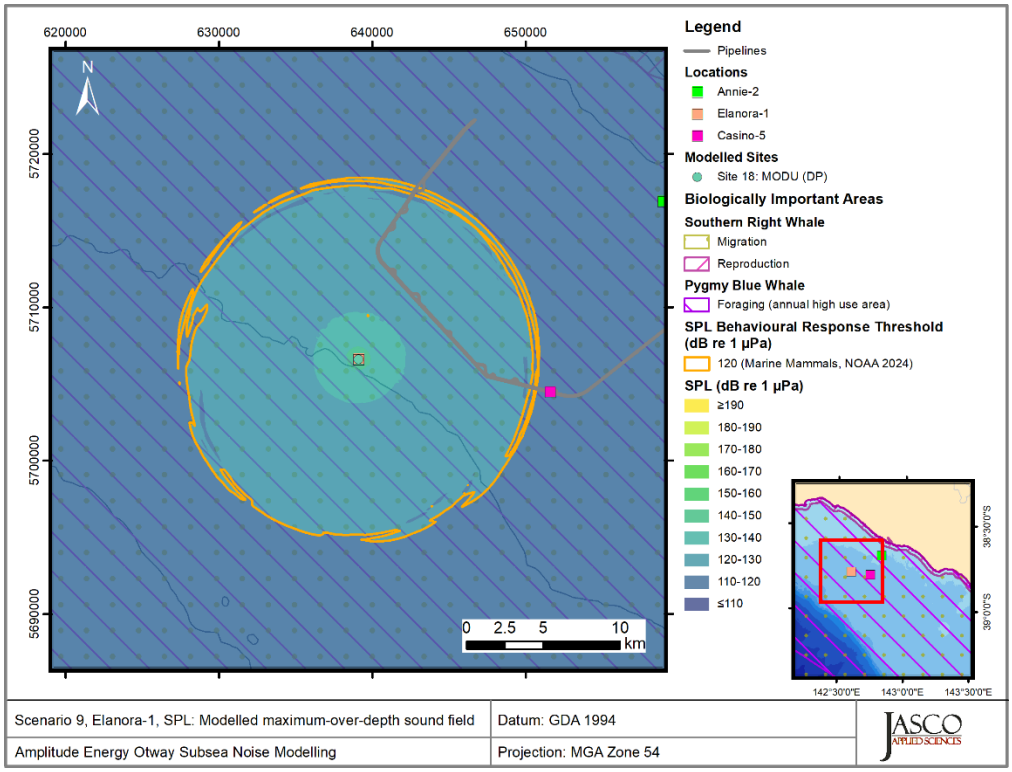

Figure 25. *Scenario 9, MODU on DP, Elanora-1, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

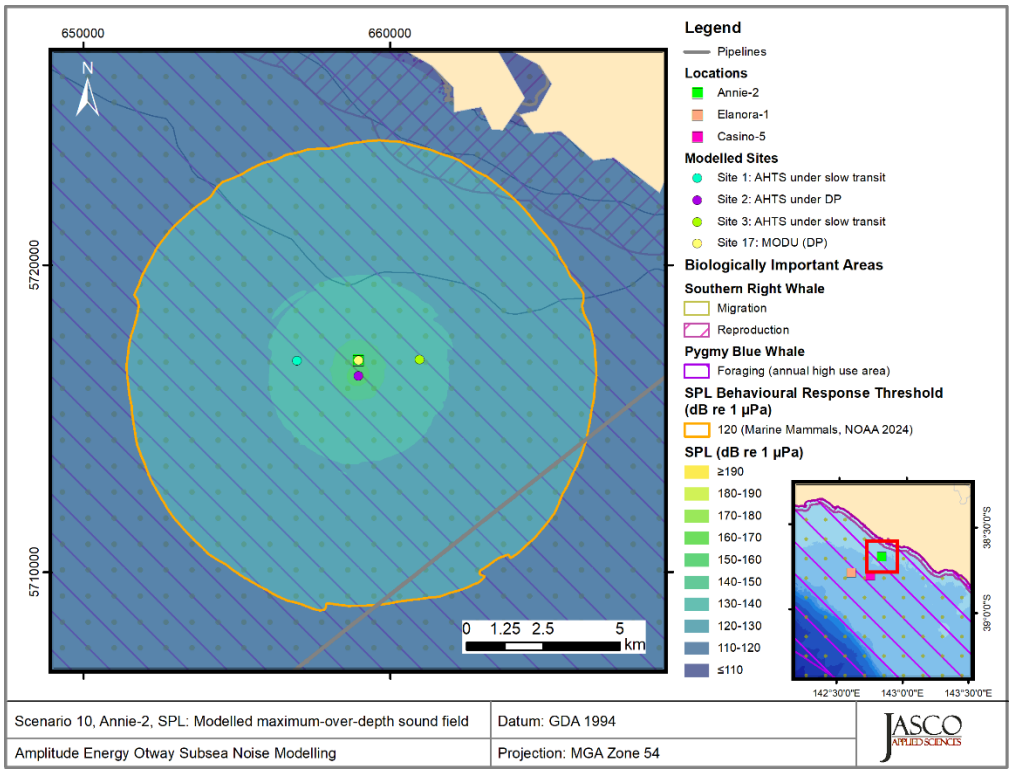

Figure 26. *Scenario 10, Mooring with Modu on DP, Annie-2, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

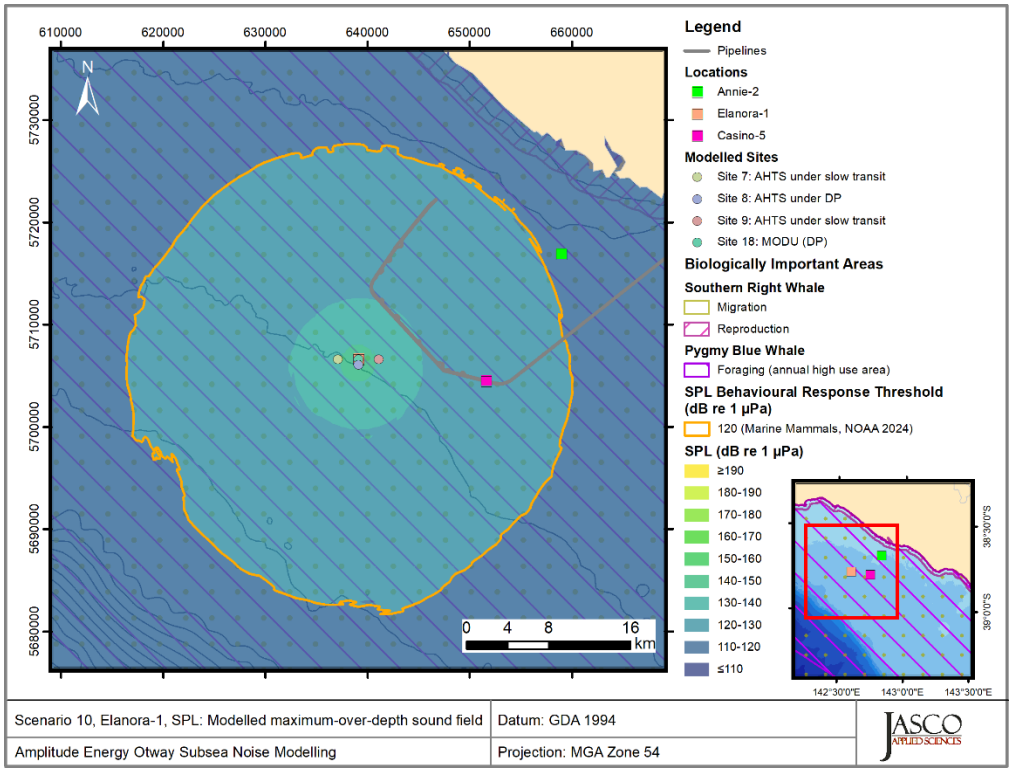

Figure 27. *Scenario 10, Mooring with MODU on DP, Elanora-1, SPL*: Sound level contour map showing the unweighted maximum-over-depth sound field in 10 dB steps, and the isopleths for behavioural response threshold for marine mammals.

4.2.2. Accumulated SEL_{24h} Sound level Contour Maps

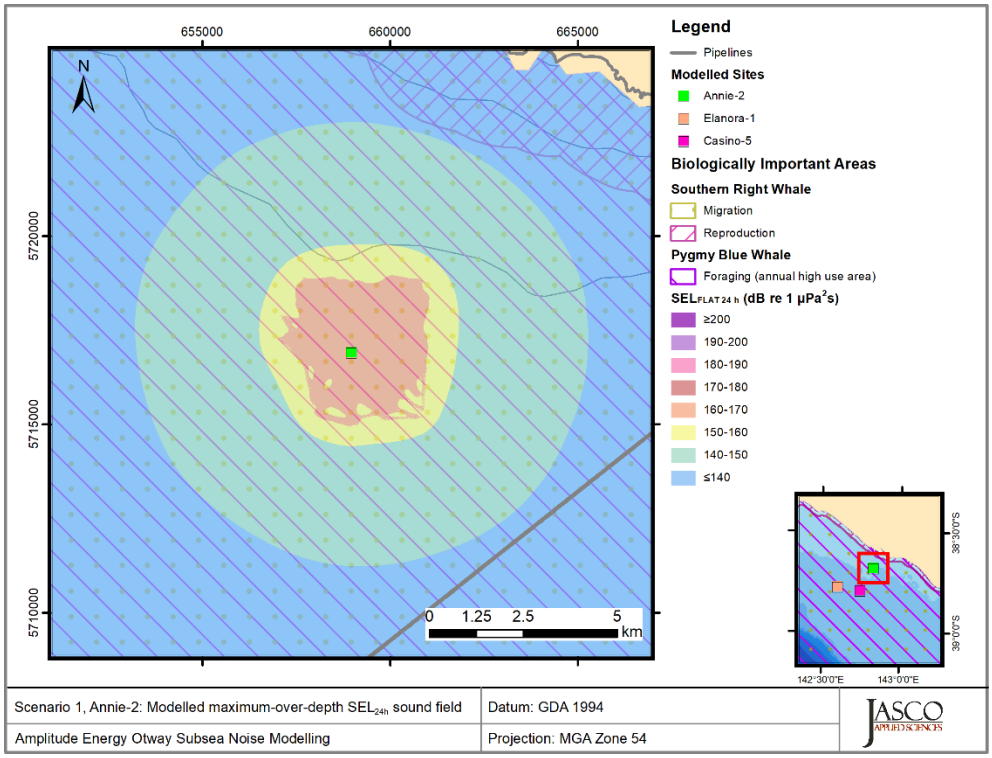

Figure 28. *Scenario 1, Drilling prelays, Annie-2, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

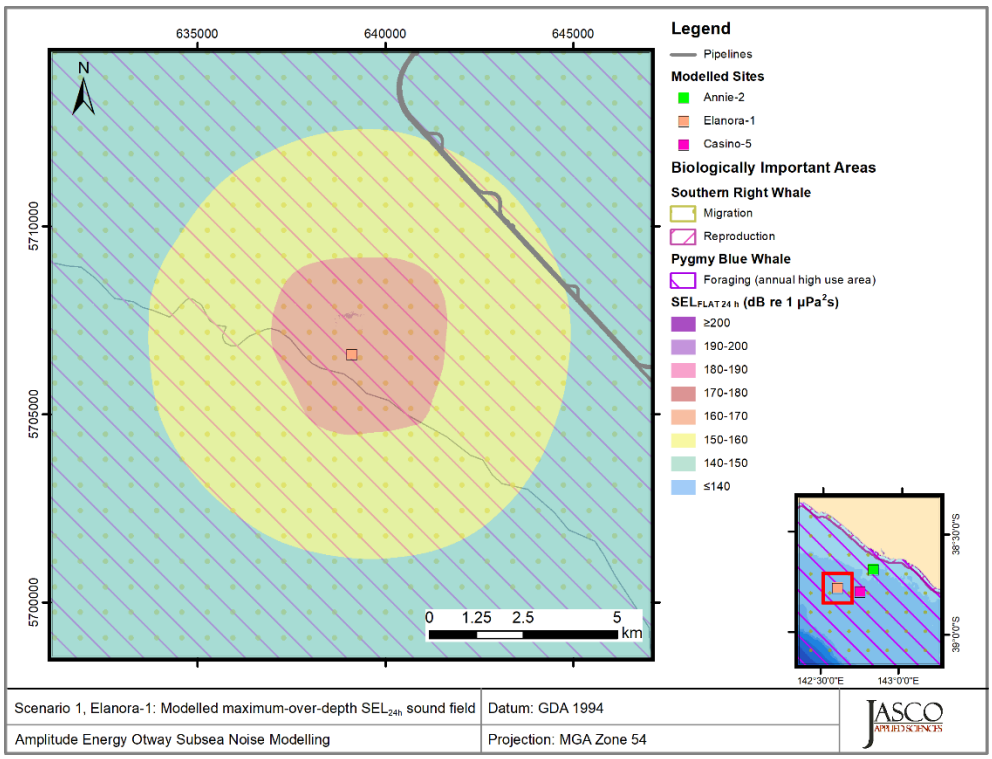

Figure 29. *Scenario 1, Drilling Prelays, Elanora-1, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

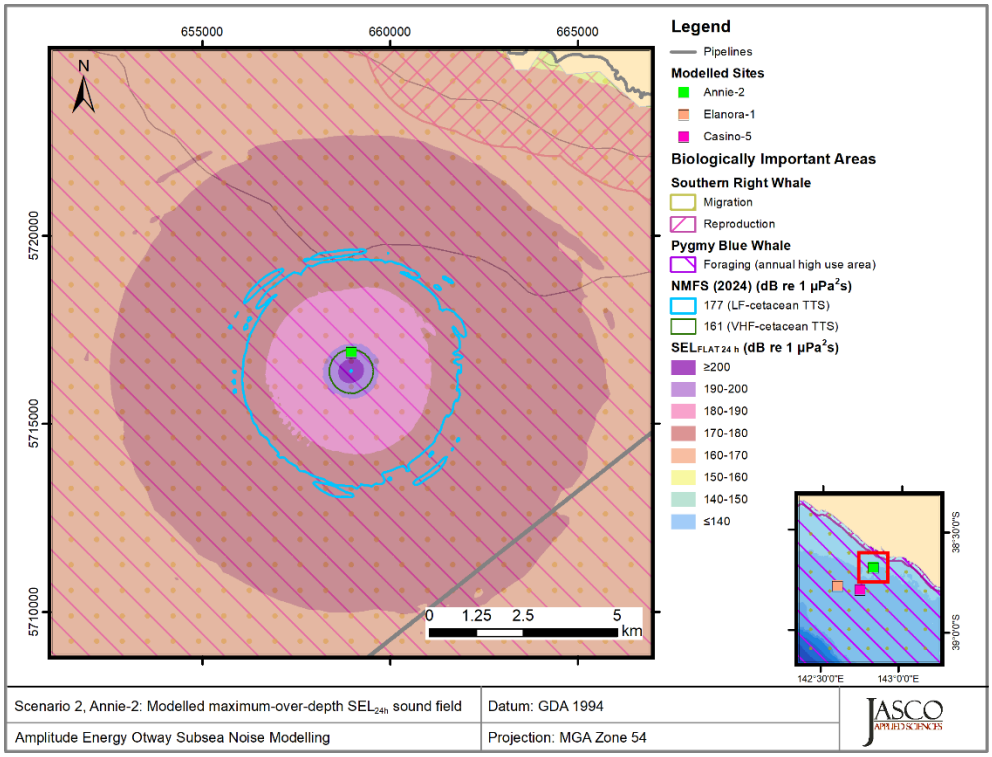

Figure 30. *Scenario 2, Mooring, Annie-2, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

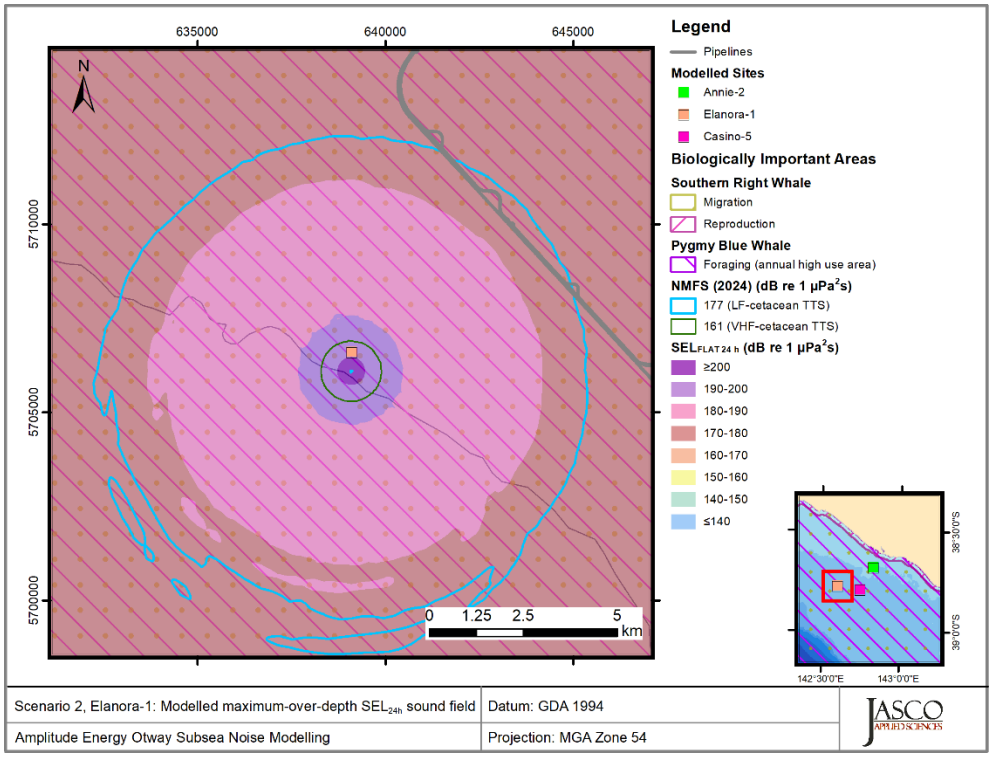

Figure 31. *Scenario 2, Mooring, Elanora-1, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

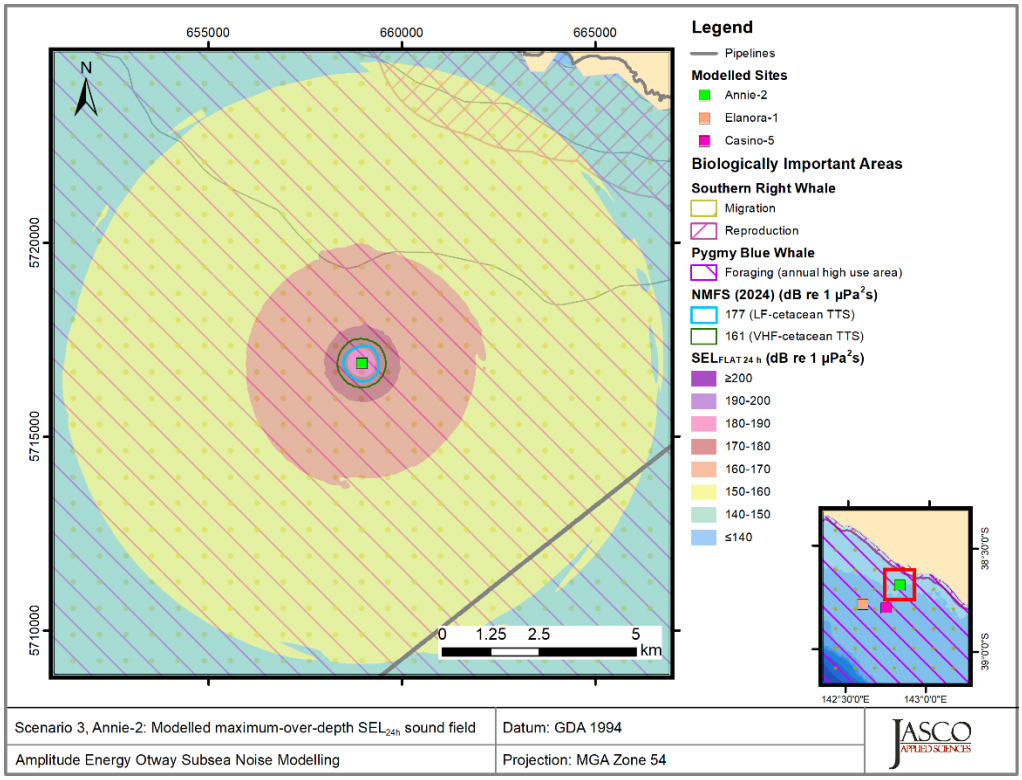

Figure 32. *Scenario 3, MODU Drilling, Annie-2, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

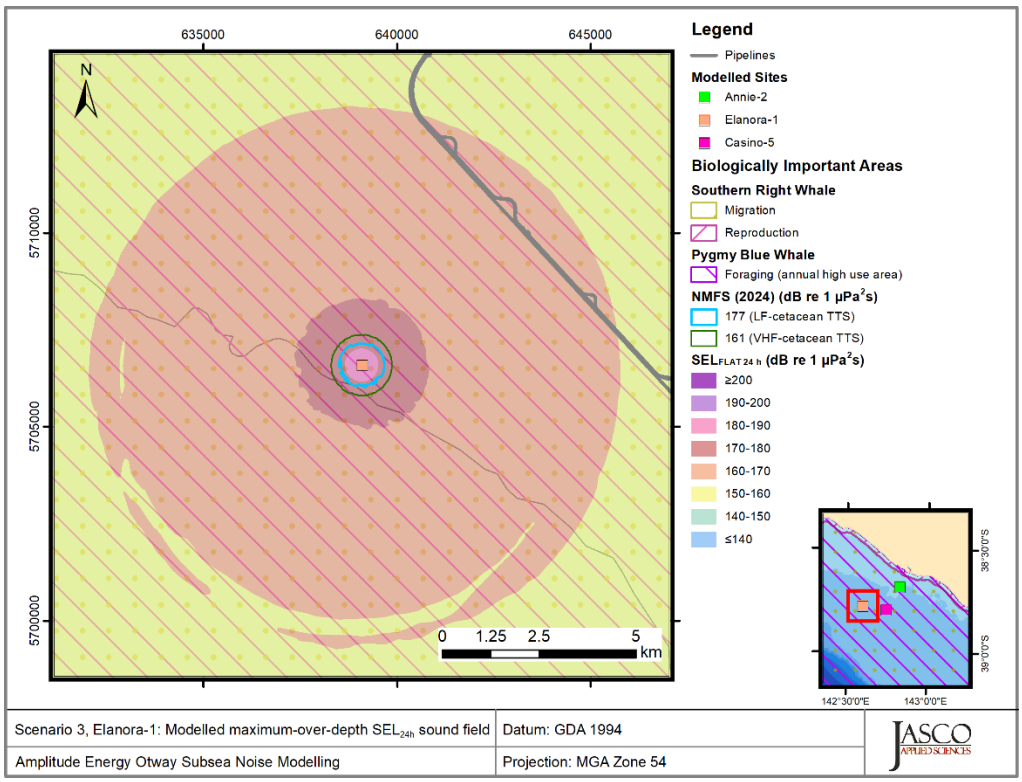

Figure 33. *Scenario 3, MODU Drilling, Elanora-1, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

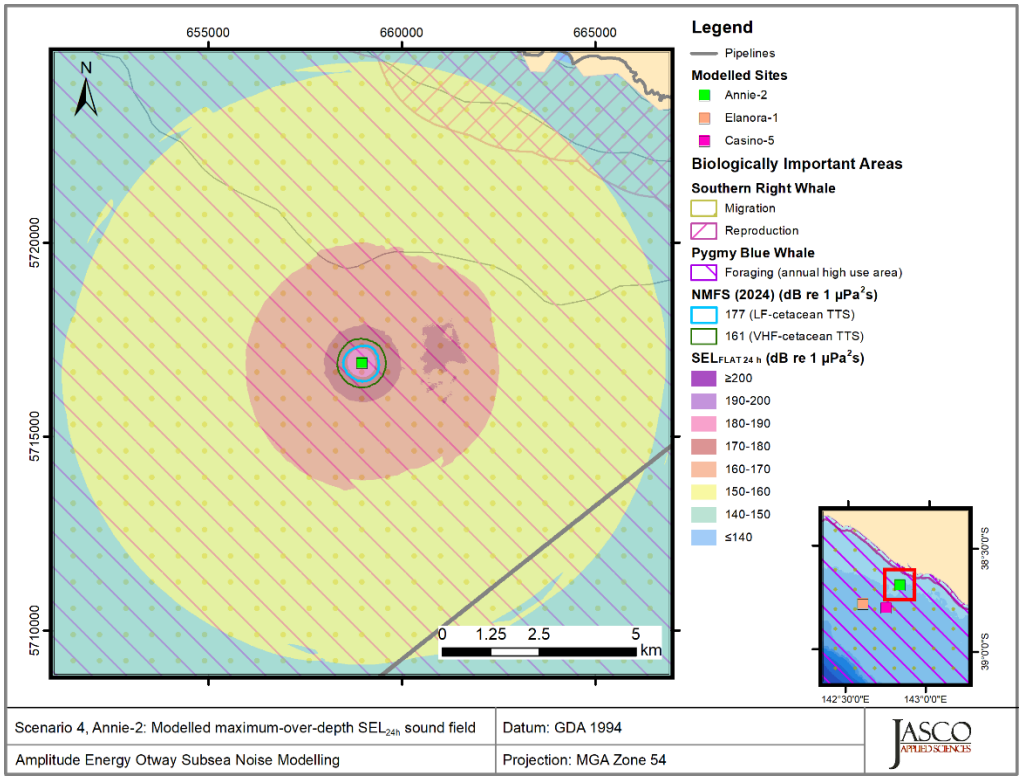

Figure 34. *Scenario 4, Drilling and standby OSV, Annie-2, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

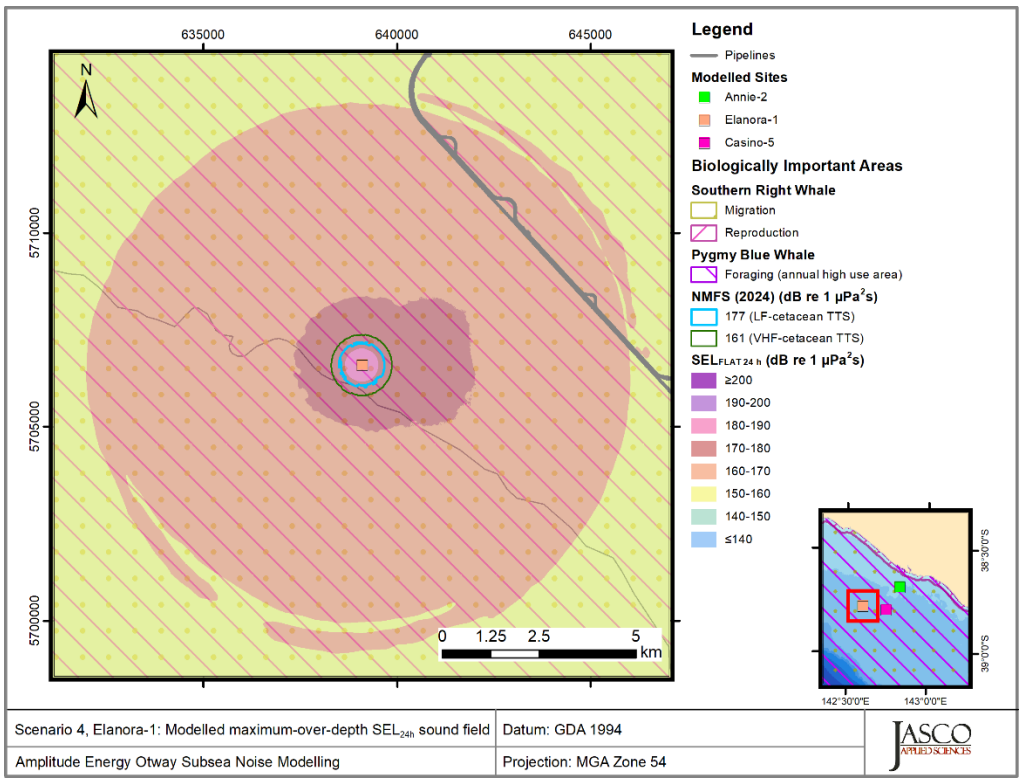

Figure 35. *Scenario 4, Drilling and standby OSV, Elanora-1, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

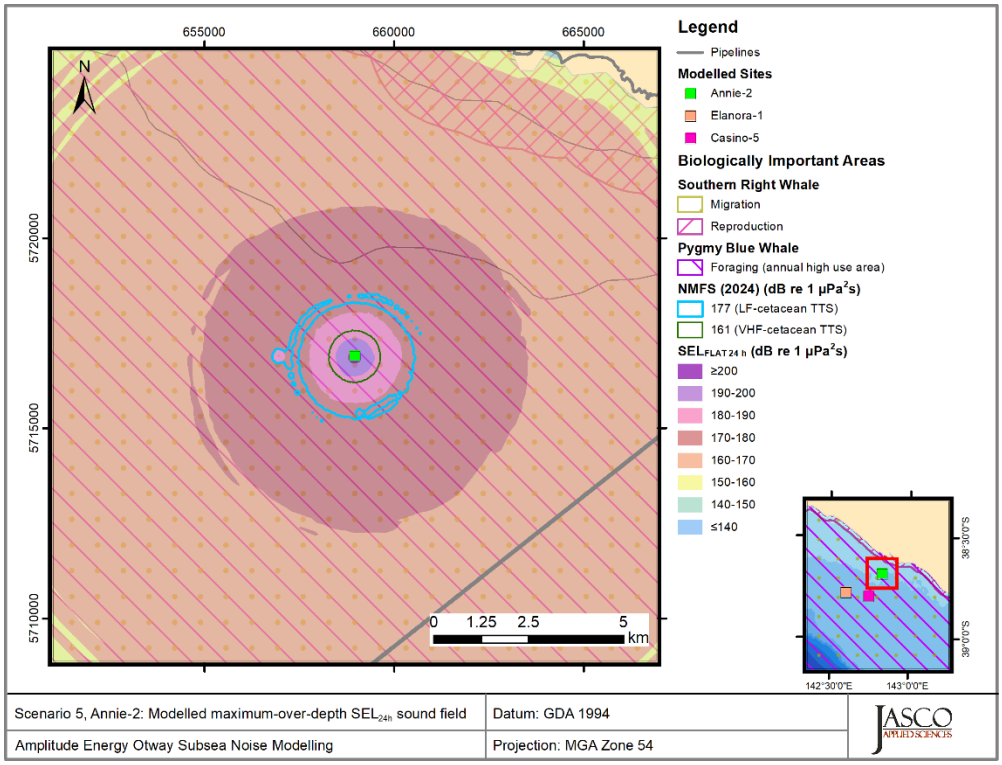

Figure 36. *Scenario 5, Drilling and standby OSV during resupply, Annie-2, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

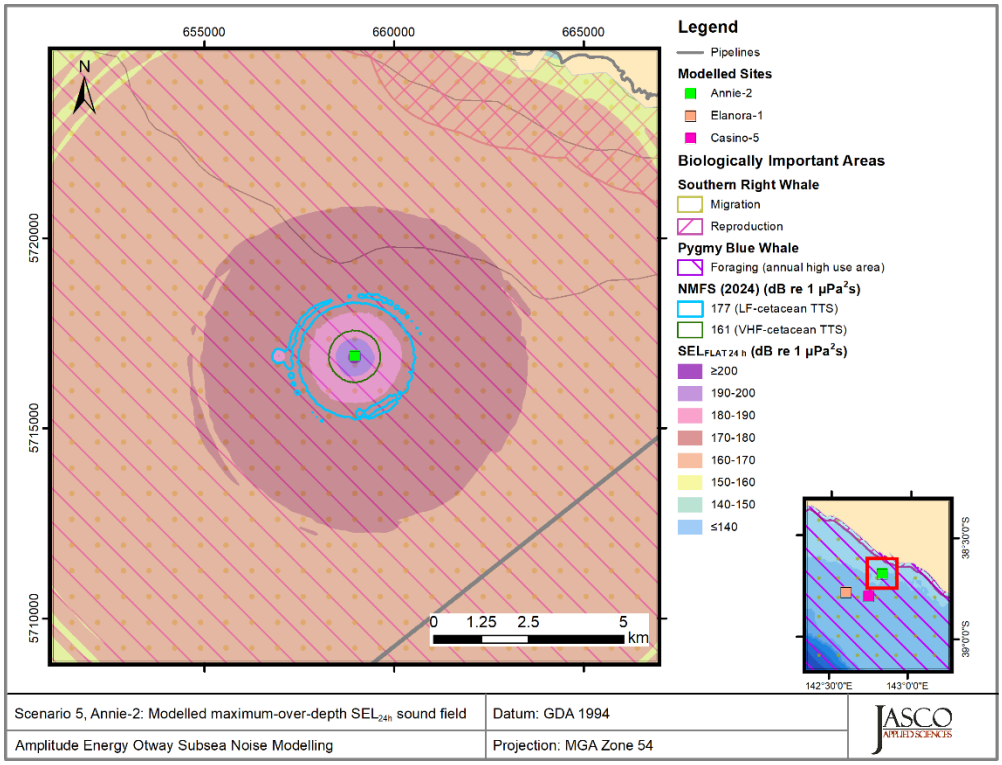

Figure 37. *Scenario 5, Drilling and standby OSV during resupply, Elanora-1, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

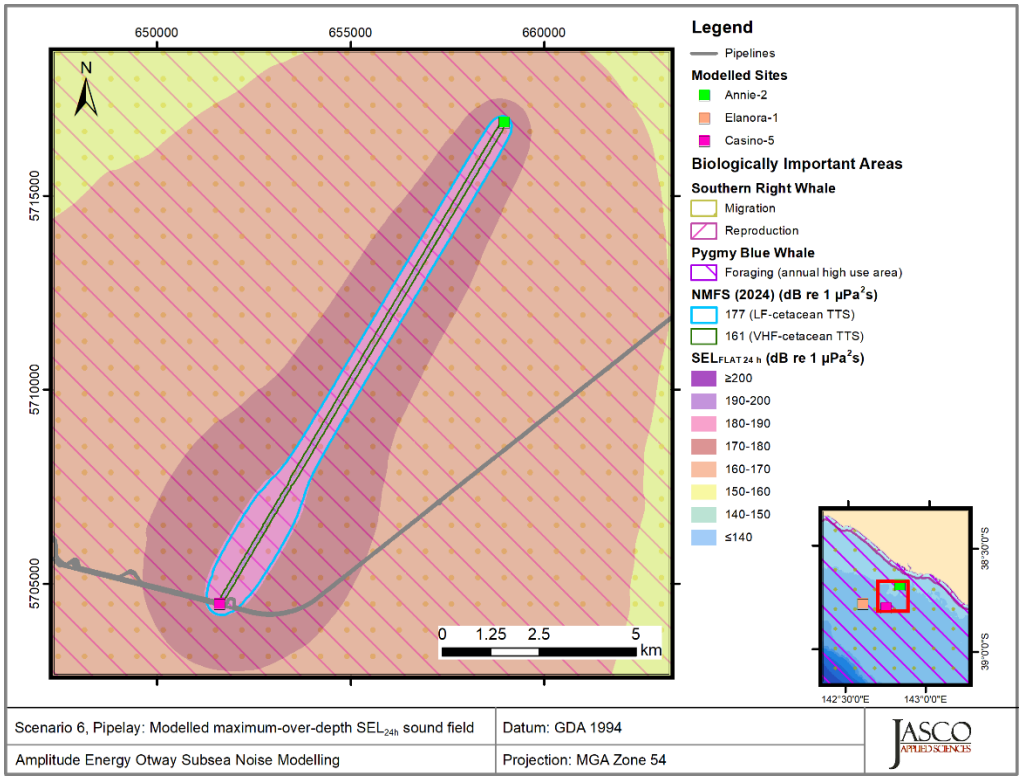

Figure 38. *Scenario 6, Pipeline/Umbilical installation*, Annie-2 & Casino-5*, accumulated SEL24h*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

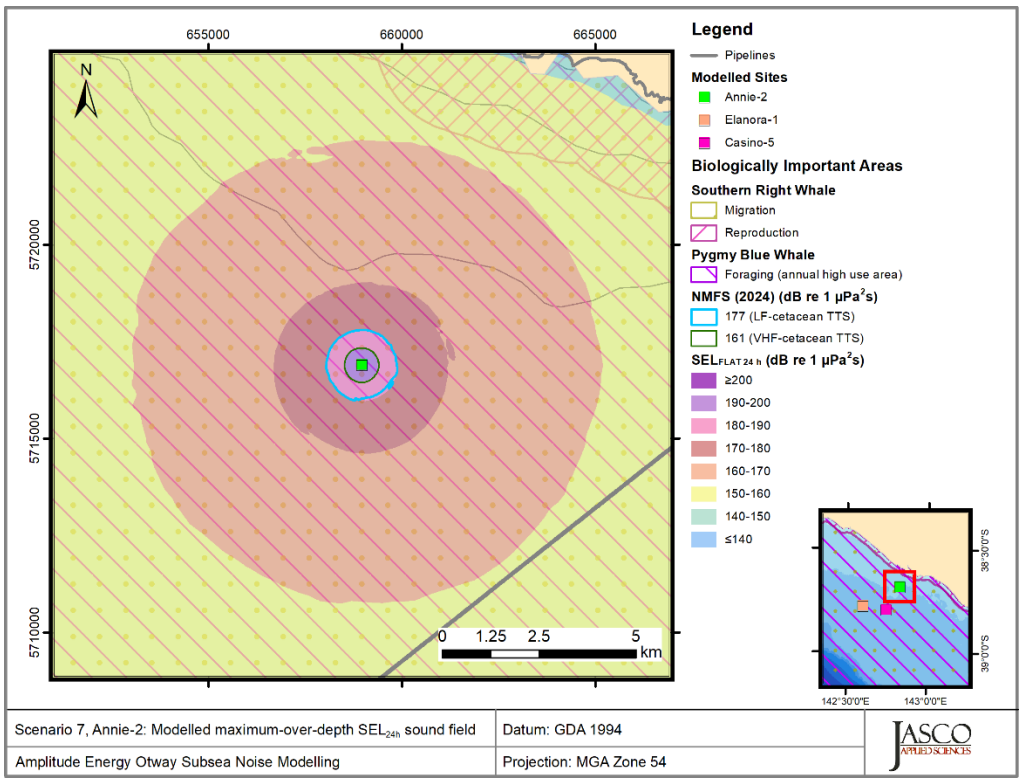

Figure 39. *Scenario 7, Installation, Annie-2, accumulated SEL24h*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

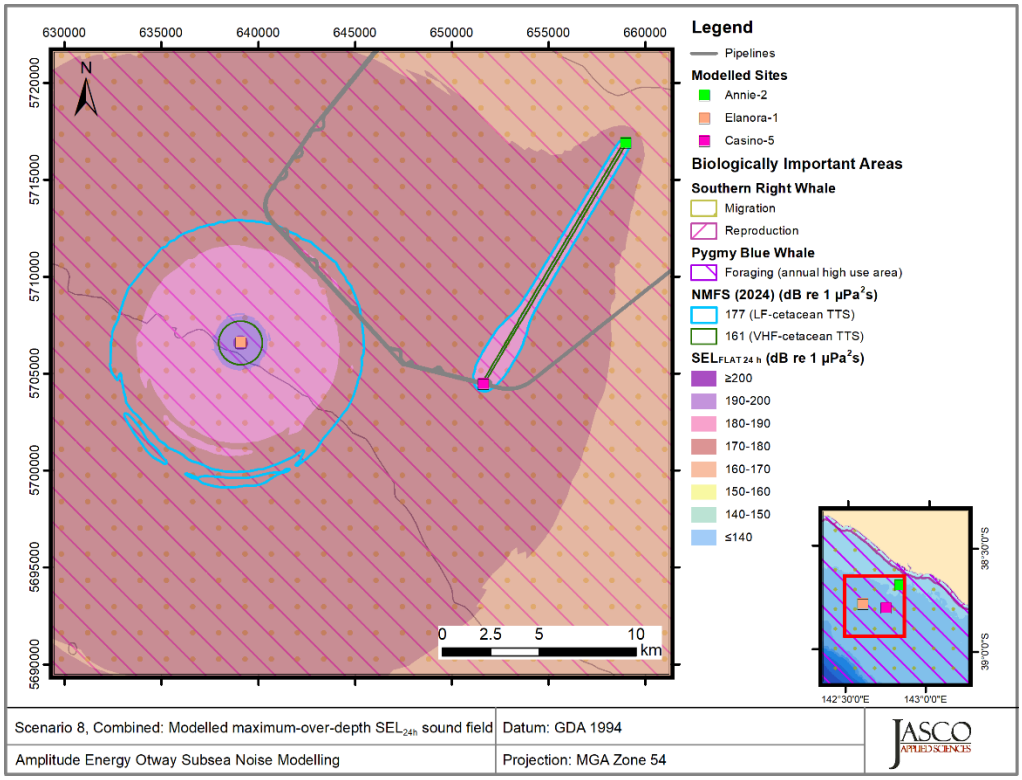

Figure 40. *Scenario 8, Drilling and standby OSV during resupply and pipelay, Elanora-1 and between Annie-2 and Casino-5, accumulated SEL$_{24h}$*: Sound level contour map showing weighted maximum-over-depth SEL$_{24h}$ results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

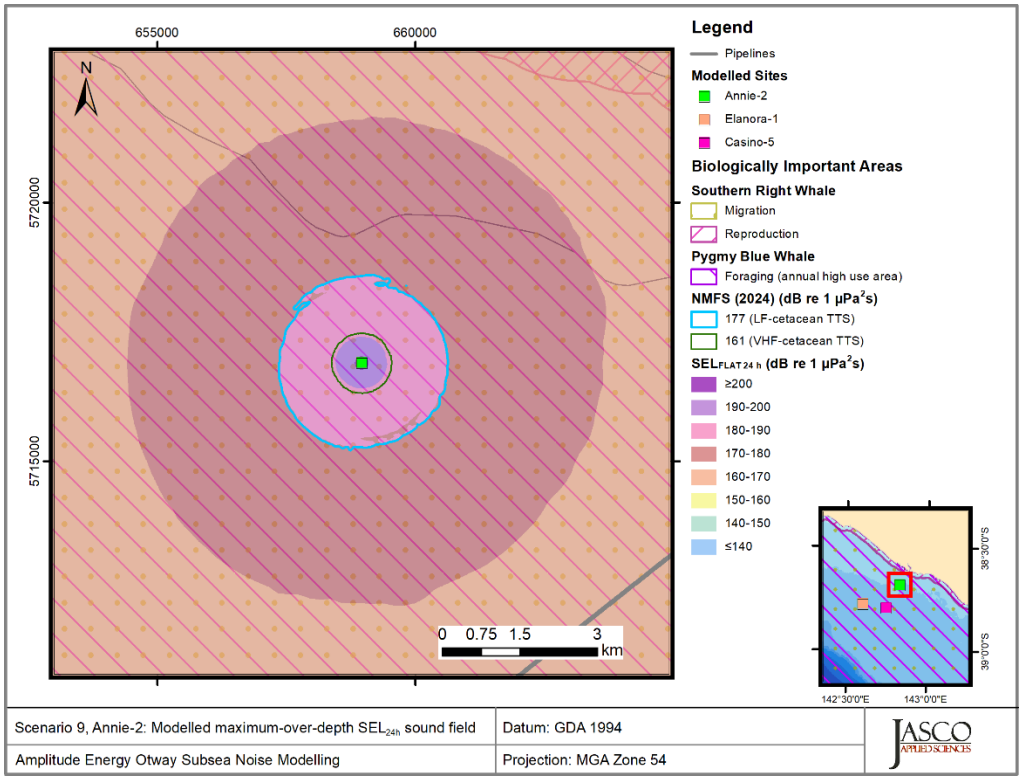

Figure 41. *Scenario 9, MODU on DP, Annie-2, accumulated SEL$_{24h}$*: Sound level contour map showing weighted maximum-over-depth SEL$_{24h}$ results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

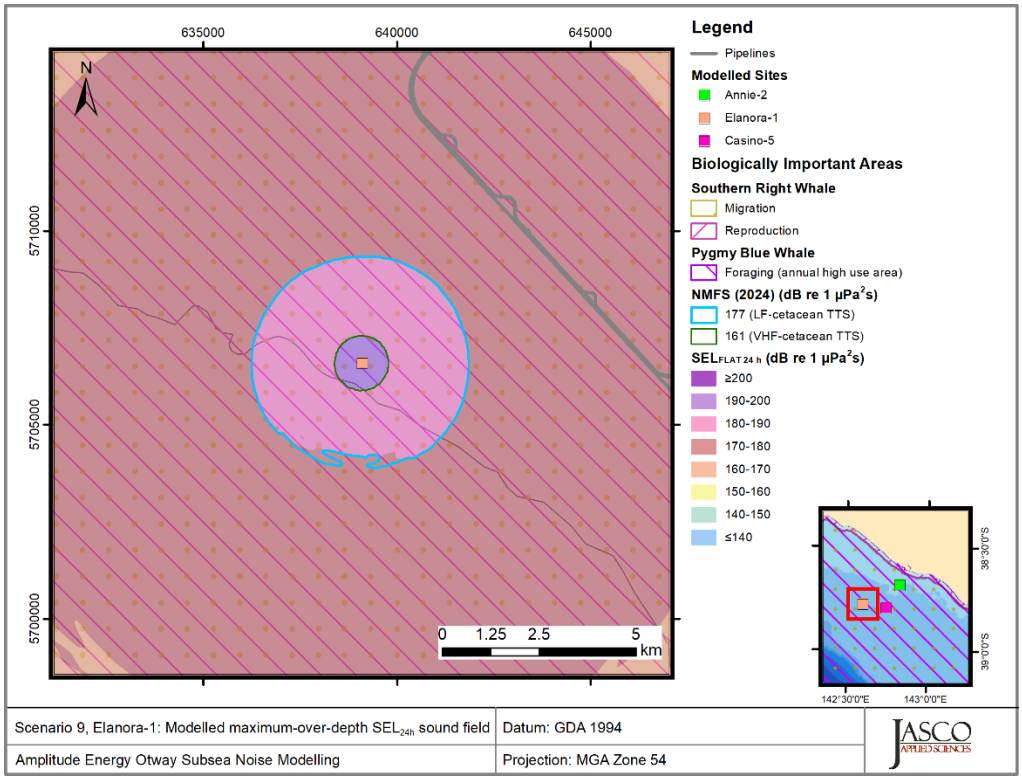

Figure 42. *Scenario 9, MODU on DP, Elanora-1, accumulated SEL$_{24h}$*: Sound level contour map showing weighted maximum-over-depth SEL$_{24h}$ results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

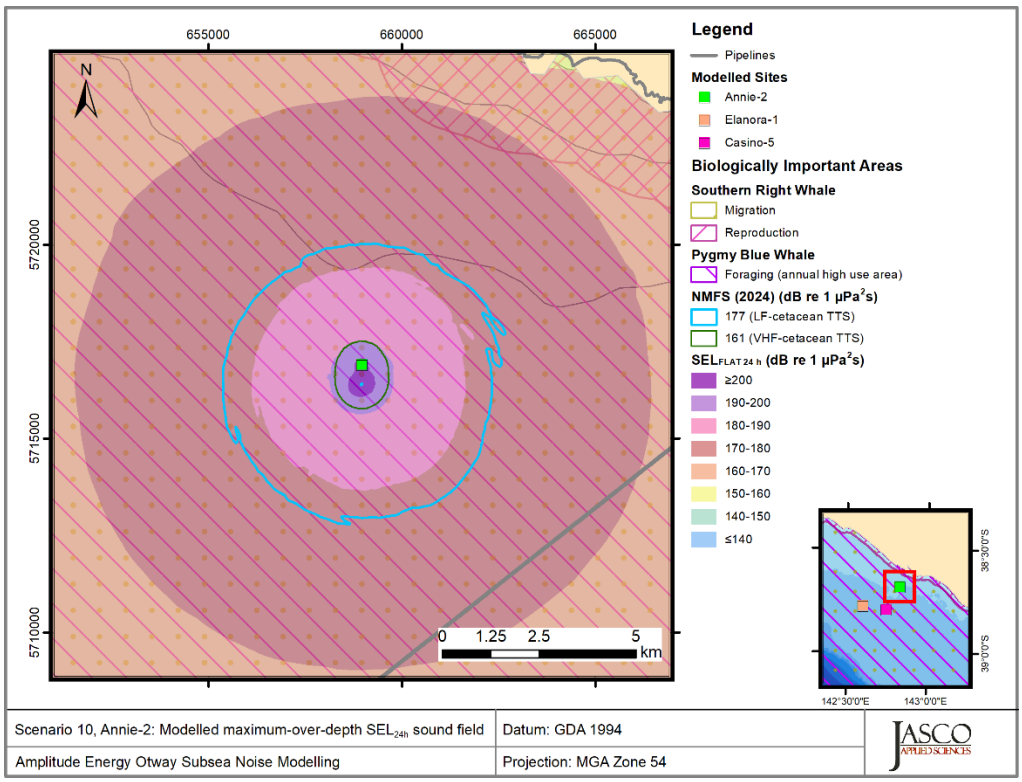

Figure 43. *Scenario 10, Mooring with MODU on DP, Annie-2, accumulated SEL$_{24h}$*: Sound level contour map showing weighted maximum-over-depth SEL$_{24h}$ results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

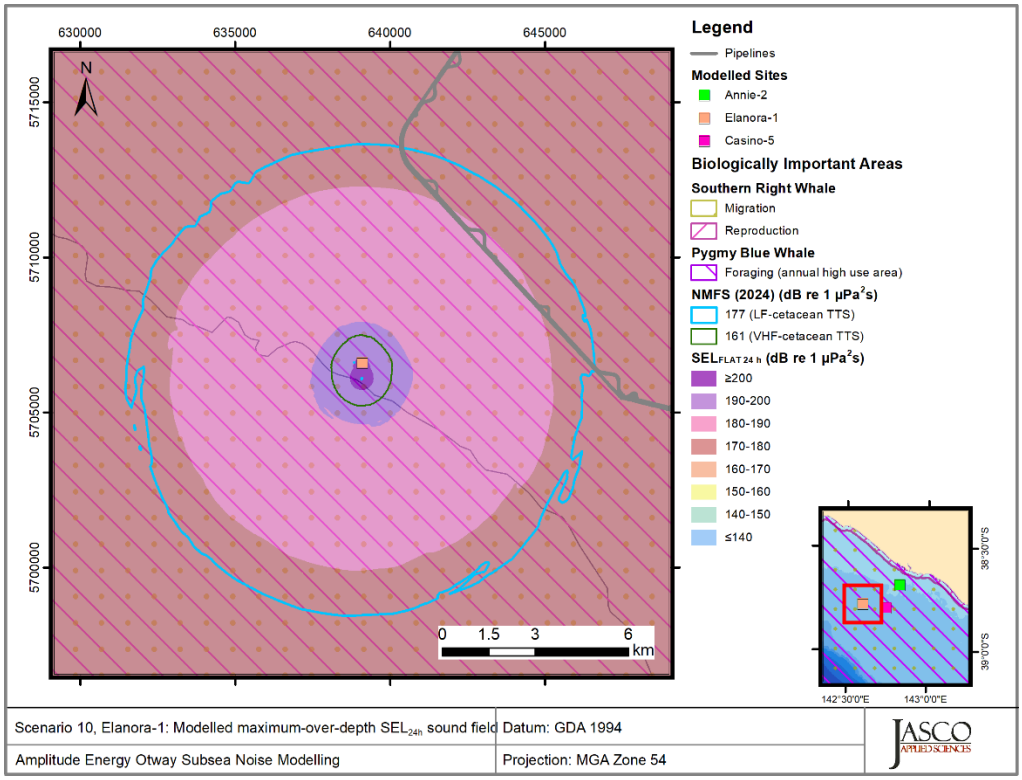

Figure 44. *Scenario 10, Mooring with MODU on DP, Elanora-1, accumulated SEL_{24h}*: Sound level contour map showing weighted maximum-over-depth SEL_{24h} results, along with isopleths for TTS in low and very-high-frequency cetaceans. Thresholds omitted here were not reached or not long enough to display graphically.

5. Discussion and Conclusion

The sound speed profile (Appendix B.1.2) was derived from data from the U.S. Naval Oceanographic Office's Generalized Digital Environmental Model V 3.0 (GDEM; Teague et al. 1990, Carnes 2009). The month of August was chosen based on an analysis of the temperature, salinity, and sound speed profiles extracted from this database. The final profile consisted of a combination of three representative profiles from within the modelled area to capture the propagation effects associated with shallow and deep-water areas.

The August sound speed profile was primarily upward refracting between the sea surface and 160 m water depth. The upward refracting section of the profile may result in energy being refracted away from the seabed and back into the water column, which can lead to large distances to isopleths compared to other months. The upward refracting sound speed profile has the potential trap frequencies above 93 Hz based on the thickness of the refracting layer (Jensen et al. 2011). These frequencies also correspond to the majority of the highest spectral levels for the considered sources detailed in Section 3.1, which can further enhance large distances to isopleths and criteria compared to other months.

Considering activity locations are situated on the continental shelf, variations in bathymetry were generally gradual within the modelled areas. Any variations in the bathymetry had a small effect on the predicted sound field footprints as manifested in the generally symmetric sound field footprints. However, the composition of the seabed used for modelling had a more substantial influence when comparing the threshold radii and sound field footprints between the Annie-2 and Elanora-1 areas. The presence of a thin veneer of un-consolidated coarse sand overlying semi-cemented carbonate rock at Elanora-1 led to a more reflective seabed and likely led to larger isopleths for low level thresholds than Annie-2. This is most evident for the marine mammal behavioural threshold of 120 dB re 1 µPa (SPL) for non-impulsive sound sources, where the Elanora-1 radii and areas are larger than Annie-2 radii and areas. However, the distribution of sand over cemented carbonate appears to be variable in the Otway Basin; (McPherson et al. 2021). Towards the Elanora-1 area, for simplicity, modelling has assumed a sand layer throughout the area. In reality, the sand layer may be present or absent depending on exact location and hence radii may be smaller than predicted. In general, the sediment cover along the continental shelf of the Otway region is minimal and non-uniform (James and Bone 2010).

The modelled scenarios generally considered activities at either Elanora-1 or Annie-2. The exception are, pipelay between Annie-2 and Casino-5 and the concurrent operations with drilling activities at Elanora-1 occurring at the same time as pipelay between Annie-2 and Casino-5 (Scenario 8). The concurrent operations scenario (Scenario 8) was considered to capture what may be a worst-case occurrence, with multiple simultaneous operations occurring. Figures 21–23 show the potential difference in the SPL contours when the pipelay may occur simultaneously but at different locations along the route with drilling activities at Elanora-1. These contours can be compared to Figure 15 for the same drilling activities at occurring only at Elanora-1. Whilst the total ensonified area and isopleth contours do increase when activities at Elanora-1 are considered with pipelay between Annie-2 and Casino-5, the resultant contours to isopleths like the behavioural response criteria of 120 dB re 1 µPa (SPL) do not significantly change. This is likely due to the activities at Elanora-1 occurring over a more reflective seabed, as discussed above, and containing louder sources than the pipelay activity. Within this modelled scenario activities at Elanora-1 are predicted to be the dominant contributor to the sound field. For PTS and TTS thresholds, for all considered hearing groups, Figure 40 show the result of the concurrent operations scenario. The additional energy that is included by considering both sets of operations simultaneously is not substantial enough to increase the size of contours such that they join. As such, for the considered concurrent scenario, the distances to PTS and TTS thresholds are approximately the same whether activities occur independently or simultaneously.

For the tables presented in Section 4.1, where a dash is used in place of a horizontal distance, these thresholds may or may not be reached. Due to the discretely sampled 20 m calculation grids of the modelled sound fields, distances to these levels could not be estimated for practicable computational purposes. It is likely that SPL isopleths could be reached at distances between the source and the modelled horizontal resolution (20 m); however, distances to injurious accumulated SEL thresholds may not be reached at any range greater than the source due the species-specific frequency weighing functions. Additionally, if close-to-source radii are comparable to the dimensions of the modelled vessel (MODU, AHTS, ISV or DSV) then they may only be reached within close proximity to a vessel, if at all.

The key results of this modelling study are summarised in Tables 18 and 19 below. These tables present the maximum distances to relevant criteria and/or thresholds. Table 18 summarises scenarios 1–7 and associated operations which may occur at Annie-2, Elanora-1, and pipelay between Annie-2 and Casino-5. Table 19 summarises potential concurrent drilling operations at Elanora-1 and pipelay operations between Annie-2 and Casino-5.

Table 18. Summary of maximum (R_{max}) horizontal distances (in km) to the behavioural response threshold, temporary threshold shift (TTS) and permanent threshold shift (PTS) for marine mammals. The maximum across scenarios 1–7 at Annie-2, Elanora-1, and pipelay between Annie-2 and Casino-5 are reported here.

Hearing group	Modelled distance to effect threshold (R_{max})					
	Behavioural response[a]	TTS[b]	PTS[b]	Behavioural response[a]	TTS[b]	PTS[b]
	Annie-2			Elanora-1		
Low-frequency (LF) cetaceans	7.87	3.60	0.40	21.7	7.54	0.50
High-frequency (HF) cetaceans		0.47	0.03		0.66	0.04
Very High-frequency (VHF) cetaceans		0.69	0.11		0.88	0.09
Otariid Seals		0.44	0.03		0.56	0.03

Noise exposure criteria: [a] NOAA (2024) and [b] NMFS (2024).

Table 19. Summary of maximum (R_{max}) horizontal distances (in km) to the behavioural response threshold, temporary threshold shift (TTS) and permanent threshold shift (PTS) for marine mammals. For the concurrent scenario (Scenario 8) with drilling at Elanora-1 and pipelay between Annie-2 and Casino-5

Hearing group	Modelled distance to effect threshold (R_{max})		
	Behavioural response[a]	TTS[b]	PTS[b]
	Concurrent		
Low-frequency (LF) cetaceans	30.7	7.50	0.48
High-frequency (HF) cetaceans		0.90	0.03
Very High-frequency (VHF) cetaceans		1.14	0.12
Otariid Seals		0.57	0.03

Noise exposure criteria: [a] NOAA (2024) and [b] NMFS (2024).
This scenario is a combination of Scenario 5 at Elanora-1 and Scenario 6 to represent concurrent operations.

Table 20. Summary of maximum (R_{max}) horizontal distances (in km) to the behavioural response threshold, temporary threshold shift (TTS) and permanent threshold shift (PTS) for marine mammals. The maximum across scenarios 9 and 10 at Annie-2 and Elanora-1 are shown.

Hearing group	Modelled distance to effect threshold (R_{max})					
	Behavioural response[a]	TTS[b]	PTS[b]	Behavioural response[a]	TTS[b]	PTS[b]
	Annie-2			Elanora-1		
Low-frequency (LF) cetaceans	8.02	3.88	0.61	24.8	7.92	0.67
High-frequency (HF) cetaceans		0.71	0.03		0.88	0.04
Very High-frequency (VHF) cetaceans		0.87	0.07		1.15	0.06
Otariid Seals		0.68	0.03		0.82	0.03

Noise exposure criteria: [a] NOAA (2024) and [b] NMFS (2024).

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Appendix A. Acoustic Metrics

This section describes in detail the acoustic metrics, impact criteria, and frequency weighting relevant to the modelling study.

A.1. Pressure Related Acoustic Metrics

Underwater sound pressure amplitude is measured in decibels (dB) relative to a fixed reference pressure of p_0 = 1 µPa. Because the perceived loudness of sound, especially pulsed sound such as from seismic airguns, pile driving, and sonar, is not generally proportional to the instantaneous acoustic pressure, several sound level metrics are commonly used to evaluate sound and its effects on marine life. Here we provide specific definitions of relevant metrics used in the accompanying report. Where possible, we follow International Organization for Standardization definitions and symbols for sound metrics (e.g., ISO 2017, ANSI S1.1-2013).

The sound pressure level (SPL or L_p; dB re 1 µPa) is the root-mean-square (rms) pressure level in a stated frequency band over a specified time window (T; s). It is important to note that SPL always refers to an rms pressure level and therefore not instantaneous pressure:

$$L_p = 10 \log_{10} \left(\frac{1}{T} \int_T g(t)\, p^2(t)\, dt / p_0^2 \right) \text{ dB} \tag{A-1}$$

where $g(t)$ is an optional time weighting function. In many cases, the start time of the integration is marched forward in small time steps to produce a time-varying SPL function.

The sound exposure level (SEL or L_E; dB re 1 µPa^2·s) is the time-integral of the squared acoustic pressure over a duration (T):

$$L_E = 10 \log_{10} \left(\int_T p^2(t)\, dt / T_0 p_0^2 \right) \text{ dB} \tag{A-2}$$

where T_0 is a reference time interval of 1 s. SEL continues to increase with time when non-zero pressure signals are present. It is a dose-type measurement, so the integration time applied must be carefully considered for its relevance to impact to the exposed recipients.

SEL can be calculated over a fixed duration, such as the time of a single event or a period with multiple acoustic events. When applied to pulsed sounds, SEL can be calculated by summing the SEL of the N individual pulses. For a fixed duration, the square pressure is integrated over the duration of interest. For multiple events, the SEL can be computed by summing (in linear units) the SEL of the N individual events:

$$L_{E,N} = 10 \log_{10} \left(\sum_{i=1}^{N} 10^{\frac{L_{E,i}}{10}} \right) \text{ dB}\,. \tag{A-3}$$

If applied, the frequency weighting of an acoustic event should be specified, as in the case of weighted SEL (e.g., $L_{E,LFC,24h}$; Appendix 0). The use of fast, slow, or impulse exponential-time-averaging or other time-related characteristics should also be specified.

A.2. Decidecade Band Analysis

The distribution of a sound's power with frequency is described by the sound's spectrum. The sound spectrum can be split into a series of adjacent frequency bands. Splitting a spectrum into 1 Hz wide bands, called passbands, yields the power spectral density of the sound. This splitting of the spectrum into passbands of a constant width of 1 Hz, however, does not represent how animals perceive sound.

Because animals perceive exponential increases in frequency rather than linear increases, analysing a sound spectrum with passbands that increase exponentially in size better approximates real-world scenarios. In underwater acoustics, a spectrum is commonly split into decidecade bands, which are one tenth of a decade wide. A decidecade is sometimes referred to as a "1/3 octave" because one tenth of a decade is approximately equal to one third of an octave. Each decade represents a factor 10 in sound frequency. Each octave represents a factor 2 in sound frequency. The centre frequency of the ith band, $f_c(i)$, is defined as:

$$f_c(i) = 10^{\frac{i}{10}} \text{ kHz} \tag{A-4}$$

and the low (f_{lo}) and high (f_{hi}) frequency limits of the ith decade band are defined as:

$$f_{lo,i} = 10^{\frac{-1}{20}} f_c(i) \quad \text{and} \quad f_{hi,i} = 10^{\frac{1}{20}} f_c(i) \tag{A-5}$$

The decidecade bands become wider with increasing frequency, and on a logarithmic scale the bands appear equally spaced (Figure A-1). The acoustic modelling spans from band 10 (f_c (10) = 10 Hz) to band 44 ($f_c(44)$ = 25 kHz).

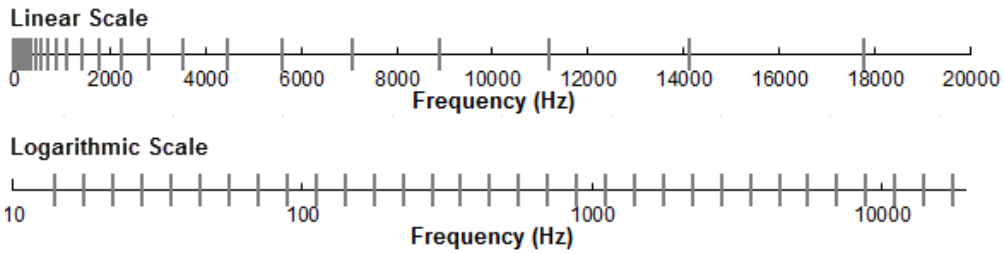

Figure A-1. Decidecade frequency bands (vertical lines) shown on a linear frequency scale and a logarithmic scale.

The sound pressure level in the ith band ($L_{p,i}$) is computed from the spectrum $S(f)$ between $f_{lo,i}$ and $f_{hi,i}$:

$$L_{p,i} = 10\, log_{10} \int_{f_{lo,i}}^{f_{hi,i}} S(f)\, df \text{ dB} \tag{A-6}$$

Summing the sound pressure level of all the bands yields the broadband sound pressure level:

$$\text{Broadband SPL} = 10 \log_{10} \sum_i 10^{\frac{L_{p,i}}{10}} \text{ dB} \tag{A-7}$$

Figure A-2 shows an example of how the decidecade band sound pressure levels compare to the sound pressure spectral density levels of an ambient sound signal. Because the decidecade bands are wider than 1 Hz, the decidecade band SPL is higher than the spectral levels at higher frequencies. Acoustic modelling of decidecade bands requires less computation time than 1 Hz bands and still resolves the frequency-dependence of the sound source and the propagation environment.

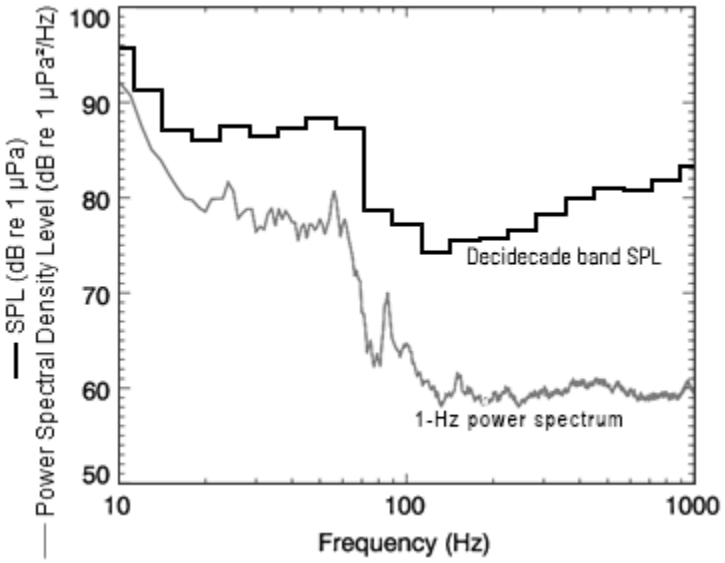

Figure A-2. Sound pressure spectral density levels and the corresponding decidecade band sound pressure levels of example ambient noise shown on a logarithmic frequency scale.Because the decidecade bands are wider with increasing frequency, the decidecade band SPL is higher than the power spectrum.

A.3. Marine Mammal Noise Effect Criteria

It has been long recognised that marine mammals can be adversely affected by underwater anthropogenic noise. For example, Payne and Webb (1971) suggest that communication distances of fin whales are reduced by shipping sounds. Subsequently, similar concerns arose regarding effects of other underwater noise sources and the possibility that impulsive sources—primarily airguns used in seismic surveys—could cause auditory injury. This led to a series of workshops held in the late 1990s, conducted to address acoustic mitigation requirements for seismic surveys and other underwater noise sources (NMFS 1998, ONR 1998, Nedwell and Turnpenny 1998, HESS 1999, Ellison and Stein 1999). In the years since these early workshops, a variety of thresholds have been proposed for auditory injury, impairment, and disturbance. The following sections summarise the recent development of thresholds; however, this field remains an active research topic.

A.3.1. Injury and Hearing Sensitivity Changes

In recognition of shortcomings of the SPL-only based auditory injury criteria, in 2005 NMFS sponsored the Noise Criteria Group to review literature on marine mammal hearing to propose new noise exposure criteria. Some members of this expert group published a landmark paper (Southall et al. 2007) that suggested assessment methods similar to those applied for humans. The resulting recommendations introduced dual auditory injury criteria for impulsive sounds that included peak pressure level thresholds and SEL_{24h} thresholds, where the subscripted 24h refers to the accumulation period for calculating SEL. The peak pressure level criterion is not frequency weighted whereas SEL_{24h} is frequency weighted according to one of four marine mammal species hearing groups: low-, mid- and high-frequency cetaceans (LF, MF, and HF cetaceans, respectively) and Pinnipeds in Water (PINN). These weighting functions are referred to as M-weighting filters (analogous to the A-weighting filter for humans; see Appendix A.4). The SEL_{24h} thresholds were obtained by extrapolating measurements of onset levels of Temporary Threshold Shift (TTS) in belugas by the amount of TTS required to produce Permanent Threshold Shift (PTS) in chinchillas. The Southall et al. (2007) recommendations do not specify an exchange rate, which suggests that the thresholds are the same regardless of the duration of exposure (i.e., it implies a 3 dB exchange rate).

Wood et al. (2012) refined Southall et al.'s (2007) thresholds, suggesting lower PTS and TTS values for LF and HF cetaceans while retaining the filter shapes. Their revised thresholds were based on TTS-onset levels in harbour porpoises from Lucke et al. (2009), which led to a revised impulsive sound PTS threshold for HF cetaceans of 179 dB re 1 $\mu Pa^2 \cdot s$. Because there were no data available for baleen whales, Wood et al. (2012) based their recommendations for LF cetaceans on results obtained from MF cetacean studies. In particular they referenced the Finneran and Schlundt (2010) research, which found mid-frequency cetaceans are more sensitive to non-impulsive sound exposure than Southall et al. (2007) assumed. Wood et al. (2012) thus recommended a more conservative TTS-onset level for LF cetaceans of 192 dB re 1 $\mu Pa^2 \cdot s$.

As of present, a definitive approach is still not apparent. There is consensus in the research community that an SEL-based method is preferable, either separately or in addition to an SPL-based approach to assess the potential for injuries. In August 2016, after substantial public and expert input into three draft versions and based largely on the above-mentioned literature (NOAA 2013, 2015, 2016), NMFS finalised technical guidance for assessing the effect of anthropogenic sound on marine mammal hearing (NMFS 2016). The guidance describes auditory injury criteria with new thresholds and frequency weighting functions for the five hearing groups described by Finneran and Jenkins (2012b). The latest revision to this work was published in 2024 (NMFS 2024).

A.3.2. Behavioural Response

Numerous studies on marine mammal behavioural responses to sound exposure have not resulted in consensus in the scientific community regarding the appropriate metric for assessing behavioural reactions. However, it is recognised that the context in which the sound is received affects the nature and extent of responses to a stimulus (Southall et al. 2007, Ellison and Frankel 2012, Southall et al. 2016).

NMFS currently uses a step function (all-or-none) threshold of 120 dB re 1 µPa SPL (unweighted) for non-impulsive sounds to assess and regulate noise-induced behavioural impacts on marine mammals (NOAA 2024). The 120 dB re 1 µPa threshold is associated with continuous sources and was derived based on studies examining behavioural responses to drilling and dredging (NOAA 2018), referring to Malme et al. (1983), Malme et al. (1984), and Malme et al. (1986), which were considered in Southall et al. (2007). Malme et al. (1986) found that playback of drillship noise did not produce clear evidence of disturbance or avoidance for levels below 110 dB re 1 µPa (SPL), possible avoidance occurred for exposure levels approaching 119 dB re 1 µPa. Malme et al. (1984) determined that measurable reactions usually consisted of rather subtle short-term changes in speed and/or heading of the whale(s) under observation. It has been shown that both received level and proximity of the sound source is a contributing factor in eliciting behavioural reactions in humpback whales (Dunlop et al. 2017, Dunlop et al. 2018).

A.4. Marine Mammal Frequency Weighting

The potential for noise to affect animals depends on how well the animals can hear it. Noises are less likely to disturb or injure an animal if they are at frequencies that the animal cannot hear well. An exception occurs when the sound pressure is so high that it can physically injure an animal by non-auditory means (i.e., barotrauma). For sound levels below such extremes, the importance of sound components at particular frequencies can be scaled by frequency weighting relevant to an animal's sensitivity to those frequencies (Nedwell and Turnpenny 1998, Nedwell et al. 2007).

A.4.1. Marine Mammal Frequency Weighting Functions

In 2015, a US Navy technical report by Finneran (2015) recommended new auditory weighting functions. The overall shape of the auditory weighting functions is similar to human A-weighting functions, which follows the sensitivity of the human ear at low sound levels. The new frequency-weighting function is expressed as:

$$G(f) = K + 10\log_{10}\left[\left(\frac{(f/f_{lo})^{2a}}{\left[1+(f/f_{lo})^{2}\right]^{a}\left[1+(f/f_{hi})^{2}\right]^{b}}\right)\right] \quad \text{(A-8)}$$

Finneran (2015) proposed five functional hearing groups for marine mammals in water: low-, mid- and high-frequency cetaceans (LF, MF, and HF cetaceans, respectively), phocid pinnipeds, and otariid pinnipeds. The parameters for these frequency-weighting functions were further modified the following year (Finneran 2016) and were adopted in NOAA's technical guidance that assesses acoustic impacts on marine mammals (NMFS 2018), and in the latest guidance by NMFS (2024). The updates did not affect the content related to either the definitions of frequency-weighting functions or the threshold values, however, the terminology for mid- and high-frequency cetaceans was changed to high- and very high-frequency cetaceans (VHF cetaceans). Table A-1. lists the frequency-weighting parameters for each hearing group relevant to this assessment, and Figure A-3 shows the resulting frequency-weighting curves.

Table A-1. Parameters for the auditory weighting functions used in this project as recommended by NMFS (2024).

	NMFS (2024)				
Functional Hearing group	**a**	**b**	**flo (kHz)**	**fhi (kHz)**	**C (dB)**
Low-frequency cetaceans (baleen whales)	0.99	5	0.168	26.6	0.12
High-frequency cetaceans (most dolphins, plus sperm, beaked, and bottlenose whales)	1.55	5	1.73	129	0.32
Very high-frequency cetaceans (true porpoises, *Kogia*, river dolphins, *Cephalorhynchus* spp., *Lagenorhynchus cruciger* and *L. australis*)	2.23	5	5.93	186	0.91
Otariid Seals in water	1.58	5	2.53	43.8	1.37

* The 'C' parameter in NMFS (2024) is equivalent to the 'K' parameter in Finneran (2015).

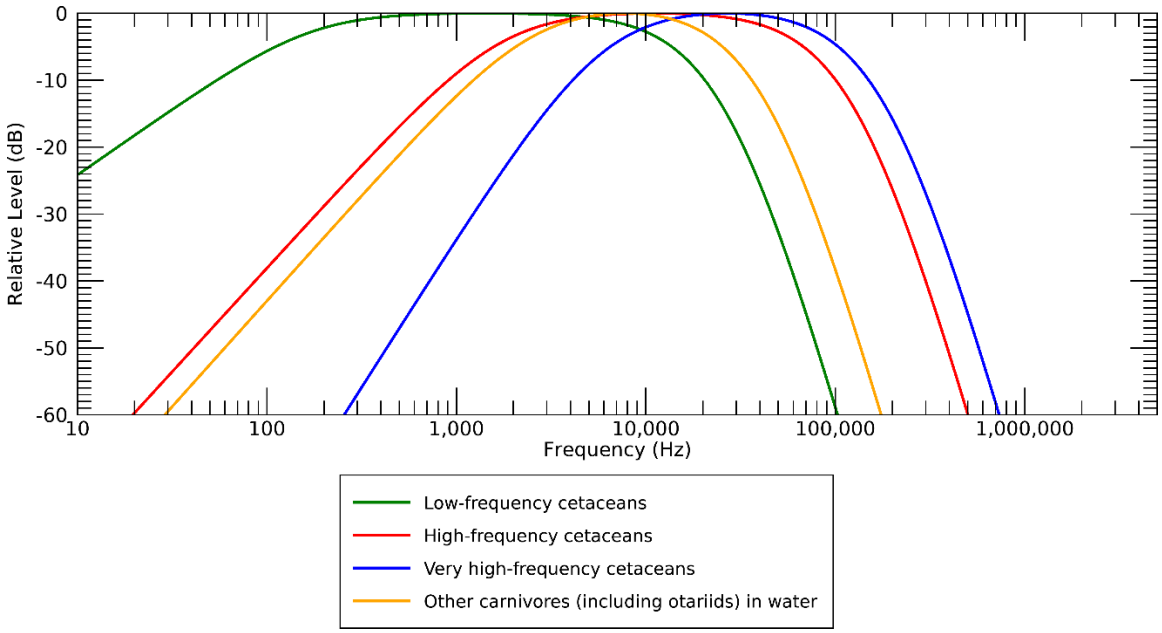

Figure A-3. Auditory weighting functions for functional marine mammal hearing groups used in this project as recommended by NMFS (2024).

Appendix B. Methods and Parameters

B.1. Environmental Parameters

B.1.1. Bathymetry

Bathymetry throughout the modelled area was extracted from the Australian Bathymetry and Topography Grid, a 9 arc-second grid rendered for Australian waters (Whiteway 2009). Bathymetry data were re-gridded and combined onto a Map Grid of Australia (MGA) coordinate projection (Zone 54) with a regular grid spacing of 250 × 250 m (Figure B-1).

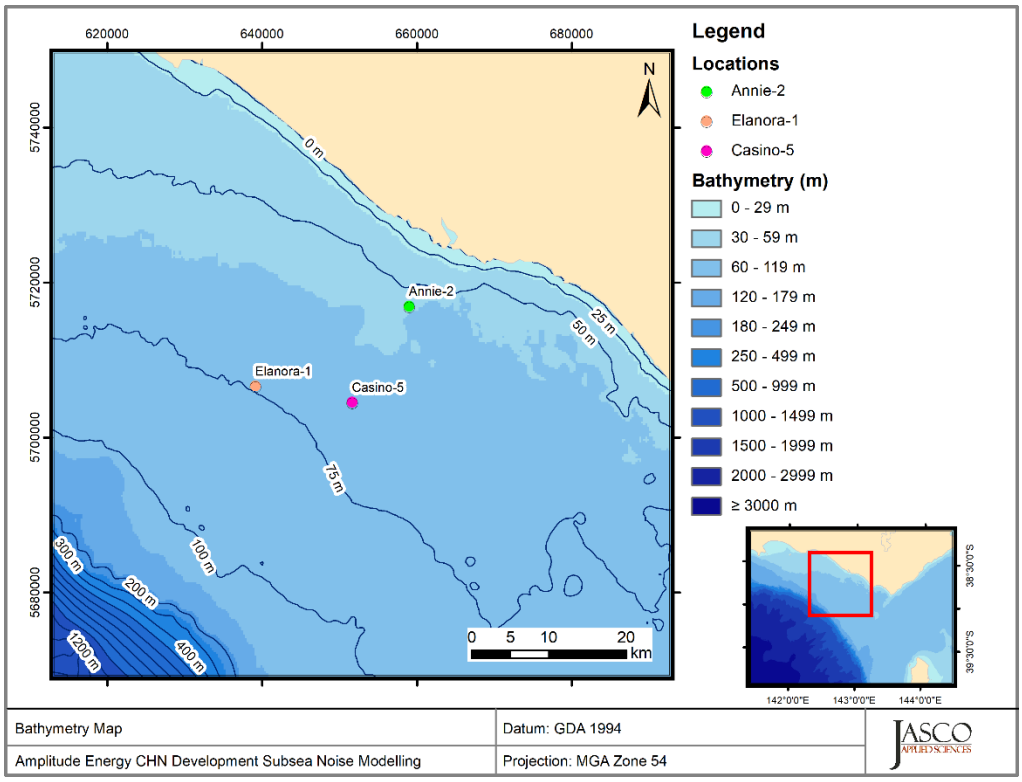

Figure B-1. Bathymetry in the modelled area.

B.1.2. Sound Speed Profile

The sound speed profile in the area was derived from temperature and salinity profiles from the U.S. Naval Oceanographic Office's Generalized Digital Environmental Model V 3.0 (GDEM; Teague et al. 1990, Carnes 2009). GDEM provides an ocean climatology of temperature and salinity for the world's oceans on a latitude-longitude grid with 0.25° resolution, with a temporal resolution of one month, based on global historical observations from the U.S. Navy's Master Oceanographic Observational Data Set (MOODS). The climatology profiles include 78 fixed depth points to a maximum depth of 6800 m (where the ocean is that deep). The GDEM temperature-salinity profiles were converted to sound speed profiles according to Coppens (1981).

Mean monthly sound speed profiles were derived from the GDEM profiles at distances less than 40 km around the modelled site. The August sound speed profile is expected to be most favourable to longer-range sound propagation across the entire year which was determined by modelling a reduced number of transects for every month and comparing the ranges to thresholds. As such, August was

selected for sound propagation modelling to ensure precautionary estimates of distances to received sound level thresholds. Figure B-2 shows the resulting profile, which was used as input to the sound propagation modelling.

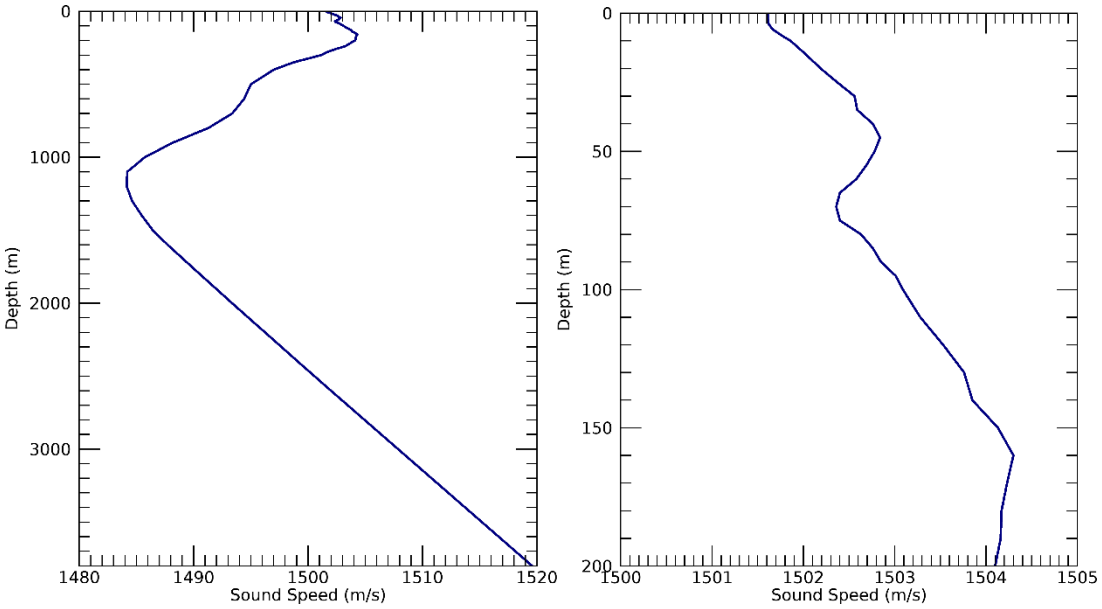

Figure B-2. The modelling sound speed profile corresponding to August: full profile (left) and top 200 m (right) Profiles are calculated from temperature and salinity profiles from Generalized Digital Environmental Model V 3.0 (GDEM; Teague et al. 1990, Carnes 2009).

B.1.3. Geoacoustics

The propagation model used in this study consider a single geoacoustic profile for each well site area. Similar to previous modelling studies in the region (Wood and McPherson 2018, Koessler et al. 2020, Matthews et al. 2020, McPherson et al. 2021), two seabed types were considered for modelling. Both seabed profiles are indicative of seabed environments located on the continental shelf of the Otway region and are consistent with larger scale geological data and interpretations of the Australian continental shelf environment (James and Bone 2010).

The geoacoustic profiles Elanora-1, Casino-5 and Annie-2 well sites were generated using lithographic descriptions from the geotechnical and geophysical reports supplied by the client and considering previous underwater acoustic modelling and measurement studies (Koessler et al. 2020, Matthews et al. 2020, McPherson et al. 2021). Within the vicinity of Annie-2 the seabed is likely to consist of a well-cemented calcarenite caprock over a semi-cemented calcarenite. Near the Elanora-1 and Casino-5 locations, the seabed is likely to consist of a thin layer of coarse sand overlying a similar calcarenite structure. This sand layer may not be consistently present. In all cases, the calcarenite layering likely extended to many hundreds of metres below the seafloor.

Table B-1 and Table B-2 present the geoacoustic profiles used modelled sites in each respective development area.

Table B-1. Geoacoustic profile for Annie-2 associated modelled sites.

Depth below seafloor (m)	Material	Density (g/cm^3)	P-wave speed (m/s)	P-wave attenuation (dB/λ)	S-wave speed (m/s)	S-wave attenuation (dB/λ)
0-1	Well-cemented carbonate caprock	2.7	2600	0.5	1200	0.5
1-20	Increasingly cemented calcarenite	2.2	2000	0.30	900	0.27
20-40		2.3	2120	0.34	960	0.31
40-60		2.4	2240	0.38	1020	0.36
60-80		2.5	2360	0.42	1080	0.41
80-10		2.6	2480	0.46	1140	0.45
>100	Well-cemented calcarenite	2.7	2600	0.50	1200	0.50

Table B-2. Geoacoustic profile for Elanora-1 and Casino-5 associated modelled sites.

Depth below seafloor (m)	Material	Density (g/cm^3)	P-wave speed (m/s)	P-wave attenuation (dB/λ)	S-wave speed (m/s)	S-wave attenuation (dB/λ)
0-1.5	Coarse carbonate sand	2.0	1800	0.85	300	3.68
1.5-2.5	Well-cemented carbonate caprock	2.7	2600	0.50	1200	0.50
2.5-22.5	Increasingly cemented calcarenite	2.2	2000	0.3	900	0.27
22.5-42.5		2.3	2120	0.34	960	0.31
42.5-62.5		2.4	2240	0.38	1020	0.36
62.5-82.5		2.5	2360	0.42	1080	0.41
82.5-102.5		2.6	2480	0.46	1140	0.45
>102.5	Well-cemented calcarenite	2.7	2600	0.50	1200	0.50

B.2. Estimated Vessel Source Levels

At the time of this study, the Platform Support Vessel (ISV) and Dive Support Vessel (DSV) to be used in the project were unconfirmed and a generic source level was proposed. Similar to the approach detailed Connell et al. (2021) in different vessels were identified as either potential ISV or RDSV vessels, therefore the source level and spectrum used to represent any of these four vessels was based on the nominal specifications for all indicated vessels, due to similarity in dimensions and total installed power ratings. This nominal vessel has an 89.2 m overall length, 20 m breadth, and 7.6 m maximum draft.

A main propulsion system is this generic vessel comprised of the following specifications.

Two stern propellers with

- 3.2 m propeller diameter,
- 165 rpm nominal propeller speed,

- 2,200 kW maximum continuous power input, and
- Typical DP operation at 26% MRC.

Additional thruster modules active during DP operations may include bow tunnel thrusters and a bow azimuth thruster. The two bow tunnel thrusters for the generic vessel were comprised of:

- 2.0 m propeller diameter,
- 318 rpm nominal propeller speed,
- 1,000 kW maximum continuous power input, and
- Typical DP operation at 17% MRC.

The bow azimuth thruster generic vessel was comprised of:

- 1.65 m propeller diameter,
- 373 rpm nominal propeller speed,
- 830 kW maximum continuous power input, and
- Typical DP operation at 21% MRC

Estimates of the acoustic source levels were based on the parameters of the propulsion system together with the method descripted in Appendix B.2.1, and the percent of Maximum Continuous Rating (MCR) for the vessel operating at during typical DP operations, as provided by the potential vessel operators.

B.2.1. Thruster Source Level Estimation

A vessel equipped with propellers/thrusters has two primary sources of sound that propagate from the unit: the machinery and the propellers. For thrusters operating in the heavily loaded conditions, the acoustic energy generated by the cavitation processes on the propeller blades dominates (Leggat et al. 1981). The sound power from the propellers is proportional to the number of blades, the propeller diameter, and the propeller tip speed.

Based on an analysis of acoustic data, Ross (1976) provided the following formula for the sound levels from a vessel's propeller, operating in calm, open ocean conditions:

$$L_{100} = 155 + 60\log(u/25) + 10\log(B/4)\,, \qquad \text{(B-1)}$$

where L_{100} is the spectrum level at 100 Hz, u is the propeller tip speed (m/s), and B is the number of propeller blades. Equation B-1 gives the total energy produced by the propeller cavitation at frequencies between 100 Hz and 10 kHz. This equation is valid for a propeller tip speed between 15 and 50 m/s. The spectrum is assumed to be flat below 100 Hz. Its level is assumed to fall off at a rate of −6 dB per octave above 100 Hz (Figure B-3).

Another method of predicting the source level of a propeller was suggested by Brown (1977). For propellers operating in heavily loaded conditions, the formula for the sound spectrum level is:

$$\mathrm{SL}_B = 163 + 40\log D + 30\log N + 10\log B + 20\log f + 10\log(A_c/A_D)\,, \qquad \text{(B-2)}$$

where D is the propeller diameter (m), N is the propeller revolution rate per second, B is the number of blades, A_C is the area of the blades covered by cavitation, and A_D is the total propeller disc area. Similar to Ross's approach, the spectrum below 100 Hz is assumed to be flat. The tests with a naval propeller operating at off-design heavily loaded conditions showed that Equation B-2 should be used with a value of $(A_c/A_D) = 1$ (Leggat et al. 1981).

The combined source level for multiple thrusters operating together can be estimated using the formula:

$$\mathrm{SL}_{\mathrm{total}} = 10\log_{10}\sum_{i} 10^{\frac{SL_i}{10}}, \tag{B-3}$$

where $SL_{1,\ldots,N}$ are the source levels of individual thrusters. If the vessel is equipped with the same type of thrusters, the combined source level can be estimated using the formula:

$$\mathrm{SL}_N = \mathrm{SL} + 10\log N \tag{B-4}$$

where N is the total number of thrusters of the same type.

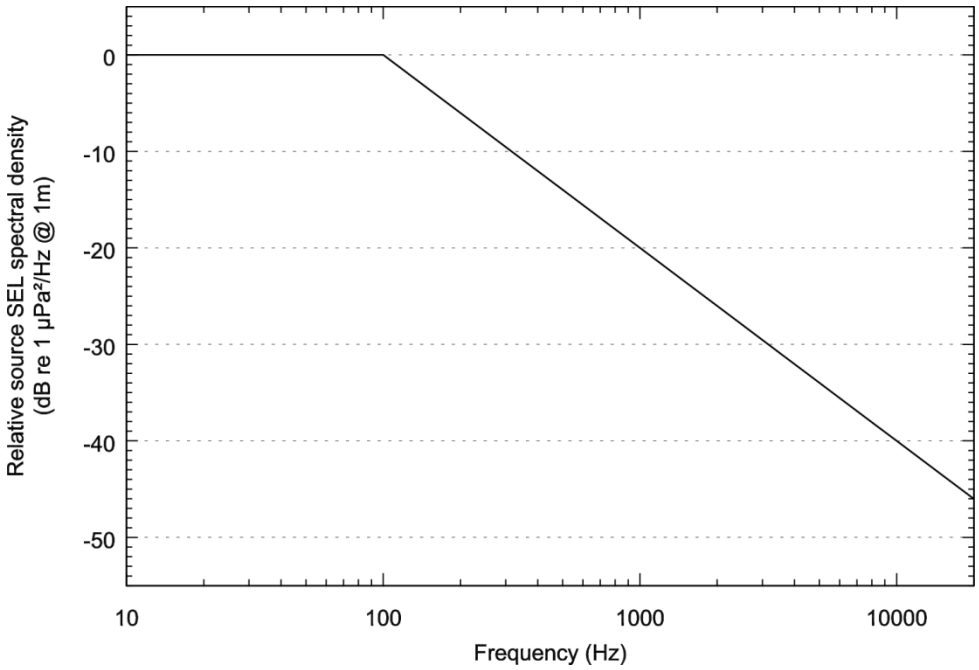

Figure B-3. Estimated sound spectrum from cavitating propeller (Leggat et al. 1981).

B.2.2. Estimating Sound Field from Moving Vessels

During vessel transit, new sound energy is constantly being introduced to the environment. The noise footprint for the transiting vessels considered in this report were estimated by modelling the 1-s SEL for the vessel at one location, and by translating and summing these footprints along the vessel transit routes. The vessel locations along the tracks were spaced uniformly, with an approximate step of $\Delta s \approx 100$ m.

The SEL sound field at any given point along the path is dependent upon the duration of exposure, which with a fixed footprint spacing depends upon the speed of the vessel during each segment of the transit. The 1-s SEL footprint at each vessel location (i) were therefore scales based on the speed of the vessel following:

$$\mathrm{SEL}_i = \mathrm{SEL}_{1s} + 10\log_{10}\left(\frac{\Delta s}{v}\right). \tag{B-5}$$

where v represents the vessel speed in m/s.

The present method acceptably reflects large-scale sound propagation features, primarily dependent on water depth, which dominate the cumulative field and is thus considered to provide a meaningful estimate of the SEL_{24h} field.

B.3. Sound Propagation Models

B.3.1. Propagation Loss

The propagation of sound through the environment was modelled by predicting the acoustic propagation loss—a measure, in decibels, of the decrease in sound level between a source and a receiver some distance away. Geometric spreading of acoustic waves is the predominant way by which propagation loss occurs. Propagation loss also happens when the sound is absorbed and scattered by the seawater, and absorbed scattered, and reflected at the water surface and within the seabed. Propagation loss depends on the acoustic properties of the ocean and seabed; its value changes with frequency.

If the acoustic energy source level (ESL), expressed in dB re 1 $\mu Pa^2 \cdot s\ m^2$, and propagation loss (PL), in units of dB, at a given frequency are known, then the received level (RL) at a receiver location can be calculated in dB re 1 $\mu Pa^2 \cdot s$ by:

$$RL = SL - PL. \tag{B-6}$$

B.3.2. MONM-BELLHOP

Long-range sound fields were computed using JASCO's Marine Operations Noise Model (MONM). While other models may be more accurate for steep-angle propagation in high-shear environment, MONM is well suited for effective longer-range estimation. This model computes sound propagation at frequencies of 10 Hz to 1.6 kHz via a wide-angle parabolic equation solution to the acoustic wave equation (Collins 1993) based on a version of the U.S. Naval Research Laboratory's Range-dependent Acoustic Model (RAM), which has been modified to account for a solid seabed (Zhang and Tindle 1995). MONM computes sound propagation at frequencies > 1.6 kHz via the BELLHOP Gaussian beam acoustic ray-trace model (Porter and Liu 1994).

The parabolic equation method has been extensively benchmarked and is widely employed in the underwater acoustics community (Collins et al. 1996). MONM accounts for the additional reflection loss at the seabed, which results from partial conversion of incident compressional waves to shear waves at the seabed and sub-bottom interfaces, and it includes wave attenuations in all layers. MONM incorporates the following site-specific environmental properties: a bathymetric grid of the modelled area, underwater sound speed as a function of depth, and a geoacoustic profile based on the overall stratified composition of the seafloor.

MONM computes acoustic fields in three dimensions by modelling propagation loss within two-dimensional (2-D) vertical planes aligned along radials covering a 360° swath from the source, an approach commonly referred to as N×2-D. These vertical radial planes are separated by an angular step size of $\Delta\theta$, yielding N = 360°/$\Delta\theta$ number of planes (Figure B-4).

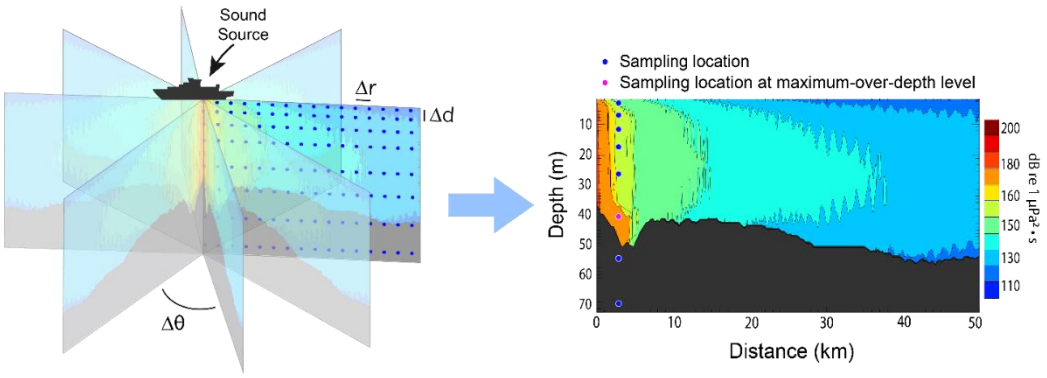

Figure B-4. The N×2-D and maximum-over-depth modelling approach used by MONM.

MONM treats frequency dependence by computing acoustic propagation loss at the centre frequencies of decidecade bands. Sufficiently many decidecade frequency-bands, starting at 10 Hz, are modelled to include most of the acoustic energy emitted by the source. At each centre frequency, the propagation loss is modelled within each of the N vertical planes as a function of depth and range from the source. The decidecade received per-second SEL are computed by subtracting the band propagation loss values from the directional source level in that frequency band. Composite broadband received per-second SEL are then computed by summing the received decidecade levels.

The received 1-s SEL sound field within each vertical radial plane is sampled at various ranges from the source, generally with a fixed radial step size. At each sampling range along the surface, the sound field is sampled at various depths, with the step size between samples increasing with depth below the surface. The step sizes are chosen to provide increased coverage near the depth of the source and at depths of interest in terms of the sound speed profile. For areas with deep water, sampling is not performed at depths beyond those reachable by marine mammals. The received per-second SEL at a surface sampling location is taken as the maximum value that occurs over all samples within the water column, i.e., the maximum-over-depth received per-second SEL. These maximum-over-depth per-second SEL are presented as colour contours around the source.

B.3.3. Wavenumber Integration Model

VSTACK computes propagation loss versus depth and range for arbitrarily layered, range-independent acoustic environments using the wavenumber integration approach to solve the exact (range-independent) acoustic wave equation. This model is valid over the full angular range of the wave equation and can fully account for the elasto-acoustic properties of the sub-bottom. Wavenumber integration methods are extensively used in the field of underwater acoustics and seismology where they are often referred to as reflectivity methods or discrete wavenumber methods. VSTACK computes sound propagation in arbitrarily stratified water and seabed layers by decomposing the outgoing field into a continuum of outward-propagating plane cylindrical waves. Seabed reflectivity in the model is dependent on the seabed layer properties: compressional and shear wave speeds, attenuation coefficients, and layer densities. Additionally, VSTACK assumes range-invariant bathymetry with a horizontally stratified medium (i.e., a range-independent environment) which is azimuthally symmetric about the source. Typically, VSTACK is best suited to modelling the sound field near the source; however, it can also be used in conjunction with MONM to account for additional bottom loss in high shear speed seabeds as described in Section B.3.4.

B.3.4. Limestone Seabed Propagation Loss

For sites where the seabed geoacoustic model consisted of bare calcarenite, an additional broadband correction was applied to the propagation loss results from MONM to better account for the additional

propagation loss associated with a limestone (calcarenite) seabed (Duncan et al. 2009). The accuracy of the broadband calculated propagation loss for the South-eastern continental shelf of Australia depends significantly upon the frequency content of the radiating sound source together with thickness of any overlying layers of unconsolidated sediment (e.g. sand) on top of calcarenite likely to occur within the region.

In general, the thinner the sand layer, the greater the overall propagation loss. When comparing SPL data McPherson et al. (2021), higher rates of propagation loss were observed and were attributed to, an absorptive carbonate (calcarenite) seabed. In this study, comparisons were conducted using JASCO's Marine Operations Noise Model (MONM), a wide-angle parabolic equation model which applies the BELLHOP Gaussian beam acoustic ray-trace model at higher frequencies, and JASCO's wavenumber integration model (VSTACK, Appendix B.3.3) which can fully account for the elasto-acoustic properties of the sub-bottom.

To account for the additional propagation loss associated with a cemented calcarenite seabed, an additional broadband correction was applied to the propagation loss results from MONM to account for the higher rates of loss when the full for the elasto-acoustic properties of the sub-bottom are consider. The differences between the broadband SPL from MONM and VSTACK were extracted at the same modelled ranges and depths that corresponded range independent predictions. The 90th percentile of the resultant dB differences in 250 m range bins were selected to generate a correction function for each individual site/source to be modelled. The conversion functions were applied after the propagation loss calculation from MONM but before summing decidecade band levels, gridding, and radii calculations for each modelled site in each modelled scenario considered.

B.4. Estimating Range to Thresholds Levels

Sound level contours were calculated based on the underwater sound fields predicted by the propagation models, sampled by taking the maximum value over all modelled depths above the sea floor for each location in the modelled region. The predicted distances to specific levels were computed from these contours. Two distances relative to the source are reported for each sound level: 1) R_{max}, the maximum range to the given sound level over all azimuths, and 2) $R_{95\%}$, the range to the given sound level after the 5% farthest points were excluded (see examples in Figure B-5).

The $R_{95\%}$ is used because sound field footprints are often irregular in shape. In some cases, a sound level contour might have small protrusions or anomalous isolated fringes. This is demonstrated in the image in Figure B-5(a). In cases such as this, where relatively few points are excluded in any given direction, R_{max} can misrepresent the area of the region exposed to such effects, and $R_{95\%}$ is considered more representative. In strongly asymmetric cases such as shown in Figure B-5(b), on the other hand, $R_{95\%}$ neglects to account for significant protrusions in the footprint. In such cases R_{max} might better represent the region of effect in specific directions. Cases such as this are usually associated with bathymetric features affecting propagation. The difference between R_{max} and $R_{95\%}$ depends on the source directivity and the non-uniformity of the acoustic environment.

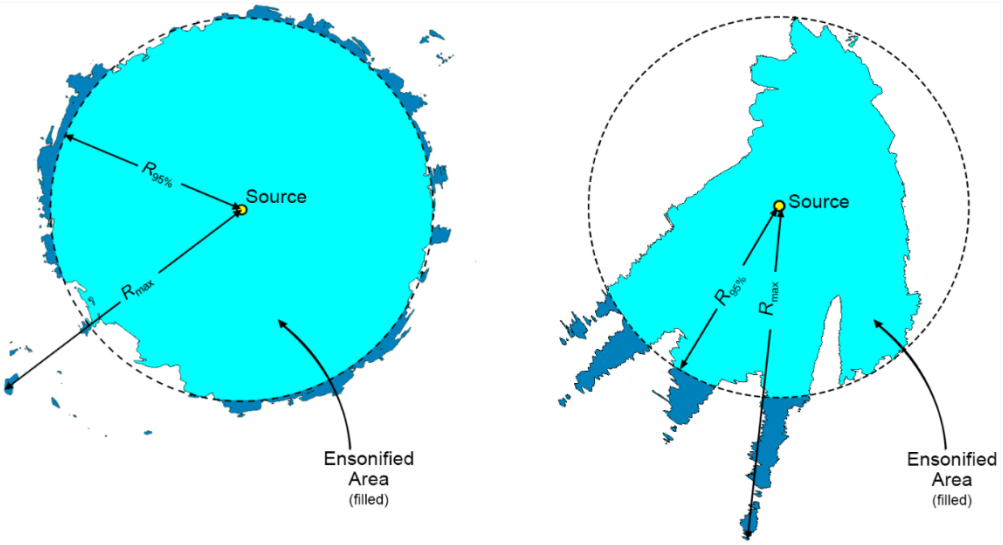

Figure B-5. Sample areas ensonified to an arbitrary sound level with R_{max} and $R_{95\%}$ ranges shown for two different scenarios. (a) Largely symmetric sound level contour with small protrusions. (b) Strongly asymmetric sound level contour with long protrusions. Light blue indicates the ensonified areas bounded by $R_{95\%}$; darker blue indicates the areas outside this boundary which determine R_{max}.

B.5. Model Validation Information

Predictions from JASCO's propagation models (MONM, FWRAM, and VSTACK) have been validated against experimental data from a number of underwater acoustic measurement programs conducted by JASCO globally, including the United States and Canadian Artic, Canadian and southern United States waters, Greenland, Russia and Australia (e.g. Hannay and Racca 2005, Aerts et al. 2008, Funk et al. 2008, Ireland et al. 2009, O'Neill et al. 2010, Warner et al. 2010, Racca et al. 2012a, Racca et al. 2012b, Matthews and MacGillivray 2013, Martin et al. 2015, Racca et al. 2015, Martin et al. 2017a, Martin et al. 2017b, Warner et al. 2017, MacGillivray 2018, McPherson et al. 2018, McPherson and Martin 2018, Quijano et al. 2018).

In addition, JASCO has conducted measurement programs associated with a significant number of anthropogenic activities that have included internal validation of the modelling (including McCrodan et al. 2011, Austin and Warner 2012, McPherson and Warner 2012, Austin and Bailey 2013, Austin et al. 2013, Zykov and MacDonnell 2013, Austin 2014, Austin et al. 2015, Austin and Li 2016, Martin and Popper 2016, Austin et al. 2018, Beach Energy Limited 2020).

Appendix 8 - Relevant Persons Consultation Report

Appendix 8 - Consultation Report and List of Relevant Persons

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1.0 Identification of Relevant Persons – 25(1)(a) and (b)

Table 1-1: Identification of Relevant Persons – 25(a) and (b)

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
Commonwealth or State agency or authority 25(1)(a)								
26	Australian Border Force (ABF) (Maritime Border Command-MBC))	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	Responsible for coordinating maritime security	Activities in offshore Australian waters may be relevant to the ABF as security issues may evolve in any offshore location.	2	Existing database
29	Australian Communications and Media Authority (ACMA)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	Regulator for communications and media services.	Activities may be relevant to ACMA as there may be potential impacts and risks to submarine cables.	2	Existing database
97	Australian Department of Agriculture, Fisheries and Forestry (DAFF) - Biosecurity (marine pests)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	DAFF has primary policy and regulatory responsibility for managing marine pest biosecurity through administering the Biosecurity Act.	Activities may be relevant to DAFF as they may present a biosecurity risk.	2	Existing database
98	Australian Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries (Note- during consultation for the ASP EP, email for DAFF Biosecurity (vessels, aircraft and personnel was also directed to the DAFF Fisheries address)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	The Department of Agriculture, Fisheries and Forestry (DAFF) has primary policy responsibility for promoting the biological, economic and social sustainability of Australian fisheries.	Activities may be relevant to DAFF as they will be carried out over numerous Commonwealth fisheries, potentially impacting Commonwealth fishery licenced operators, and/or commercial fish stock. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database
101	Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Sea Dumping Section	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	DCCEEW has responsibility for the Environment Protection (Sea Dumping) Act 1981 (Sea Dumping Act), which implements Australia's commitments as a contracting party to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972.	Activities may be relevant to DCCEEW with respect to waste disposal and/or any plug and abandonment activities. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database
102	Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Underwater Cultural Heritage	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	DCCEEW administers the Underwater Cultural Heritage Act 2018 (UCH Act). DCCEEW regulates activities in relation to protected underwater cultural heritage (UCH) within Australian waters including the Commonwealth marine area.	Activities may be relevant to DCCEEW as there is potential impact to underwater cultural heritage. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
105	Australian Department of Defence (DOD)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	Responsible for defending Australia and its national interests. DoD's role requires not only naval warfare capabilities but also disaster relief, search and rescue, fisheries protection and border patrol training capabilities.	Activities may be relevant to DoD as there is potential for overlap with defence activities such as training or other exercises, or there may be potential for UXO. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database
31	Australian Fisheries Management Authority (AFMA)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	Responsible for managing Commonwealth fisheries	Activities may be relevant to AFMA as they will be carried out over numerous Commonwealth fisheries, potentially impacting Commonwealth fishery licenced operators and/or commercial fish stock. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database
106	Australian Hydrographic Service (AHS) (sits under Australian Hydrographic Office (AHO) - (DoD)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	The Australian Hydrographic Office (AHO) is part of DoD and is the entity responsible for the provision of hydrographic services to Australia, under the Safety of Life at Sea (SOLAS) Convention and the Navigation Act 2012. This includes the publication and distribution of nautical products and other information required for the safety of ships navigating in Australian waters.	Activities may be relevant to AHO as there are vessel activities that would require notices to mariners, and there may be requirements for chart updates. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database
33	Australian Maritime Safety Authority (AMSA)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	Statutory agency for vessel safety and navigation in Commonwealth waters.	Activities may be relevant to AMSA as vessel operations are involved, there is potential for interactions with other vessels, and AMSA have a role in maritime emergency response. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
459	Corangamite Catchment Management Authority	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	The Corangamite Catchment Management Authority manages the Corangamite Regional Catchment Strategy (RCS) - a high-level blueprint for catchment health. It provides a strategic, integrated framework for natural resource management in the Corangamite Catchment Management Authority's region of Victoria.	The Corangamite RCS overlaps the Consultation Focus Area.	2	Other operator Otway EP
130	Director of National Parks (DNP)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	The Director of National Parks (DNP) is the statutory authority responsible for administration, management and control of Australian marine parks (AMPs).	Activities may be relevant to the DNP as in the unlikely event of a hydrocarbon release, there may be impacts on Australian Marine Parks. Listed as a relevant Commonwealth agency in NOPSEMA's guideline "Consultation with Commonwealth agencies with responsibilities in the marine area" dated 10 January 2024.	2	Existing database
157	Fisheries Research and Development Corporation (FRDC)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	Commonwealth dept or agency	The Corporation is a co-funded partnership between the Australian Government and fisheries and aquaculture. It is a statutory corporation under the Primary Industries Research and Development Act 1989 (the PIRD Act) and is responsible to the Minister for Agriculture, Fisheries and Forestry.	Activities may be relevant to FRDC as they will be carried out over numerous Commonwealth fisheries, potentially impacting Commonwealth fishery licenced operators, and/or commercial fish stock. Activities could also affect any research being conducted in the area.	2	Existing database
460	Heritage Victoria	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	Heritage Victoria regulates and enforces the Victorian Heritage Act 2017 and also serves as the Commonwealth delegate. for DCCEEW for heritage matters in Commonwealth waters offshore Victoria.	Activities may be relevant to Heritage Victoria due to potential interactions with submerged cultural heritage.	2	Other operator Otway EP
458	SA Department for Infrastructure and Transport (DIT)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	The Department for Infrastructure and Transport (DIT) is the Control Agency for Marine Pollution (Coastal) and is responsible for the management of marine pollution incidents in coastal waters.	Activities may be relevant to SA DIT due to their key role in emergency response, including oil spill response in the unlikely event of a hydrocarbon release that may threaten South Australian waters.	2	Existing database
366	Tasmanian EPA	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	Responsible for preparedness and responding to oil and chemical spills in Tasmanian waters. Spill Response 'Control Agency' for any spill that enters (or threatens to enter Tasmanian coastal waters). Where relevant the OPEP sets out arrangements for working with the EPA in the event of a spill.	Activities may be relevant to Tasmanian EPA due to their key role in emergency response, including oil spill response in the unlikely event of a hydrocarbon release that may threaten Tasmanian waters.	2	Existing database
380	Transport for NSW	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	Is NSW Statutory Authority for coordination of spill response in NSW waters.	Activities may be relevant to Transport for NSW due to their key role in emergency response,	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
					Is responsible for responding to any shipping incident or marine oil or chemical spill along the coast of NSW.	including oil spill response in the unlikely event of a hydrocarbon release that may threaten NSW waters.		
156	Victorian Department of Premier and Cabinet (DPC) First Peoples - State Relations	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	First Peoples – State Relations is a group within the Department of Premier and Cabinet, responsible for nation-leading work in the areas of cultural rights, self-determination, treaty and truth – an extensive program of priority work with First Peoples.	Activities may be relevant to the DPC First Peoples-State Relations due to potential impacts on submerged cultural heritage.	2	Existing database
127	Victorian Department of Transport and Planning (DTP)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	Responsible for marine pollution response arrangements in Victorian jurisdiction. Coordinate advice with other state agencies involved in marine pollution response including Department of Energy, Environment and Climate Action and Port Authorities.	Activities may be relevant to Victorian DTP due to their key role in emergency response, including oil spill response in the unlikely event of a hydrocarbon release that may threaten Victorian waters.	2	Existing database
393	Victorian Fisheries Authority (VFA)	25(1)(a) State and Cth	Commonwealth or State Agency or Authority	State dept or agency	Independent statutory authority established to effectively manage Victoria's state managed fisheries resources.	Activities may be relevant to the VFA due to overlap with state managed fisheries. In addition, in the unlikely event of a hydrocarbon spill, fishing, marketability of catch and fish stocks may be affected in state managed fisheries.	2	Existing database
The Department of the responsible State Minister 25(1)(b)								
272	Parks Victoria	25(1)(a) State and Cth	The Department of the Responsible Minister	State dept or agency	Parks Victoria is a statutory authority of the Victorian Government, within the DEECA portfolio, acting in accordance with the Parks Victoria Act 2018. Parks Victoria is responsible for managing a diverse estate of more than 4 million hectares including 3,000 land and marine parks and reserves making up 18 per cent of Victoria’s landmass, 75 per cent of Victoria’s wetlands and 70 per cent of Victoria’s coastline.	Activities may be relevant to Parks Victoria, as in the unlikely event of a hydrocarbon release Victorian marine parks may be affected.	2	Existing database
115	Victorian Department of Energy, Environment and Climate Action (DEECA) - Biosecurity and Agriculture Services	25(1)(a) State and Cth	The Department of the Responsible Minister	State dept or agency	Manages and advises on biosecurity within Victoria including vessels in state waters/calling into ports.	Activities may be relevant to DEECA due to potential biosecurity and environmental risks.	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
107	Victorian Department of Energy, Environment and Climate Action – Earth Resources Regulation (DEECA ERR)	25(1)(b) Resp State	The Department of the Responsible Minister	State dept or agency	Joint Authority Member for offshore Victorian waters including granting, refusal or renewal of offshore petroleum titles, variation of titles and title terms, etc. Regulate petroleum activities in Victorian State waters.	Under Regulation 25(1)(b) they are the Department of the responsible Minister.	2	Existing database
573	Victorian Department of Energy, Environment and Climate Action - Planning and Environment (DEECA PEA)	25(1)(a) State and Cth	The Department of the Responsible Minister	State dept or agency	DEECA planning and environment assessment – energy team is a statewide team, that can provide key contacts for environmental responses for various referrals and approvals in the regions for planning related to marine, native vegetation, marine and coastal act consents, land owner and public land manager consents.	Activities may be relevant to DEECA PEA as in the unlikely event of a hydrocarbon release Victorian coastal areas may be affected.	2	Existing database

2.0 Identification of Relevant Persons – 25(1)(d)

Table 2-1 Identification of Relevant Persons - 25(1)(d)

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
Business, industry and research 25(1)(d)								
439	12 Apostles Cottages	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
1	12 Apostles Helicopters	25(1)(d)	Business, industry and research	Tourism	Port Campbell based tourism operator that offers helicopter flights over the 12 Apostles area.	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities may result in temporary access issues and loss of visual amenity.	2	Existing database
539	54 on Bank	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
540	A1 Motel - Port Fairy	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
5	AARNet Pty Ltd	25(1)(d)	Business, industry and research	Subsea infrastructure	Provides telecommunications, cyber security, data and collaboration services and network with focus on research and education sector.	Potential impact to subsea cables.	2	Existing database
11	Academy of Scuba	25(1)(d)	Business, industry and research	Coastal business	Ocean diving training centre	In the event of a hydrocarbon spill, business may be commercially affected.	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
601	Admella Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
497	Allansford Hotel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
593	Allestree Beach Holiday Units	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
12	Allfresh Seafood	25(1)(d)	Business, industry and research	Seafood business	Processor of Southern Rock Lobster from waters offshore Port Fairy & Warrnambool.	Fishers may be affected during operations due to access restrictions, and in the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
446	Anchors	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
604	Annesley House	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
15	Apollo Bay Chamber of Commerce	25(1)(d)	Business, industry and research	Commercial group	The Chamber partners with local businesses to do better business and promote the local area.	In the event of a hydrocarbon spill, local businesses may be commercially affected.	2	Existing database
16	Apollo Bay Dive Centre and Surf n Fish	25(1)(d)	Business, industry and research	Seafood business	Ocean based activities for locals and visitors	Fishers may be affected during operations due to access restrictions, and in the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected, as may general tourism.	2	Existing database
466	Apollo Bay Fishing & Adventure Tours	25(1)(d)	Business, industry and research	Fisheries business	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities may result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
465	Apollo Bay Fishing Charters	25(1)(d)	Business, industry and research	Tourism	Local fishing charters and sunset tours	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities may result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
21	Apollo Bay Surf & Kayak	25(1)(d)	Business, industry and research	Coastal business	Business offering marine based activities and rental services	In the event of a hydrocarbon spill, business may be commercially affected.	2	Existing database
23	Apollo Bay Visitor Information Centre	25(1)(d)	Business, industry and research	Tourism	Providing information for tourists to the region.	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Existing database

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541	Ashmont Motor Inn & Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
606	Bagout Tuna Fishing Charters	25(1)(d)	Business, industry and research	Fisheries business	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Project web search
49	Beach Energy	25(1)(d)	Business, industry and research	Oil and Gas-offshore	Oil and gas operator with interests on the offshore Otway Basin	Offshore energy operators need to consider cumulative impacts, simultaneous operations, and potential emergency events.	2	Existing database
498	Best Western Colonial Village Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
591	BIG4 Narrawong Island Holiday Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
542	BIG4 Port Fairy Holiday Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
508	Blue Whale Motor Inn & Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
57	Blue Whale Study	25(1)(d)	Business, industry and research	Other research	International research collaboration interested in pygmy blue whale migration in south-east Australia.	Researchers may deploy equipment in the marine environment that could be affected by operations or emergency events. The activity may also need to be considered when analysing collected scientific data.	2	Existing database
59	Boating Industry Association of Victoria	25(1)(d)	Business, industry and research	Peak body	Peak body for the marine sector. BIAV represents its members and supports the 200,000 registered boat owners, 400,000 marine license holders, and 900,000 boating participants in Victoria each year.	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, coastal areas may be affected.	2	Existing database
63	Bridgeport Pty Ltd (New Hope Group)	25(1)(d)	Business, industry and research	Oil and Gas-offshore	Oil and gas operator with interests on the offshore Otway Basin	Offshore energy operators need to consider cumulative impacts, simultaneous operations, and potential emergency events.	2	Existing database
569	BW Digital	25(1)(d)	Business, industry and research	Subsea infrastructure	Submarine cable operator	Potential impact to subsea cables	2	Other stakeholder
614	Casuarina Cabins	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search

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543	Central Motel Port Fairy	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
73	CGG	25(1)(d)	Business, industry and research	Oil and Gas-offshore	Multi-client seismic data acquisition company with interests in the Otway Basin.	Offshore energy operators need to consider cumulative impacts, simultaneous operations, and potential emergency events.	2	Existing database
544	Cherry Plum Cottages	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
509	City Heart Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
545	Clonmara Country House & Cottages	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
76	Coastal Planning	25(1)(d)	Business, industry and research	Coastal business	Services include tribunal appeals for planning, development and subdivision applications, council strategic planning advice, planning hearing discussions for planning scheme amendments and general statutory advice.	In the event of a hydrocarbon spill, local businesses may be commercially affected.	2	Existing database
499	Comfort Inn On Raglan	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
516	Comfort Inn Warrnambool International	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
505	Commercial Hotel Panmure	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
613	Committee for Portland	25(1)(d)	Business, industry and research	Commercial group	Local volunteer community group committed to the promotion and development of the community.	In the event of a hydrocarbon spill, local businesses may be commercially affected.	2	Project web search
84	Conoco Phillips	25(1)(d)	Business, industry and research	Oil and Gas-offshore	Oil and gas operator with interests on the offshore Otway Basin	Offshore energy operators need to consider cumulative impacts, simultaneous operations, and potential emergency events.	2	Existing database
500	Convent at Koroit	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
517	Darriwill Farm Warrnambool	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search

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93	Deakin University - School of Life and Environmental Sciences (Warrnambool Campus)	25(1)(d)	Business, industry and research	University research	Carries out research offshore Victoria	Researchers may deploy equipment in the marine environment that could be affected by operations or emergency events. The activity may also need to be considered when analysing collected scientific data.	2	Existing database
501	Deep Blue Hotel & Hot Springs	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
133	Diving Industry of Victoria	25(1)(d)	Business, industry and research	Peak body	The Dive Industry Association of Victoria (DIVA) was established to promote the sport of diving in Victoria and to support Victorians involved in the diving industry.	In the event of a hydrocarbon spill, members' business may be commercially affected.	2	Existing database
546	Dockside Waterfront Indulgence	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
548	Drift House, Small Luxury Hotel and Dining Room	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
549	Edge 17	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
518	Eight Spence	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
519	Elm Tree Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
520	Fairholme Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
611	Fin Chaser Fishing Charters - Portland	25(1)(d)	Business, industry and research	Fisheries business	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Project web search
550	Gardens Caravan Park Port Fairy	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
178	Go Surf School	25(1)(d)	Business, industry and research	Coastal business	Surf and Stand-Up Paddleboard lessons in Port Fairy, Warrnambool, and Cape Bridgewater	In the event of a hydrocarbon spill, members' business may be commercially affected.	2	Existing database
600	Golden Chain Victoria Lodge Motor Inn	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search

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607	Gone Fishing Charters - Portland	25(1)(d)	Business, industry and research	Fisheries business	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Project web search
185	Great Ocean Road Coast and Parks Authority	25(1)(d)	Business, industry and research	Tourism	Established on 1 December 2020 to deliver better protection and management of the iconic coast and parks of Victoria's Great Ocean Road. Also manages a national park, three local ports and numerous caravan parks and camping sites.	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Existing database
186	Great Ocean Road Regional Tourism	25(1)(d)	Business, industry and research	Tourism	Regional tourism board covering the area from Torquay to the South Australian border. Working with local municipalities, tourism associations and tourism related operators to make the Great Ocean Road Region the destination of choice and help the region prosper.	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Existing database
187	Great Ocean Road Tourist Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Existing database
536	Harmony at Tower Hill	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
552	Hearn's Beachside Villas	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
534	High View Family Cottages	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
521	Hotel Warrnambool	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
196	Institute for Marine and Antarctic Studies (IMAS) - University of Tasmania	25(1)(d)	Business, industry and research	University research	A collaborative research body in marine and Antarctic science between the University of Tasmania, CSIRO Marine and Atmospheric Research, the Australian Antarctic Division and other agencies. Research interests in various environment values and sensitivities and support for further research programs with common interests.	Researchers may deploy equipment in the marine environment that could be affected by operations or emergency events. The activity may also need to be considered when analysing collected scientific data.	2	Existing database
522	Kiki Holiday Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search

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609	Kraken Fishing Charters	25(1)(d)	Business, industry and research	Fisheries business	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Project web search
553	Laneway Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
445	Lochard Motor Inn	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
523	Mahogany Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
494	Mako Ocean Adventures	25(1)(d)	Business, industry and research	Tourism	Ocean tours Great Ocean Road	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
598	Mariner Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
610	Matthew Hunt Fishing Services	25(1)(d)	Business, industry and research	Fisheries business	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Project web search
605	Melaleuca Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
502	Mickey Bourke's Koroit Hotel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
524	Mid City Motel Warrnambool	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
504	Mt Noorat Hotel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
495	Mulloka Cruises	25(1)(d)	Business, industry and research	Tourism	Boat cruises from Port Fairy	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP

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615	Nelson Hotel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
554	Nivani Port Fairy Colonial Cottages	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
599	NRMA Portland Bay Holiday Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
525	NRMA Warrnambool Riverside Holiday Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
555	Ocean Ridge Retreat	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
556	Old Market Inn Port Fairy	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
506	Peterborough House	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
447	Pitcher Vista	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
592	Portland Bay Lodge	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
595	Portland Retro Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
597	Portland Tourist Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
558	Port Fairy Holiday Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
493	Pro Red Fishing Charters	25(1)(d)	Business, industry and research	Tourism	Regional fishing and boat charters	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
608	Proline Fishing Charters	25(1)(d)	Business, industry and research	Fisheries business	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Project web search

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
603	Quest Portland	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
602	Richmond Henty Hotel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
448	Ride with Us	25(1)(d)	Business, industry and research	Tourism	Local transport provider and bike hire	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
472	Salty Dog Charters	25(1)(d)	Business, industry and research	Tourism	Local fishing charter	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
507	Schomberg Inn	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
323	Sea Foam Villas Port Campbell	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
559	Seacombe House	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
441	Seahorse Coastal Villas	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
596	Seascape Accommodation	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
473	Sharkmen Charters	25(1)(d)	Business, industry and research	Tourism	Regional fishing and boat charters	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
496	Skydive 12 Apostles	25(1)(d)	Business, industry and research	Tourism	Skydiving over 12 Apostles from Great Ocean Road airport	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
442	Southern Ocean Motor Inn	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
570	Subco	25(1)(d)	Business, industry and research	Subsea infrastructure	Submarine cable operator	Potential impact to subsea cables	2	Existing database
346	Superloop	25(1)(d)	Business, industry and research	Subsea infrastructure	Superloop has gained membership of the INDIGO Consortium with its acquisition of SubPartners. A subsea	Potential impact to subsea cables	2	Existing database

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					communications provider and member of the Indigo consortium			
535	The Bank	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
560	The Boatshed Waterfront B&B	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
503	The Cally	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
561	The Coach House	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
562	The Oak & Anchor Hotel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
443	The Port O Call	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
563	The Star of The West Hotel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
564	The Victoria Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
377	Timboon Action Group	25(1)(d)	Business, industry and research	Commercial group	Local volunteer community group committed to the promotion and development of the community.	In the event of a hydrocarbon spill, local businesses may be commercially affected.	2	Existing database
526	Turn-In Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
383	Twelve Apostles Tourism & Business Group	25(1)(d)	Business, industry and research	Tourism	Membership-based organisation that provides leadership for the development and facilitation of local tourism and business initiatives.	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Existing database
397	Victorian Tourism Industry Council (VTIC)	25(1)(d)	Business, industry and research	Tourism	Peak tourism industry body and is the leading advocate for Victoria's tourism and events industry. Represents over 1,000 businesses, providing opportunities for members to connect and keep informed on the latest research, policy development and impacts that shape the Victorian visitor economy.	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Existing database
568	Vocus	25(1)(d)	Business, industry and research	Subsea infrastructure	Submarine cable operator with future plans for new cables	Potential impact to subsea cables	2	Other stakeholder

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
538	Warreen Killarney BNB	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
527	Warrnambool Central Court Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
528	Warrnambool Diving & Firearms	25(1)(d)	Business, industry and research	Coastal business	Accommodation provider	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
529	Warrnambool Gallery Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
530	Warrnambool Holiday Village	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
531	Warrnambool Motel and Holiday Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
532	Warrnambool Retreat	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
492	Warrnambool Tours	25(1)(d)	Business, industry and research	Tourism	Specialise in small group luxury tours	In the event of a hydrocarbon spill, tourism business may be commercially affected. For offshore tourism operators, offshore activities result in temporary access issues and loss of visual amenity.	2	Other operator Otway EP
444	Waves Luxury Suites	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
533	Waves Motel and Apartments	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
594	Whalers Rest Motor Inn	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
612	William Dutton Motel	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
565	Wyntonia Beachfront Accommodation	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
566	Yambuk Lake Caravan Park	25(1)(d)	Business, industry and research	Tourism	Local accommodation provider.	In the event of a hydrocarbon spill, tourism business may be commercially affected.	2	Project web search
590	Yumbah Aquaculture - Narrawong	25(1)(d)	Business, industry and research	Aquaculture	Aquaculture developer / operator	In the event of a hydrocarbon spill, water quality may affect stock	2	Project web search

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
First Nations 25(1)(d)								
65	Bunurong Land Council Aboriginal Corporation	25(1)(d)	First Nations	Native Title Holder	The Bunurong Land Council Aboriginal Corporation manages native title rights for the Bunurong Peoples. BLCAC is a Registered Aboriginal Party (RAP). The Victorian Aboriginal Heritage Act 2006 recognises Registered Aboriginal Parties (RAP) as the primary guardians, keepers and knowledge holders of Aboriginal Cultural Heritage. RAPs are the primary source of advice and knowledge on matters relating to Aboriginal places or Aboriginal objects in their region. (https://www.aboriginalheritagecouncil.vic.gov.au/about-victorias-registered-aboriginal-parties). As such, RAPs are well placed to advise on potential risks and impacts of our activities and to advise on the existence of potential additional Relevant Persons whose functions, interests or activities may be impacted by our activities.	In the unlikely event of a hydrocarbon spill, cultural heritage may be affected.	1	Existing database
140	Eastern Maar Aboriginal Corporation (EMAC)	25(1)(d)	First Nations	Native Title Holder	The Eastern Maar Aboriginal Corporation manages native title rights for the Eastern Maar Peoples. The EMAC is a Registered Aboriginal Party (RAP). The Victorian Aboriginal Heritage Act 2006 recognises Registered Aboriginal Parties (RAP) as the primary guardians, keepers and knowledge holders of Aboriginal Cultural Heritage. RAPs are the primary source of advice and knowledge on matters relating to Aboriginal places or Aboriginal objects in their region. (https://www.aboriginalheritagecouncil.vic.gov.au/about-victorias-registered-aboriginal-parties). As such, RAPs are well placed to advise on potential risks and impacts of our activities and to advise on the existence of potential additional Relevant Persons whose functions, interests or activities may be impacted by our activities.	Planned offshore activities, and the unlikely event of a hydrocarbon spill, may affect cultural heritage.	1	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	25(1)(d)	First Nations	Native Title Holder	The Gunaikurnai Land and Waters Aboriginal Corporation manages native title rights for the Gunaikurnai Peoples. GLaWAC is a Registered Aboriginal Party (RAP). The Victorian Aboriginal Heritage Act 2006 recognises Registered Aboriginal Parties (RAP) as the primary guardians, keepers and knowledge holders of Aboriginal Cultural Heritage. RAPs are the primary source of advice and knowledge on matters relating to Aboriginal places or Aboriginal objects in their region. (https://www.aboriginalheritagecouncil.vic.gov.au/about-victorias-registered-aboriginal-parties). As such, RAPs are well placed to advise on potential risks and impacts of our activities and to advise on the existence of potential additional Relevant Persons whose functions, interests or activities may be impacted by our activities.	In the unlikely event of a hydrocarbon spill, cultural heritage may be affected.	1	Existing database
192	Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC)	25(1)(d)	First Nations	Native Title Holder	GMTOAC manages native title rights for the Gunditjmara community and ensure cultural obligations and responsibilities for country, custom and beliefs are upheld. GMTOAC is a Registered Aboriginal Party (RAP). The Victorian Aboriginal Heritage Act 2006 recognises Registered Aboriginal Parties (RAP) as the primary guardians, keepers and knowledge holders of Aboriginal Cultural Heritage. RAPs are the primary source of advice and knowledge on matters relating to Aboriginal places or Aboriginal objects in their region. (https://www.aboriginalheritagecouncil.vic.gov.au/about-victorias-registered-aboriginal-parties). As such, RAPs are well placed to advise on potential risks and impacts of our activities and to advise on the existence of potential additional Relevant Persons whose functions, interests or activities may be impacted by our activities.	Planned offshore activities, and the unlikely event of a hydrocarbon spill, may affect cultural heritage.	1	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
588	Southern Oceans Protection Embassy Collective (SOPEC)	25(1)(d)	First Nations	Interest group	Gunditjmara led organisation fighting to protect sea country and kin, Koontapool, from the expansion of offshore oil and gas in the Otway basin (Instagram 10 Feb 2024)	Planned offshore activities, and the unlikely event of a hydrocarbon spill, may affect cultural heritage.	2 (Telephone number not published)	Other operator Otway EP
398	Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC)	25(1)(d)	First Nations	Native Title Holder	Community organisation that represents the interests of Aboriginal people residing in South-western Victoria. The WTOAC is a Registered Aboriginal Party (RAP). The Victorian Aboriginal Heritage Act 2006 recognises Registered Aboriginal Parties (RAP) as the primary guardians, keepers and knowledge holders of Aboriginal Cultural Heritage. RAPs are the primary source of advice and knowledge on matters relating to Aboriginal places or Aboriginal objects in their region. (https://www.aboriginalheritagecouncil.vic.gov.au/about-victorias-registered-aboriginal-parties). As such, RAPs are well placed to advise on potential risks and impacts of our activities and to advise on the existence of potential additional Relevant Persons whose functions, interests or activities may be impacted by our activities. Prefers not to be consulted on this type of activity, so correspondence provided for information purposes and for potential sharing with members.	Planned offshore activities, and the unlikely event of a hydrocarbon spill, may affect cultural heritage.	2-does not require consultation	**Existing database**
Fishery licence holder or representative body 25(1)(d)								
670	A B Hunter Fishing Nominees Pty Ltd	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
7	Abalone Council Victoria	25(1)(d)	Fishery licence holder or rep	Peak body	The peak body representing interests of abalone divers, quota holders and processors in the Victorian wild harvest abalone fishery. Is a member of SIV, and will also be contacted by SIV with respect to consultation on this project.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
8	Abalone Victoria (Central Zone) Ltd (AVCZ)	25(1)(d)	Fishery licence holder or rep	Victoria-Abalone Central Zone	AVCZ represent the interests of Abalone Central Zone entitlement holders on operational fishery management matters. For Abalone, Abalone Council Victoria are members of SIV, while individual licence holders are members of ACV. As such AVZ members will also be contacted indirectly from SIV.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
17	Apollo Bay Fishermen's Cooperative	25(1)(d)	Fishery licence holder or rep	Co-op-multiple fisheries	Distributes crayfish and rock lobster across Australia and globally, runs fish and chip shop operation and supports wider local fishing industry in the Otway region. ABFC are members of SIV, as are their Victorian fisheries licence holders.	Fishers may be affected during operations due to access restrictions, and in the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
37	Australian Southern Bluefin Tuna Industry Association (ASBTIA)	25(1)(d)	Fishery licence holder or rep	Comm-Southern Bluefin Tuna	Represents the Australian Southern Bluefin Tuna Industry. Members (representing 90% of Australian quota) are based in Port Lincoln (SA).	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	1	Existing database
38	Australian Wildcatch Fishing	25(1)(d)	Fishery licence holder or rep	Comm-Southern & Eastern Scalefish & Shark	SESS Fisher operate in Commonwealth waters.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
82	Commonwealth Fisheries Association (CFA)	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Peak industry body representing the interests of fishers operating in Commonwealth managed fisheries. AFMA recommended that engagement with CFA be undertaken as the peak fishing industry body for Commonwealth fisheries.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
574	Cull Fisheries Management/Cull Fisheries Pty Ltd	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Squid jig fisher operating in Commonwealth waters.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Other operator
437	Fishermen Direct Pty Ltd	25(1)(d)	Fishery licence holder or rep	Victoria Corner Inlet fishery	Hold a number of different fishing licences, operates in Gippsland area, but during previous consultation on another project, an interest was expressed to be consulted on future drilling activities in the Otway Basin.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
283	Port Campbell Professional Fishermen's Association	25(1)(d)	Fishery licence holder or rep	Co-op-multiple fisheries	Industry body representing views and interests of its members. EMBA may overlap with State fisheries who may be members of the association. Port Campbell is in Otway	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
688	Raptis Fishing Licences Pty Ltd	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
671	Relevant Person ID 671	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
672	Relevant Person ID 672	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
673	Relevant Person ID 673	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
674	Relevant Person ID 674	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
675	Relevant Person ID 675	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
676	Relevant Person ID 676	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
	Relevant Person ID 677	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
678	Relevant Person ID 678	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
679	Relevant Person ID 679	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
680	Relevant Person ID 680	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
681	Relevant Person ID 681	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
682	Relevant Person ID 682	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
683	Relevant Person ID 683	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
684	Relevant Person ID 684	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
685	Relevant Person ID 685	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
686	Relevant Person ID 686	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
687	Relevant Person ID 687	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
689	Relevant Person ID 689	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
690	Relevant Person ID 690	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
691	Relevant Person ID 691	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
693	Relevant Person ID 693	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
694	Relevant Person ID 694	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
695	Relevant Person ID 695	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
696	Relevant Person ID 696	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
697	Relevant Person ID 697	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
698	Relevant Person ID 698	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
699	Relevant Person ID 699	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
700	Relevant Person ID 700	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
701	Relevant Person ID 701	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
702	Relevant Person ID 702	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
703	Relevant Person ID 703	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
704	Relevant Person ID 704	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
706	Relevant Person ID 706	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
707	Relevant Person ID 707	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
708	Relevant Person ID 708	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
709	Relevant Person ID 709	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
710	Relevant Person ID 710	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
711	Relevant Person ID 711	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
712	Relevant Person ID 712	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
713	Relevant Person ID 713	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
	Relevant Person ID 714	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
	Relevant Person ID 715	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
	Relevant Person ID 717	25(1)(d)	Fishery licence holder or rep	Comm-Bass Strait Central Zone Scallop	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
317	Scallop Fishermen's Association Inc.	25(1)(d)	Fishery licence holder or rep	Victoria-Scallop	Scallop Fishermen's Association Inc represents the interests of scallop fishermen operating within Australia's south east waters. Our members hold entitlement to operate within the Bass Strait Central Zone Scallop Fishery, the Victorian Scallop Fishery and the Tasmanian Scallop Fishery.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
318	Scallop Fishermen's Association of Tasmania	25(1)(d)	Fishery licence holder or rep	Peak body	Industry association for the Bass Strait Central Scallop Fishery (Commonwealth Fishery)	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
327	Seafood Industry Victoria (SIV)	25(1)(d)	Fishery licence holder or rep	Peak body	Peak industry body representing the interests of fishers operating in State (Vic) managed fisheries. SIV primary contact for State fishers. Multiple constructive engagements over the years with SIV to discuss Cooper Energy's activities and ongoing engagement. SIV has expressed interest in overlapping activities with its members. SIV engagement covers all state fisheries; every Victorian fishing access licence holder other than individual wildcatch abalone licence holders are members, with wildcatch abalone fishery licence holders represented through their membership with Abalone Council Victoria. ACV are members of SIV. Cooper Energy has established a formal agreement with SIV that supports consultation with all relevant SIV members.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	1	Existing database
692	Ship Agencies Australia Pty Ltd	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Commonwealth fisheries licence holder.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	AFMA
338	South East Trawl Fishing Industry Association (SETFIA)	25(1)(d)	Fishery licence holder or rep	Peak body	Peak industry body representing the interests of fishers operating in the Commonwealth Trawl Sector. SETFIA supports consultation for members of the following fisheries: South East Trawl (Cth), Gillnet Hook and Trap (Cth), Eastern Zone Rock Lobster (Vic), Bass Strait Central zone scallop fishery (Cth), and Small Pelagic Fishery (Cth) and represents SPFIA and SSIA in addition to SETFIA members. Cooper Energy has had a long-	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	1	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
					standing agreement in place with SETFIA to support Coper Energy's consultation.			
184	Southern Ocean Mariculture	25(1)(d)	Fishery licence holder or rep	Aquaculture	An abalone farm pioneer operating near Port fairy.	In the event of a hydrocarbon spill, water quality may affect stock	2	Project web search
341	Southern Rock Lobster Limited	25(1)(d)	Fishery licence holder or rep	Peak body	Administers an industry wide levy that funds research, development, and innovation in Australia's Southern rock lobster fishery, underpinning the sustainable harvest of lobsters from the Southern Ocean. SIV are members of SRL, and lobster fishers operating in the Victorian fishery are members of SIV.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
342	Southern Shark Industry Alliance (SSIA)	25(1)(d)	Fishery licence holder or rep	Comm-Southern & Eastern Scalefish & Shark	Industry body representing interests of its Commonwealth-licenced shark gillnet and shark hook members in the Gillnet Hook and Trap Fishery. Activity is within the Southern and Eastern Scalefish and Shark Fishery management area. SSIA also represented by SETFIA.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
575	Trinsand Fisheries Pty Ltd	25(1)(d)	Fishery licence holder or rep	Comm-Southern Squid Jig	Squid jig fisher operating in Commonwealth waters.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Project web search
382	Tuna Australia	25(1)(d)	Fishery licence holder or rep	Peak body	Peak body representing statutory fishing right owners, holders, fish processors and sellers, and associate members of the Eastern and Western tuna and billfish fisheries of Australia. Cooper Energy has a consultation services agreement with Tuna Australia.	Fishers may be affected during operations due to access restrictions or other aspects. In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	1	Existing database
411	Western Abalone Divers Association	25(1)(d)	Fishery licence holder or rep	Peak body	The Western Abalone Divers Association (WADA) represents licence holders and divers in the abalone industry in South West Victoria. For Abalone, Abalone Council Victoria are members of SIV, while individual licence holders are members of ACV. As such WADA members will also be contacted indirectly from SIV.	In the unlikely event of a hydrocarbon spill, fishing and marketability of catch may be affected.	2	Existing database
Interest groups 25(1)(d)								

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
3	3280-3284 Warrnambool Beach Patrol	25(1)(d)	Interest group	Environment-Local conservation	Volunteer organisation based in Warrnambool focussed on maintaining the quality of Warrnambool's beaches	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
18	Apollo Bay Landcare	25(1)(d)	Interest group	Environment-Local conservation	The Apollo Bay Landcare Group remains a key force in local Landcare with many members having made significant contributions to environmental rehabilitation on their properties. Whilst continuing a concern for weed and pest management, the group also has a strong focus on local environmental issues such as monitoring the nests of the endangered Hooded Plover.	Activities may impact local fauna of interest. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
20	Apollo Bay Sailing Club	25(1)(d)	Interest group	Recreation-Other	Members based recreational sailing club based in Apollo Bay.	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
22	Apollo Bay Surf Lifesaving Club	25(1)(d)	Interest group	Recreation-Surf Life Saving Club	Community club undertaking beach patrols, surf sport, events and community social functions	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
463	AusOcean	25(1)(d)	Interest group	Environmental-Conservation	Develop and apply open source, ocean technology to help solve ocean science and conservation challenges. Aim to transform the way in which ocean data is collected and communicated on a global scale.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected. Activities may affect data gathering activities.	2	Other operator Otway EP
28	Australian Coastal Society – Victorian Chapter	25(1)(d)	Interest group	Environment-Local conservation	Contributes to a number of coastal and marine policy reforms happening in Victoria via working groups and submissions.	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
30	Australian Conservation Foundation	25(1)(d)	Interest group	Environmental-Conservation	A community-funded organisation that advocates for nature protection and climate action in Australia.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
32	Australian Marine Conservation Society	25(1)(d)	Interest group	Environmental-Conservation	AMCS is a national charity that campaigns for healthy and free oceans and coasts.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
669	Citizen Scientists Southern Right Whales	25(1)(d)	Interest group	Environmental-Conservation	The SRW citizen scientists have a particular interest in sighting, photographing and identifying Southern Right Whales in the Otway region, and upload this data into the online Whaleface site.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
147	Environment Victoria	25(1)(d)	Interest group	Environmental-Conservation	Victoria based charity campaigning to solve the climate crisis and build a thriving, sustainable society that protects and values nature. Key focus is climate change and Victorian wildlife.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
153	Fight for the Bight Port Fairy	25(1)(d)	Interest group	Environmental-Conservation	Goal is to protect the Great Australian Bight from exploitation by Big Oil.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
166	Friends of Bay of Islands Coastal Park	25(1)(d)	Interest group	Environment-Local conservation	A community group preserving native vegetation, revegetating, and removal of exotic invasive species.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
167	Friends of the Earth - Melbourne	25(1)(d)	Interest group	Environmental-Conservation	Campaigning organisation with climate justice perspective. Focus is to protect forests and waterways, stand as allies for First Nations' self-determination and land rights and keep fossil fuels in the ground.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
467	Game Fishing Association of Victoria	25(1)(d)	Interest group	Peak body	Member of Game Fishing Association of Australia, which is affiliated with the International Game Fish Association (IGFA) and plays an active part in the leadership of the sport of game fishing on a world level.	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Other operator Otway EP
189	Greenpeace	25(1)(d)	Interest group	Environmental-Conservation	Independent campaigning organization that uses peaceful protest and creative confrontation to expose global environmental problems and promote solutions that are essential to a green and peaceful future.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
197	International Fund for Animal Welfare (IFAW)	25(1)(d)	Interest group	Environmental-Conservation	Global non-profit helping animals and people thrive together. Run various programmes including marine mammal rescue and research, and marine conservation	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
220	Life Saving Victoria	25(1)(d)	Interest group	Recreation-Surf Life Saving Club	Independent organisation that works with communities, educational institutions, governments, businesses and the broader aquatic industry to achieve new lifesaving and water safety initiatives	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
227	Marine Mammal Foundation	25(1)(d)	Interest group	Environmental-Conservation	Protects the marine environment for marine mammals through research, community engagement, and education.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
586	No Offshore Windfarm Zone - Warrnambool and District	25(1)(d)	Interest group	Environmental-Conservation	General concerns around offshore windfarms and effects on marine life.	Activities may impact local fauna and flora. In the unlikely event of a	2	Self-identified during

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
						hydrocarbon spill, marine and coastal areas may be affected.		community sessions
262	Ocean Racing Club of Victoria	25(1)(d)	Interest group	Recreation-Other	Club which conducts regular offshore racing in Victoria. Home of blue water classic Melbourne to Hobart and Rudder Cup yacht races (noting route goes along west coast of Tasmania)	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
263	Ocean Watch	25(1)(d)	Interest group	Fisheries advocacy/sustainability/research	Not-for-profit environmental company that works to advance sustainability in the Australian seafood industry and operates community-based coastal habitat restoration programs.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
266	Otway Climate Emergency Action Network (OCEAN)	25(1)(d)	Interest group	Environmental-Conservation	OCEAN is an environmental activist and campaign group based in Apollo Bay and the Otway ranges. We support non-violent civil disobedience to demand urgent action to halt the climate and ecological crisis.	Activities may contribute to global emissions.	2	Existing database
271	Paddle Victoria	25(1)(d)	Interest group	Recreation-Other	Members organisation to support the paddling community	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
273	Peterborough Golf Club	25(1)(d)	Interest group	Recreation-Other	Local golfing club.	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be impacted, affecting local amenity.	2	Existing database
281	Port Campbell Community Group	25(1)(d)	Interest group	Local community	Volunteer group focussed on environment protection of local fauna	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
285	Port Campbell Rifle Club	25(1)(d)	Interest group	Recreation-Other	Rifle club for local members and tourists.	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be impacted, affecting local amenity.	2	Existing database
286	Port Campbell Surf Life Saving Club	25(1)(d)	Interest group	Recreation-Surf Life Saving Club	Community club undertaking beach patrols, surf sport, events and community social functions	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
470	Port Fairy Angling Club	25(1)(d)	Interest group	Recreation-Fishing	Local angling club	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Other operator Otway EP
289	Port Fairy Yacht Club	25(1)(d)	Interest group	Recreation-Other	Port Fairy based yacht club offering sailing and social events.	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
718	Protect the West	25(1)(d)	Interest group	Environmental-Conservation	Protect the West is primarily focussed on environmental issues that may impact upon areas in western Victoria.	Activities may impact local fauna and flora. In the unlikely event of a	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
						hydrocarbon spill, marine and coastal areas may be affected.		
576	Relevant Person ID 576	25(1)(d)	Interest group	Individual-local community	Individual with an interest in having a choice in energy consumption.	Self-identified with an interest in well managed ongoing gas exploration.	2	Self-identify
322	Scuba Divers Federation of Victoria	25(1)(d)	Interest group	Recreation-Other	Amateur organisation representing diving clubs throughout Victoria.	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
325	Sea Shepherd	25(1)(d)	Interest group	Environmental-Conservation	Sea Shepherd fights to defend, conserve and protect our ocean. They use direct action to defend marine wildlife and protect their habitat in the world's oceans.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
352	Surfers for Climate	25(1)(d)	Interest group	Environmental-Conservation	A sea-roots movement dedicated to positive climate action and heads the campaign 'Don't Drill the Otways'.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
354	Surfrider Foundation Australia	25(1)(d)	Interest group	Environmental-Conservation	Not-for-profit dedicated to the protection of Australia's waves and beaches through conservation, activism, research and education.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
389	Victoria Game Fishing Club	25(1)(d)	Interest group	Recreation-Fishing	The premier game fishing club in the southern states of Australia	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
394	Victorian Recreational Fishing Peak Body (VRFish)	25(1)(d)	Interest group	Recreation-Fishing	Peak body representing recreational fishing interests in Victorian waters.	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
402	Warrnambool Coastcare Landcare Network	25(1)(d)	Interest group	Environment-Local conservation	Improve biodiversity in Warrnambool and district and advocate for the protection of our natural environment	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
469	Warrnambool Offshore & Light GFC	25(1)(d)	Interest group	Recreation-Fishing	Local game fishing club	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Project web search
404	Warrnambool Surf Life Saving Club	25(1)(d)	Interest group	Recreation-Surf Life Saving Club	Community club undertaking beach patrols, surf sport, events and community social functions	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
407	Warrnambool Yacht Club	25(1)(d)	Interest group	Recreation-Other	Warrnambool based family-oriented yacht club offering sailing and social events.	Activities may result in short term loss of access to operational areas, or impact visual amenity. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database

ID	Relevant person	Relevant persons category	Primary group	Sub-group	General description	Why relevant persons for Annie-2	Level of effort	How found
412	Whale and Dolphin Conservation Australia	25(1)(d)	Interest group	Environmental-Conservation	Leading charity dedicated to the protection of whales and dolphins	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
413	Wilderness Society Melbourne	25(1)(d)	Interest group	Environmental-Conservation	A community-based, not-for-profit non-governmental environmental advocacy organisation.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
418	Windsurfing Victoria	25(1)(d)	Interest group	Recreation-Other	Represents the community of windsurfers in Victoria and promotes all aspects of the sport locally. Windsurfing Victoria is the public voice promoting windsurfing and lobbying to protect access to preferred spots around the State.	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
423	World Wildlife Fund	25(1)(d)	Interest group	Environmental-Conservation	WWF partners with governments, businesses, communities, and individuals to catalyse change for a range of pressing environmental issues.	Activities may impact local fauna and flora. In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
425	Wye River Surf Life Saving Club	25(1)(d)	Interest group	Recreation-Surf Life Saving Club	Community club undertaking beach patrols, surf sport, events and community social functions	In the unlikely event of a hydrocarbon spill, marine and coastal areas may be affected.	2	Existing database
Local government and elected officials 25(1)(d)								
79	Colac Otway Shire	25(1)(d)	Local government and elected officials	Local Govt	Victorian local government authority.	Local government authority that overlaps the Consultation Focus Area. Residents and ratepayers may be affected by the activities.	2	Existing database
86	Corangamite Shire Council	25(1)(d)	Local government and elected officials	Local Govt	Victorian local government authority.	Local government authority that overlaps the Consultation Focus Area. Residents and ratepayers may be affected by the activities.	2	Existing database
177	Glenelg Shire Council	25(1)(d)	Local government and elected officials	Local Govt	Victorian local government authority.	Local government authority that overlaps the Consultation Focus Area. Residents and ratepayers may be affected by the activities.	2	Existing database
243	Moyne Shire Council	25(1)(d)	Local government and elected officials	Local Govt	Victorian local government authority.	Local government authority that overlaps the Consultation Focus Area. Residents and ratepayers may be affected by the activities.	2	Existing database
401	Warrnambool City Council	25(1)(d)	Local government and elected officials	Local Govt	Victorian local government authority.	Local government authority that overlaps the Consultation Focus Area. Residents and ratepayers may be affected by the activities.	2	Existing database

3.0 Identification of Relevant Persons – 25(1)(e)

No persons were identified under regulation 25(1)(e) of the OPGGS(E)R as all persons identified as relevant persons have qualities consistent with 25(1)(a), (b) or (d).

4.0 Identification of other stakeholders

Table 4-1 Other stakeholders

ID	Stakeholder	Category	Primary group	Sub group	General description
52	Bev McArthur MP, Member for Western Victoria Region	Other stakeholder	Local government and elected officials	State MP	Victorian MP - Member for Western Victoria Region. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons. Information also provided for awareness.
90	Dan Tehan MP, Federal Member for Wannon	Other stakeholder	Local government and elected officials	Commonwealth MP	Federal MP - Member for Wannon. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons. Information also provided for awareness.
151	Federation of Victorian Traditional Owner Corporations	Other stakeholder	First Nations	Peak body	Peak body for Victorian Traditional Owner corporations. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons.
155	First Nations Legal & Research Services (Vic)	Other stakeholder	First Nations	Other organisation	First Nations Legal & Research Services is the native title services provider for Victorian Traditional Owners. It separated from FVTOC and was renamed from Native Title Services Vic Ltd. Govt funded, independent org. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons.
193	Gunditjmara Aboriginal Cooperative Ltd	Other stakeholder	First Nations	Other organisation	The Cooperative was incorporated in 1982 and now delivers a wide range of culturally appropriate health and well-being services at all life stages from cradle to grave. The Cooperative has more than 300 members and more than 60 staff members. Many members likely represented by EMAC and/or GMTOAC. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons.
571	Jacinta Ermacora MP - Member for Western Victoria	Other stakeholder	Local government and elected officials	State MP	Victorian MP - Member for Western Victoria Region. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons. Information also provided for awareness.
202	Joe McCracken MP- Member for Western Victoria Region	Other stakeholder	Local government and elected officials	State MP	Victorian MP - Member for Western Victoria Region, Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons. Information also provided for awareness.
310	Richard Riordan MP-Member for Polwarth	Other stakeholder	Local government and elected officials	State MP	Victorian MP - Member for Polwarth. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons. Information also provided for awareness.
233	Roma Britnell MP - Member for South West Coast	Other stakeholder	Local government and elected officials	State MP	Victorian MP - Member for South West Coast. Not considered a Relevant person as an organisation itself, but may assist in identifying relevant persons. Information also provided for awareness.
414	Winda Mara Aboriginal Corporation	Other stakeholder	First Nations	Other organisation	The corporation was established in 1991, providing community support services for First Nations people in the area. Not considered a relevant person as an organisation but may help in identifying relevant persons amongst its community. Many members likely represented by EMAC and/or GMTOAC.

5.0 Summary of consultation

This consultation report summarises the consultation activities undertaken by Amplitude Energy with each relevant person, for this EP.

This report further reflects that:

1. Amplitude Energy has discharged its obligations for consultation under regulation 25, by providing all relevant persons listed in Table 1-1 and Table 2-1 with:
   - sufficient information to make an informed assessment of the possible consequences of the activity on their functions, interests or activities; a reasonable period for consultation; and
   - a reasonable opportunity to consult.

2. Amplitude Energy has assessed and responded to all claims and objection raised about the adverse impacts of each activity to which this EP relates, by the relevant persons in Table 1-1 and Table 2-1.

Table 5-1 and Table 5-2 provide further summaries of how Amplitude Energy has discharged its consultation obligations with respect to the relevant persons listed in Table 1-1 and Table 2-1.

Table 4-1 identifies other stakeholders that Cooper Energy contacted about this EP, but not for the purposes of consultation under regulation 25.

Table 5-1 Relevant persons consultation report

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Commonwealth or State agency or authority 25(1)(a)								
2025 0513 145452 3606	26	Australian Border Force (ABF) (Maritime Border Command-MBC))	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 154349 2782	26	Australian Border Force (ABF) (Maritime Border Command-MBC))	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 152109 3717	29	Australian Communications and Media Authority (ACMA)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted earlier advice on an EP in the same area your recommendation to consult the following, and we will endeavour to do so. **BW Digital - Hawaiki Nui cable** **SUBCO - SMAP cable** **Vocus and Google - Pacific Connect cable**. Noted that we will also consult with AHO. Also note that based on current mapping, there are no submarine cables in close proximity to our proposed activities area.	N/A	N/A
2025 0514 084431 5800	29	Australian Communications and Media Authority (ACMA)	2025-05-14	Email	In	Noted that the project area located in the Otway Basin, Victoria is not in the vicinity of any **submarine cables protection zones** declared by the ACMA. However, noted that the project area may be located in the vicinity of the Indigo Central submarine cable and provided relevant website links. Noted list of telecommunications submarine cable owners we provided that we were contacting, and confirmed we should consult with owners of cables in vicinity of the project area. No more consultation is required by ACMA on these projects.	No objection or claim of adverse impact. Reasonable request to consult with owners of submarine cables in vicinity of project area.	Consulted with listed submarine cable owners.
2025 0514 084531 6215	29	Australian Communications and Media Authority (ACMA)	2025-05-14	Email	Out	Passed on thanks for quick response.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received. ACMA advised no further consultation required.								
2025 0513 154951 7846	97	Australian Department of Agriculture, Fisheries and Forestry (DAFF) - Biosecurity (marine pests)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0519 142828 4923	97	Australian Department of Agriculture, Fisheries and Forestry (DAFF) - Biosecurity (marine pests)	2025-05-13	Email	In	Auto reply.	N/A	N/A
2025 0809 170346 4061	97	Australian Department of Agriculture, Fisheries and Forestry (DAFF) - Biosecurity (marine pests)	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0809 171105 8642	97	Australian Department of Agriculture, Fisheries and Forestry (DAFF) - Biosecurity (marine pests)	2025-08-09	Email	In	Auto reply	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 155045 8330	98	Australian Department of Agriculture, Fisheries and Forestry (DAFF) - Fisheries	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0809 170602 4883	98	Australian Department of Agriculture, Fisheries and Forestry (DAFF) - Fisheries	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 155144 7381	101	Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Sea Dumping Section	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0519 142802 3036	101	Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Sea Dumping Section	2025-05-13	Email	In	Auto reply	N/A	N/A
2025 0809 170749 5881	101	Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Sea Dumping Section	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0809 170821 5095	101	Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Sea Dumping Section	2025-08-09	Email	In	Auto reply.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0514 142547 2065	102	Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Underwater Cultural Heritage	2025-05-14	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted and will take into account the advice provided by DCCEEW UCH during recent consultation on the Athena Supply Project EP when developing these EPs (email 16 October 2024).	N/A	Consistent with ASP EP. No new measures adopted.
2025 0514 145800 6333	102	Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Underwater Cultural Heritage	2025-05-14	Email	In	Auto reply	N/A	N/A
2025 0809 171029 3181	102	Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Underwater Cultural Heritage	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 14 May 2025 and no request for additional time has been received.								
2025 0513 160059 1408	105	Australian Department of Defence (DOD)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 171234 5335	105	Australian Department of Defence (DOD)	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 154255 7972	31	Australian Fisheries Management Authority (AFMA)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0527 085206 5365	31	Australian Fisheries Management Authority (AFMA)	2025-05-27	Email	Out	Passed on thanks for email regarding the 2 ECSP EPs, and acknowledged we intended to consult with SETFIA, SSIA, Tuna Australia, ASBTIA and CFA. Noted proposed activities were close to the Cth Bass Strait Scallop Fishery, and encouraged Amplitude Energy to consult with them via the following bodies: Bass Strait Scallop Industry Association Tasmanian Seafood Industry Council Seafood Industry Victoria	No objection or claim of adverse impact. Reasonable request as to which fisheries bodies to consult. Reasonable request to update contact details.	Consulted with fisheries as described in Event ID 2025 0529 113719 7151, noting that we would go direct to individual licence holders of the Cth Bass Strait Central Zone Scallop Fishery, as the peak body appears

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Advised of AFMA's new email address for future correspondence: **OffshoreEnergy@afma.gov.au**.		to have ceased operations. AFMA email contact details updated in database.
2025 0529 113719 7151	31	Australian Fisheries Management Authority (AFMA)	2025-05-29	Email	Out	Passed on thanks for response, noting response is also reflected on AFMA"s website. Noted that we had contacted Bass Strait Central Zone Scallop Fishery members direct thanks to AFMA recently providing a list of Cth fisheries license holders. Suggested some updates to the advice provided, noting that the Bass Strait Scallop Industry Association was no longer functioning, and that with respect to Tasmanian members, the Scallop Fishermen's Association of Tasmania was probably a better option for Tasmanian based members of the Cth fishery.	N/A	N/A
2025 0603 153940 1740	31	Australian Fisheries Management Authority (AFMA)	2025-06-03	Email	Out	Passed on thanks for the response and updates which will assist in their planned review of the information on their website.	No objection or claim of adverse impact.	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 160350 4726	106	Australian Hydrographic Service (AHS) (sits under Australian Hydrographic Office (AHO) - (DoD)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0514 132913 5800	106	Australian Hydrographic Service (AHS) (sits under Australian Hydrographic Office (AHO) - (DoD)	2025-05-14	Email	In	Passed on thanks. Noted there were no concerns with proposed activities. Only require further updates once activities are due to begin. Provided link to AHO"s standard notification requirements.	No objection or claim of adverse impact. Reasonable request for notifications.	Confirmed we would follow the notification requirements as per Event ID 2025 0514 140050 3106. Annie-2 EP stakeholder notifications register updated accordingly.
2025 0514 140050 3106	106	Australian Hydrographic Service (AHS) (sits under Australian Hydrographic Office (AHO) - (DoD)	2025-05-14	Email	Out	Passed on thanks, and confirmed we will follow the reporting requirements.	N/A	N/A
2025 0522 131114 5679	106	Australian Hydrographic Service (AHS) (sits under Australian Hydrographic Office (AHO) - (DoD)	2025-05-22	Email	Out	Queried as to whether 3 working weeks' notice was sufficient notice ahead of activities commencing, noting NtMs are issued fortnightly.	N/A	N/A
2025 0522 132733 1225	106	Australian Hydrographic Service (AHS) (sits under Australian Hydrographic Office (AHO) - (DoD)	2025-05-22	Email	In	Confirmed 3 working weeks' notice is fine, and that they also typically check in with us a couple of days prior to publication to check things are on schedule.	No objection or claim of adverse impact. Confirmed 3 weeks' notice for requesting NtM is sufficient time.	Will request NtM with at least 3 weeks' notice.
2025 0522 132753 5302	106	Australian Hydrographic Service (AHS) (sits under Australian Hydrographic Office (AHO) - (DoD)	2025-05-22	Email	Out	Passed on thanks.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 154456 1126	33	Australian Maritime Safety Authority (AMSA)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0520 142220 7349	33	Australian Maritime Safety Authority (AMSA)	2025-05-20	Email	In	Passed on thanks for the information on the activities proposed under the two ECSP EPs. Noted future correspondence should include the **NavSafety@amsa.gov.au** address. Provided vessel plot and noted that heavy vessel traffic likely in the area. Requested that associated survey and support vessels notify JRCC through **rccaus@amsa.gov.au** to provide for radio-navigation warnings 24-48 hours prior to commencement of operations. The RC will require the vessel details (including name, callsign and Maritime Mobile Service Identity (MMSI)), satellite communications details (including INMARSAT-C and satellite telephone), area of operation, requested clearance from other vessels and need to be advised when operations start and end. AHO should be notified no less than 4 working weeks prior to commencement of operations for issuance of NtMs. Vessels should exhibit appropriate lights and shapes to reflect the nature of operations and comply with the International Rules for Preventing Collisions at Sea (**COLREGs**), in particular, the use of appropriate lights and shapes to reflect the nature of operations (e.g. restricted in the ability to manoeuvre). Vessels should also ensure their navigation status is set correctly in the ship's Automatic Identification System (AIS) unit. Amplitude Energy should evaluate and implement adequate anti-collision measures, including additional warnings and/or lights to attract attention, installation of AIS units, and offshore guard vessel/s. Provided links to AMSA"s spatial data gateway and showed how customised information could be requested.	No objection or claim of adverse impact. Reasonable requests for notifications. Reasonable requests made to exhibit appropriate lighting and shapes, and to comply with COLREGs. Reasonable requests to evaluate and implement adequate anti-collision measures. Reasonable request to update contact details.	Section 6.2.1 updated to reflect heavy vessel traffic. Confirmed adherences to navigation and anti collison requirements. Annie-2 EP stakeholder notifications register updated accordingly.
2025 0522 131114 1245	33	Australian Maritime Safety Authority (AMSA)	2025-05-22	Email	Out	Passed on thanks for the quick response. Confirmed we will have the associated survey vessel/s and support craft notify AMSA's **Joint Rescue Coordination Centre** (JRRC) in the time and manner requested Will notify **Australian Hydrographic Office** (AHO) through **datacentre@hydro.gov.au**, no less than four working weeks before operations commence for the promulgation of related notices to mariners, or as otherwise advised by AHO. Noted and accepted the following advice: *Vessels should exhibit appropriate lights and shapes to reflect the nature of operations -we remind vessels of their obligation to comply with the International Rules for Preventing Collisions at Sea (**COLREGs**), in particular, the use of appropriate lights and shapes to reflect the nature of operations (e.g restricted in the ability to manoeuvre). Vessels should also ensure their navigation status is set correctly in the ship's Automatic Identification System (AIS) unit.* *Amplitude Energy should evaluate and implement adequate anti-collision measures. Whereby collision avoidance measures may include but are not limited to:* *Additional warnings and/or lights to attract attention.* *Installation of AIS units.*	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Offshore guard vessel/s that can monitor traffic and take early action to alert a vessel approaching the area of operations Passed on thanks for the plot provided, and noted appreciation of the links to the spatial data portal. Also noted on future use of the **NavSafety@amsa.gov.au** email address. Also suggested that they notify NOPSEMA regarding email address, as different to that shown in the relevant NOPSEMA guidance.		
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 163254 4276	459	Corangamite Catchment Management Authority	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 210941 9503	459	Corangamite Catchment Management Authority	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0520 095559 5800	130	Director of National Parks (DNP)	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted these two EPs were under the East Coast Gas Supply Project Offshore Project Proposal (OPP) and proximate to the Athena Supply Project EP area that they had recently commented on. Noted the only change to the relevant data provided for those was a small increase in the noise EMBA, and provided shape files for that EMBA. Provided copies of prior correspondence for the ECSP OPP and ASP EP for reference.	N/A	N/A
2025 0619 100603 7349	130	Director of National Parks (DNP)	2025-06-19	Email	In	Passed on thanks for opportunity to comment. No authorisations required from the DNP as no overlap with noise EMBA with AMPs. Noted new management plan for the South-east Marine Parks Network came into effect on 13 February 2025 **South-east Marine Parks Network Management Plan 2025** . In line with the management plan's objectives and values, the Environment Plan (EP) must identify and control all risks and impacts to Australian Marine Park values, including ecosystems, to an acceptable level. It must also show that all reasonable measures to avoid or minimise impacts have been considered, and that the activity aligns with relevant legislation referenced in the class approval. No further updates on this activity are required unless there is a change that introduces a new impact or overlap with a marine park, or if there is an emergency response. If an activity takes place in a marine park without authorisation from NOPSEMA or the Director of National Parks (DNP), it would breach the EPBC Act. Emergency Response Requirements: If oil or gas pollution occurs within or threatens a marine park, it must be reported immediately to the 24-hour Marine Compliance Duty Officer (0419 293 465). The report should include: Titleholder and incident details	No objection or claim of adverse impact. Reasonable requests made for notifications and actions to be taken should emergency events occur.	Standard response – no additional measures adopted. Annie-2 EP stakeholder notifications register updated accordingly.

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Location and affected marine park Planned response actions from the Oil Pollution Emergency Plan Confirmation that monitoring and evaluation reports will be shared when available Contact details of the response coordinator Depending on the incident's severity, the DNP may request regular Situation Reports (daily or weekly). All future correspondence should be sent to marineparksauthorisations@dcceew.gov.au, and queries are welcome.		
2025 0709 165410 3590	130	Director of National Parks (DNP)	2025-07-09	Email	Out	Passed on thanks for advice regarding the two East Coast Supply Project (ECSP) EPs (Annie-2 development well EP & the Wells Connection EP) and confirming that DNP do not require further notification of progress made in relation to the activities unless details regarding the activities change and result in an overlap with or new impact to a marine park, or in event of emergency response. Noted on the new South-east Marine Parks Network management plan, and emergency response requirements, and confirmed the EPs will, with respect to management plan objectives and values: identify and manage all impacts and risks on all Australian marine park values (including ecosystem values) to an acceptable level and consider all reasonable options to avoid or reduce them to as low as reasonably practicable. clearly demonstrate that the activities will not be inconsistent with the relevant legislation listed in the class approval, and include notification requirements in event of an oil/gas pollution incident either within a marine park or are likely to impact on a marine park as soon as possible	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received. Noted no further consultation required at this point.								
2025 0513 161055 4361	157	Fisheries Research and Development Corporation (FRDC)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 211147 3305	157	Fisheries Research and Development Corporation (FRDC)	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0519 114106 5800	460	Heritage Victoria	2025-05-19	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0519 131239 9639	460	Heritage Victoria	2025-05-19	Email	In	Out of office auto reply	N/A	N/A
2025 0523 095702 4620	460	Heritage Victoria	2025-05-19	Email	In	Passed on thanks for the email. Queried how prior Heritage Victoria feedback is being implemented under these new EPs, and whether we are engaging with a qualified maritime archaeologist. Requested shapefiles for the projects.	No objection or claim of adverse impact. Reasonable query on how prior advice was considered for this EP. Reasonable request for shape files.	Confirmed that prior advice was considered as per Event ID 2025 0609 135820 7349 Provided shapefiles.

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Suggested either email or meeting would be fine for further discussions.		
2025 0609 135820 7349	460	Heritage Victoria	2025-05-19	Email	Out	Passed on thanks for the response. Advised the name of the Archaeologist who specialises in Maritime and Underwater cultural heritage. Noted they will also review our site survey data for evidence of cultural heritage and will provide us a report including any potential UCH we may need to look at further, or report and avoid during our project activities. In parallel, we are engaging with traditional owners about the projects and cultural sensitivities important to them in the marine environment. Suggested we could meet to run you through the projects and some of our preliminary seabed survey results.	N/A	N/A
2025 0610 101539 2996	460	Heritage Victoria	2025-06-10	Email	In	Passed on thanks for response, and appreciated we had retained the services of experienced and trusted maritim4e archaeologists who would provide good advice. Appreciated the shape files and noted the shipwreck "Alfred" was located around 500m outside the operational area, although the estimated position of the Alfred is likely to be very inaccurate. Noted that if it were to be found to be within or adjacent to the operational areas, then the maritime archaeologists could advise on managing potential impacts noting the wreck is protected under Cth legislation. Accepted the offer to meet and provided suggested times.	N/A	N/A
2025 0610 121838 8781	460	Heritage Victoria	2025-06-10	Email	Out	Passed on thanks for the email, and suggested which times would work. Appreciated advice on "the Alfred" and will share with team for awareness.	N/A	N/A
2025 0610 144003 1077	460	Heritage Victoria	2025-06-10	Email	In	Confirmed meeting time.	N/A	N/A
2025 0618 123456 5684	460	Heritage Victoria	2025-06-18	Meeting	In/Out	During an online meeting, project background was provided consistent with materials provided in earlier email. Heritage Victoria were pleased that we had retained a good suitably qualified marine archaeologist to provide advice. Amplitude Energy noted timing for first well in the broader drilling campaign was scheduled for November this year (for ASP EP). Noted a magnetic anomaly from geophysics survey and advised that HV would be updated on any interpretation by retained marine archaeologist. Heritage Victoria advised that Flinders University was the only institution offering courses in marine archaeology. Amplitude Energy requested contact details to see if they might benefit from any shared data.	No objection or claim of adverse impact.	N/A
2025 0809 212707 2931	460	Heritage Victoria	2025-08-09	Email	Out	Appreciated their time for the meeting on 18 June, and for the opportunity to provide an overview of activities proposed under the EP. Noted current estimated timing for the start of drilling on Annie-2 had moved from November to December 2025 now. Review of drop camera images has so far not picked up on any anthropogenic objects at the Annie anomaly site mentioned in our meeting (this was 2.8km for the planned Annie-2 well site), but our UCH consultants are continuing their review of the Geophysical data and images this month, and unless they advise otherwise, we plan to retain the 20m mooring	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						buffer around this anomaly which the UCH consultants recommended following their initial review of the magnetometer data. Regarding the mention of Flinders Uni, we would be interested to discuss how the work we do, and data we collect, might be useful for student projects if a contact could be shared. We are now finalising consultation on these EPs, and below is appended a general mailout – Bulk mailout #3		
2025 0809 212753 3459	460	Heritage Victoria	2025-08-09	Email	In	Auto reply	N/A	N/A
20250930 200604-7862	460	Heritage Victoria	2025-09-30	Email	In	Apologised for delay and passed on thanks for update. Shared a university contact that might have an interest in our studies. Checked as to whether further review of the geophysical data or drop camera surveys identified anything new of interest.	No objection or claim of adverse impact. Reasonable query regarding status of anomaly responded to in event ID 20251002 202106-9311.	N/A
20251002 202106-9311	460	Heritage Victoria	2025-10/02	Email	Out	Passed on thanks for the University contact, and hoped that our work might be of value to the University. Further review of geophysical data and drop camera images didn't result in the identification of anything new of interest. The recommendation from our UCH consultants didn't change, so we plan to retain the 20m mooring buffer around the anomaly mentioned below. Looked forward to meeting in-person at some point.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 19 May 2025 and no request for additional time has been received.								
2025 0721 130932 9471	458	SA Department for Infrastructure and Transport (DIT)	2025-07-28	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted spill models showed areas of potential impact within those of the most recently reviewed OPEP. Provided a link to the OPEP that was part of the recently accepted ASP EP. Suggested that a major review was unlikely to be required.	N/A	N/A
2025 0820 153022 6553	458	SA Department for Infrastructure and Transport (DIT)	2025-08-20	Email	Out	Noted we have now completed our draft update of the OPEP which is attached and includes highlighted changes and notes. Upon reflection, we would consider that given the updated assets are in the same general location as the assets already described in the accepted OPEP, and these assets do not increase the likelihood or threat of pollution, and that the worst case spill scenarios modelled in the current version of the OPEP have not increased, no further consultation is likely required.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 28 July 2025 and no request for additional time has been received. Considering recent review of OPEP, no further consultation considered necessary.								
2025 0721 115142 5800	366	Tasmanian EPA	2025-07-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted spill models showed areas of potential impact within those of the most recently reviewed OPEP. Provided a link to the OPEP that was part of the recently accepted ASP EP. Suggested that a major review was unlikely to be required.	N/A	N/A
2025 0721 115245 8928	366	Tasmanian EPA	2025-07-21	Email	In	Auto reply out of office	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0820 140032 7349	366	Tasmanian EPA	2025-08-20	Email	Out	Noted we have now completed our draft update of the OPEP which is attached and includes highlighted changes and notes. Upon reflection, we would consider that given the updated assets are in the same general location as the assets already described in the accepted OPEP, and these assets do not increase the likelihood or threat of pollution, and that the worst case spill scenarios modelled in the current version of the OPEP have not increased, no further consultation is likely required. Requested contact details provided be confirmed.	N/A	N/A
2025 0820 141857 7523	366	Tasmanian EPA	2025-08-20	Email	In	Agreed no further consultation on the OPEP required. Provided changes to emergency contacts.	No objection or claim of adverse impact.	N/A
2025 0820 150607 4604	366	Tasmanian EPA	2025-08-20	Email	Out	Passed on thanks for quick response. Noted contacts will be updated accordingly.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 July 2025 and no request for additional time has been received.								
2025 0721 131357 7740	380	Transport for NSW	2025-07-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted spill models showed areas of potential impact within those of the most recently reviewed OPEP. Provided a link to the OPEP that was part of the recently accepted ASP EP. Suggested that a major review was unlikely to be required.	N/A	N/A
2025 0820 145554 5800	380	Transport for NSW	2025-08-20	Email	Out	Noted we have now completed our draft update of the OPEP which is attached and includes highlighted changes and notes. Upon reflection, we would consider that given the updated assets are in the same general location as the assets already described in the accepted OPEP, and these assets do not increase the likelihood or threat of pollution, and that the worst case spill scenarios modelled in the current version of the OPEP have not increased, no further consultation is likely required. Requested contact details provided be confirmed.	N/A	N/A
2025 0826 100859 7349	380	Transport for NSW	2025-08-26	Email	In	Passed on thanks for the opportunity to review the EP. Provided corrected contact details for emergency response.	No objection or claim of adverse impact.	N/A
2025 0826 150221 3606	380	Transport for NSW	2025-08-26	Email	Out	Passed on thanks for the quick response, and advised contacts register will be updated accordingly.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 July 2025 and no request for additional time has been received.								
2025 0519 105115 7349	156	Victorian Department of Premier and Cabinet (DPC) First Peoples - State Relations	2025-05-19	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0519 131258 5819	156	Victorian Department of Premier and Cabinet (DPC) First Peoples - State Relations	2025-05-19	Email	Out	Offered to meet during our planned visit to Melbourne in early June.	N/A	N/A
2025 0809 213111 6393	156	Victorian Department of Premier and Cabinet (DPC) First Peoples - State Relations	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 19 May 2025 and no request for additional time has been received.								
2025 0516 123921 6773	127	Victorian Department of Transport and Planning (DTP)	2025-05-16	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4). Noted potential spills for these two EPs are smaller and sit spatially within the models used for the recently approved OPEP that was part of the	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						accepted. ASP EP. Therefore we would not expect much of a review will be needed.		
2025 0516 124415 2954	127	Victorian Department of Transport and Planning (DTP)	2025-05-16	Email	In	Out of office auto reply,	N/A	N/A
2025 0721 123014 8983	127	Victorian Department of Transport and Planning (DTP)	2025-07-21	Email	Out	Re-sent Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted spill models showed areas of potential impact within those of the most recently reviewed OPEP. Provided a link to the OPEP that was part of the recently accepted ASP EP. Suggested that a major review was unlikely to be required.	N/A	N/A
2025 0721 123158 8765	127	Victorian Department of Transport and Planning (DTP)	2025-07-21	Email	In	Email bounced	N/A	N/A
2025 0721 123159 7635	127	Victorian Department of Transport and Planning (DTP)	2025-07-21	Email	In	Email bounced	N/A	N/A
2025 0721 143607 6826	127	Victorian Department of Transport and Planning (DTP)	2025-07-21	Email	Out	Noted a change in personnel, so forwarded earlier email. Offered to meet to provide background.	N/A	N/A
2025 0722 132058 8762	127	Victorian Department of Transport and Planning (DTP)	2025-07-23	Email	In	Passed on thanks for the email, and appreciated the opportunity to be introduced to Amplitude Energy. Noted they would respond on the EP shortly.	N/A	N/A
2025 0722 135739 6289	127	Victorian Department of Transport and Planning (DTP)	2025-07-22	Email	Out	Suggested a meeting time	N/A	N/A
2025 0724 085257 7349	127	Victorian Department of Transport and Planning (DTP)	2025-07-24	Email	In	Noted name change to Amplitude Energy. Provided a copy of the updated guidance :" Victorian Joint Industry and State Oil Pollution Responses Guidance Note V3". Queried as to when the updated OPEP will be shared for comment so they can plan accordingly.	No objection or claim of adverse impact.	N/A
2025 0724 123456 6754	127	Victorian Department of Transport and Planning (DTP)	2025-07-24	Meeting	In	An online meeting was held to introduce Amplitude Energy to new senior manager at DTP. Amplitude Energy gave an overview of its operations across the Gippsland and Otway Basins, and provided background on past cooperation with DTP on emergency response drills, noting its plans for a near term drill being supported by AMOSC. With respect to the ECSP EPs, it was noted that inventories had changed with Annie-2 being added, and that we would share the OPEP for review shortly. DTP noted their updated guidance.	No objection or claim of adverse impact.	N/A
2025 0820 131551 7349	127	Victorian Department of Transport and Planning (DTP)	2025-08-20	Email	Out	Passed on appreciation for the opportunity to meet and to provide a general overview of Amplitude Energy"s activities. Shared the draft OPEP, and noted our view that no further consultation was required given the updated assets are in the same general location as the assets already described in the accepted OPEP, and these assets do not increase the likelihood or threat of pollution, and that the worst case spill scenarios modelled in the current version of the OPEP have not increased.	N/A	N/A
2025 0821 065701 4777	127	Victorian Department of Transport and Planning (DTP)	2025-08-21	Email	In	Noted they would be in touch if anything further needed, and enquired as to timeframe for a response.	No objection or claim of adverse impact.	N/A
2025 0821 092305 2550	127	Victorian Department of Transport and Planning (DTP)	2025-08-21	Email	Out	Noted that a response by the end of the following week would be good.	N/A	N/A
2025 0821 132655 7951	127	Victorian Department of Transport and Planning (DTP)	2025-08-21	Email	In	Advised they would endeavour to review OPEP in the following week and check as to whether further consultation on the OPEP is required.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0827 130839 7872	127	Victorian Department of Transport and Planning (DTP)	2025-08-27	Email	In	Agreed no further consultation required as per the consultation criteria in the Victorian Joint Industry and State Oil Pollution Responses guidance note. Noting DTP reviewed Athena Supply Project (ASP) OPEP in August 2024 and the likelihood or threat of pollution and the modelled spill scenario remains the same. Highlighted changes that were recently made to Victoria's SEMP.	No objection or claim of adverse impact.	N/A
2025 0827 142748 9139	127	Victorian Department of Transport and Planning (DTP)	2025-08-27	Email	Out	Passed on thanks for confirming that the OPEP required no further consultation, and for highlighting changes to the SEMP guidance note.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 16 May 2025 and no request for additional time has been received.								
2025 0513 162422 1506	393	Victorian Fisheries Authority (VFA)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 213215 8676	393	Victorian Fisheries Authority (VFA)	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
The Department of the responsible State Minister 25(1)(b)								
2025 0514 142923 7759	272	Parks Victoria	2025-05-14	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0514 145759 6560	272	Parks Victoria	2025-05-14	Email	In	Auto response	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 14 May 2025 and no request for additional time has been received.								
2025 0513 160727 8763	107	Victorian Department of Energy, Environment and Climate Action Earth Resources Regulation (DEECA ERR)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 213427 3757	107	Victorian Department of Energy, Environment and Climate Action Earth Resources Regulation (DEECA ERR)	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 160932 8114	115	Victorian Department of Energy, Environment and Climate Action (DEECA) Biosecurity and Agriculture Services	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 213617 9908	115	Victorian Department of Energy, Environment and Climate Action (DEECA) Biosecurity and Agriculture Services	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0811 075051 7349	115	Victorian Department of Energy, Environment and Climate Action (DEECA) Biosecurity and Agriculture Services	2025-08-11	Email	Out	Noted some high-level comments have been sent (via webform) regarding continuing to work together to manage marine pest risks.	N/A	N/A
2025 0811 081516 6215	115	Victorian Department of Energy, Environment and Climate Action (DEECA) Biosecurity and Agriculture Services	2025-08-11	Email	In	Noted the branch was a relevant person as responsible for marine biosecurity for the State of Victoria. Acknowledges a strong collaborative relationship with Amplitude Energy, which shares vessel import data and risk management practices to prevent invasive marine species (IMS) spread. Agriculture Victoria confirmed the they seek to have this relationship continue, and remain pleased to provide advice on IMS risk and practical	No objection or claim of adverse impact. Reasonable request that the nature of the current relationship continue. Reasonable request that we note presence of *Undaria pinnatifida* in the Port of Portland, and consider transfer risk.	Section 3.18 of the Description of the environment has been updated to note the existence of *Undaria pinnatifida* in Portland Harbour, and is noted in Table 4-3 of the EP. (See

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						steps that can be taken to manage that risk. The department highlighted the presence of the invasive seaweed Undaria pinnatifida in the Port of Portland and advised Amplitude Energy to consider the risk of its transfer to offshore infrastructure via supply vessels Requested updates on activities under these EPs.		Event ID 2025 0812 154449 6174.
2025 0811 130256 9070	115	Victorian Department of Energy, Environment and Climate Action (DEECA) Biosecurity and Agriculture Services	2025-08-11	Email	Out	Passed on thanks for the response (via the web form), and that we would respond shortly.	N/A	N/A
2025 0812 154449 6174	115	Victorian Department of Energy, Environment and Climate Action (DEECA) Biosecurity and Agriculture Services	2025-08-12	Email	Out	Appreciated the department had visited the website. Passed on thanks for the comments, and confirmed we also appreciate the good working relationship and look forward to it continuing. Passed on thanks also for highlighting the *Undaria pinnatifida* risk. Noted the proposed Annie 2 development drilling activity, along with the installation of subsea infrastructure including flowlines connecting with the Casino Henry Netherby pipeline are in deeper waters (> 55m water depth which is outside of the preferred establishment range of the species Undaria pinnatifida (up to ~25m water depth). We consider the risk of establishment of invasive marine species in this particular instance to be minimal. Nonetheless, confirmed vessel biofouling and ballast water management is reviewed as part of our pre-mobilisation process to ensure vessels we hire adhere to Australian biofouling management and ballast water management requirements. In addition, noted we undertake reviews of IMS transfer risk (Amplitude IMS Risk Management Protocol) for each of our activities, which are informed by the biofouling management practices for the vessels and ROVs, as well as particular species to be aware of and the suitability of the offshore subsea equipment as potential substrate for establishment. Passed on appreciation for the response, and that we looked forward to catching up on a future visit . Confirmed we will keep Agriculture Victoria updated on these activities.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 163951 5723	573	Victorian Department of Energy, Environment and Climate Action Planning and Environmental Assessment (DEECA PEA)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0809 213723 7709	573	Victorian Department of Energy, Environment and Climate Action Planning and Environmental Assessment (DEECA PEA)	2025-08-09	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
Business, industry and research 25(1)(d)								
2025 0512 100024 3553	439	12 Apostles Cottages	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	439	12 Apostles Cottages	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	439	12 Apostles Cottages	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 100105 8552	1	12 Apostles Helicopters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0512 165719 8189	1	12 Apostles Helicopters	2025-05-12	Email	In	Does not require further consultation on these activities.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received, and noted no further information was required.								
2025 0512 134312 9657	539	54 on Bank	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	539	54 on Bank	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	539	54 on Bank	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134312 4361	540	A1 Motel Port Fairy	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	540	A1 Motel Port Fairy	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	540	A1 Motel Port Fairy	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 100838 7566	5	AARNet Pty Ltd	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	5	AARNet Pty Ltd	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	5	AARNet Pty Ltd	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 100933 6464	11	Academy of Scuba	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	11	Academy of Scuba	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	11	Academy of Scuba	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0512 130214 6604	601	Admella Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
00002025 0530 112556 7365	601	Admella Motel	2025-06-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	601	Admella Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114212 8780	497	Allansford Hotel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	497	Allansford Hotel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	497	Allansford Hotel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125915 9546	593	Allestree Beach Holiday Units	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	593	Allestree Beach Holiday Units	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	593	Allestree Beach Holiday Units	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 101016 2993	12	Allfresh Seafood	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	12	Allfresh Seafood	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	12	Allfresh Seafood	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113823 4994	446	Anchors	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	446	Anchors	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	446	Anchors	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130328 3514	604	Annesley House	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 124922 8831	604	Annesley House	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 104817 3606	604	Annesley House	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 104915 8999	15	Apollo Bay Chamber of Commerce	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	15	Apollo Bay Chamber of Commerce	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	15	Apollo Bay Chamber of Commerce	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 104840 4535	16	Apollo Bay Dive Centre and Surf n Fish	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	16	Apollo Bay Dive Centre and Surf n Fish	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	16	Apollo Bay Dive Centre and Surf n Fish	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114002 6084	466	Apollo Bay Fishing & Adventure Tours	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	466	Apollo Bay Fishing & Adventure Tours	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	466	Apollo Bay Fishing & Adventure Tours	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113945 5605	465	Apollo Bay Fishing Charters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	465	Apollo Bay Fishing Charters	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	465	Apollo Bay Fishing Charters	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 104938 1503	21	Apollo Bay Surf & Kayak	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	21	Apollo Bay Surf & Kayak	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	21	Apollo Bay Surf & Kayak	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 105021 9135	23	Apollo Bay Visitor Information Centre	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	23	Apollo Bay Visitor Information Centre	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	23	Apollo Bay Visitor Information Centre	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134312 8114	541	Ashmont Motor Inn & Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	541	Ashmont Motor Inn & Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	541	Ashmont Motor Inn & Apartments	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130540 3041	606	Bagout Tuna Fishing Charters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	606	Bagout Tuna Fishing Charters	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4	606	Bagout Tuna Fishing Charters	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 105713 6131	49	Beach Energy	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0519 144335 4438	49	Beach Energy	2025-05-12	Email	In	Out of office auto reply	N/A	N/A
2025 0530 112556 7365	49	Beach Energy	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	49	Beach Energy	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114228 4761	498	Best Western Colonial Village Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	498	Best Western Colonial Village Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	498	Best Western Colonial Village Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125844 8843	591	BIG4 Narrawong Island Holiday Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	591	BIG4 Narrawong Island Holiday Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	591	BIG4 Narrawong Island Holiday Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0512 134312 8763	542	BIG4 Port Fairy Holiday Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	542	BIG4 Port Fairy Holiday Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	542	BIG4 Port Fairy Holiday Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114653 5406	508	Blue Whale Motor Inn & Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	508	Blue Whale Motor Inn & Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	508	Blue Whale Motor Inn & Apartments	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 105046 1662	57	Blue Whale Study	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	57	Blue Whale Study	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	57	Blue Whale Study	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 105305 5180	59	Boating Industry Association of Victoria	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	59	Boating Industry Association of Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	59	Boating Industry Association of Victoria	2025-08-06	Email	In/Out	Bulk mailout #3 - notification this phase of consultation is closing Unsubscribed via the " You can **unsubscribe from this list** if you no longer wish to be consulted on this project."	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134359 4276	63	Bridgeport Pty Ltd (New Hope Group)	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	63	Bridgeport Pty Ltd (New Hope Group)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	63	Bridgeport Pty Ltd (New Hope Group)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 074653 5486	569	BW Digital	2025-05-12	Email	Out	Sent contact form with link to consultation website, and request for contact details.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received. No response to form, and no contact number provided. Consistent with previous efforts to consult.								
2025 0512 130424 6302	614	Casuarina Cabins	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	614	Casuarina Cabins	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	614	Casuarina Cabins	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134312 4726	543	Central Motel Port Fairy	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	543	Central Motel Port Fairy	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	543	Central Motel Port Fairy	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 105809 1311	73	CGG	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0512 121621 6215	73	CGG	2025-05-12	Email	In	Passed on thanks for the email, and advised that CGG would like to be provided ongoing updates.	N/A	N/A
2025 0530 112556 7365	73	CGG	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0530 112632 7972	73	CGG	2025-05-30	Email	In	Auto reply	N/A	N/A
2025 0806 141549 4254	73	CGG	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134312 1408	544	Cherry Plum Cottages	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	544	Cherry Plum Cottages	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	544	Cherry Plum Cottages	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114713 4419	509	City Heart Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	509	City Heart Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	509	City Heart Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0512 134312 7381	545	Clonmara Country House & Cottages	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	545	Clonmara Country House & Cottages	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	545	Clonmara Country House & Cottages	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 110039 8013	76	Coastal Planning	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	76	Coastal Planning	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	76	Coastal Planning	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114257 4465	499	Comfort Inn On Raglan	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 124533 7349	499	Comfort Inn On Raglan	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 114638 3717	499	Comfort Inn On Raglan	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114742 9314	516	Comfort Inn Warrnambool International	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	516	Comfort Inn Warrnambool International	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	516	Comfort Inn Warrnambool International	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114541 8785	505	Commercial Hotel Panmure	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	505	Commercial Hotel Panmure	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	505	Commercial Hotel Panmure	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130506 9198	613	Committee for Portland	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125020 9121	613	Committee for Portland	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 114901 7972	613	Committee for Portland	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 110138 9877	84	Conoco Phillips	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0519 144311 2117	84	Conoco Phillips	2025-05-12	Email	In	Auto response	N/A	N/A
2025 0519 131311 4463	84	Conoco Phillips	2025-05-19	Email	In	Advised no need for further consultation on these EPs, but would like to be kept up to date on progress of the EPs.	N/A	N/A
2025 0603 160716 5516	84	Conoco Phillips	2025-06-03	Email	In	Registered for webinar for 9 June 2025	N/A	N/A
2025 0609 1234562576	84	Conoco Phillips	2025-06-09	Webinar	In/Out	Attended webinar which contained numerous slides describing the activities and potential impacts and risks. Did not raise any queries.	No objection or claim of adverse impact.	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received. Advised no further consultation required.								
2025 0512 114436 6868	500	Convent at Koroit	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	500	Convent at Koroit	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	500	Convent at Koroit	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114841 5918	517	Darriwill Farm Warrnambool	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	517	Darriwill Farm Warrnambool	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	517	Darriwill Farm Warrnambool	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 111043 8496	93	Deakin University - School of Life and Environmental Sciences (Warrnambool Campus)	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0512 111143 5323	93	Deakin University - School of Life and Environmental Sciences (Warrnambool Campus)	2025-05-12	Email	In	Auto response	N/A	N/A
2025 0530 112556 7365	93	Deakin University - School of Life and Environmental Sciences (Warrnambool Campus)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	93	Deakin University - School of Life and Environmental Sciences (Warrnambool Campus)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0512 114828 1877	501	Deep Blue Hotel & Hot Springs	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	501	Deep Blue Hotel & Hot Springs	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	501	Deep Blue Hotel & Hot Springs	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 111626 7805	133	Diving Industry of Victoria	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	133	Diving Industry of Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	133	Diving Industry of Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134359 5218	546	Dockside Waterfront Indulgence	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	546	Dockside Waterfront Indulgence	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	546	Dockside Waterfront Indulgence	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134359 6332	548	Drift House Port Fairy	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	548	Drift House Port Fairy	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	548	Drift House Port Fairy	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134359 1481	549	Edge 17	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	549	Edge 17	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	549	Edge 17	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114859 2694	518	Eight Spence	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	518	Eight Spence	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	518	Eight Spence	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114916 8419	519	Elm Tree Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0526 164850 5623	519	Elm Tree Motel	2025-05-26	Email	In	Advised they do not need to be consulted further on these projects but would like to receive project updates.	N/A	N/A
2025 0526 165131 4652	519	Elm Tree Motel	2025-05-26	Email	Out	Passed on thanks for response, and confirmed we would provide project updates.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114931 2271	520	Fairholme Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	520	Fairholme Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	520	Fairholme Apartments	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130718 1957	611	Fin Chaser Fishing Charters - Portland	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	611	Fin Chaser Fishing Charters - Portland	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	611	Fin Chaser Fishing Charters - Portland	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134359 7904	550	Gardens Caravan Park Port Fairy	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Per comms with Moyne Shire, no more consultation direct with Gardens Caravan Park is required as they are council owned. See 2025 0513 095930 5671.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received. No further consultation required, as consulting direct with owner – Moyne Shire.								
2025 0512 113056 6259	178	Go Surf School	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 085513 5800	178	Go Surf School	2025-05-12	Email	In	Passed on thanks for reaching out. Acknowledged they were a relevant person, and noted they were engaging on a various projects across a large amount of technical data. Noted there was significant community opposition to these projects, and advocated for permanent removal of these projects. Noted they did not support the gas development under these EPs, Considered there was a lack transparency regarding Victoria's energy usage, and how these projects specifically applied to local demand. The gas supply/demand equation seemed unclear and held a belief most of the gas was destined for overseas.	No objection or claim of adverse impact. Noted community opposition to gas development. Expressed concerns regarding gas market transparency in Victoria. This is considered outside scope of EP (see Event ID 2025 0520 090815 7349) Reasonable request for further information regarding mitigating and responding to hydrocarbon spills.	Provided requested further information regarding hydrocarbon spills. (See Event ID 2025 0520 090815 7349). No new measures adopted.

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Requested guarantees and evidence regarding risk of accidental hydrocarbon release being minimised, and how we would ensure a rapid and effective response to any spill.		
2025 0520 090815 7349	178	Go Surf School	2025-05-20	Email	Out	Noted not supportive of our gas development project. Regarding general concerns about transparency of Victoria's energy use, the clarity of supply and demand, and doubts about gas/profits going overseas, noted we can only comment on matters specific to Amplitude Energy and the activities under these EPs, and can confirm that we are an ASX listed company, and all the gas we produce goes into the domestic market. Regarding oil spill risk: We have not had any material spills or leaks of gas or condensate from our facilities (the wells or pipeline) or the vessels we hire for offshore campaigns. Though a spill or leak of gas or condensate from our subsea facilities, or spill of diesel oil from a vessel, is unlikely, there are no guarantees, and we do have response plans in place in case a spill or leak does occur. Our response plans are additional to the current national spill response plans, as are required under the regulations that apply to our industry. Our response plans include consideration of the area where we operate, and the resources we require to respond to a spill. Our plans also outline how our response would integrate with local, state and national response agencies. Our current Oil Pollution Emergency Plan (OPEP) can be found here on the NOPSEMA site: **OPEP**, and further information regarding oil spill risk and response can be found here: **Oil spill risk planning**, We agree that managing spill risk is a very important issue, and both mitigating this risk and being well prepared in our response planning are things we take very seriously.	N/A	N/A
2025 0530 112556 7365	178	Go Surf School	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0606 225928 8942	178	Go Surf School	2025-06-06	Email	Out	Passed on thanks for information about the ECSP EP, and invitation to attend community sessions and webinars. Raised community concerns about gas drilling in the Otway Basin, and the potential for companies to profit in what is considered an environmentally sensitive region. Noted they did not support the company operating there. Remain committed to the use only of existing pipelines within Victoria. Also expressed opposition to the export of any gas or oil beyond borders. Concerned about lack of transparency on supply and demand figures.	An objection was raised to the use of new pipelines in Victoria; we confirmed that this project did not require new pipelines onshore Victoria, nor in Victorian state waters. New flowlines would connect to existing pipelines under the ECSP: Wells connection EP. Therefore, we consider there is no merit to the objection. Gas market transparency considered outside the scope of this EP, but confirmed gas produced is destined for the domestic market only. See Event ID 2025 0709 161003 4693.	Requested information provided to reasonable queries. No new measures adopted.
2025 0709 161003 4693	178	Go Surf School	2025-07-09	Email	Out	Passed on thanks for response. Noted regarding general views on gas drilling in the Otway Basin, and companies profiting from these ventures It was also noted they did not support our company operating in the Otway Basin. With respect to the strong view that Victoria's energy supply should be limited to being through existing pipelines within Victoria, noted our	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						proposed activities under these 2 EPs do not include any additional pipelines in Victorian state waters or onshore Victoria. Our plan is to provide replacement supply through the connecting of new flowlines into existing pipelines in Commonwealth waters. The gas will flow through those existing pipelines to our established onshore gas plant which currently operates below its designed capacity. Confirmed that all our gas is destined for domestic consumption, and not for export. Advised we could not comment on the general concern around market transparency, which is outside the scope of our EP, but did advise that domestic customers have expressed a strong desire to bring on more local gas supply.		
2025 0806 141549 4254	178	Go Surf School	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130143 3683	600	Golden Chain Victoria Lodge Motor Inn	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	600	Golden Chain Victoria Lodge Motor Inn	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	600	Golden Chain Victoria Lodge Motor Inn	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130601 7256	607	Gone Fishing Charters - Portland	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	607	Gone Fishing Charters - Portland	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	607	Gone Fishing Charters - Portland	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113220 7371	185	Great Ocean Road Coast and Parks Authority	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	185	Great Ocean Road Coast and Parks Authority	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0530 112632 3717	185	Great Ocean Road Coast and Parks Authority	2025-05-30	Email	In	Auto reply	N/A	N/A
2025 0806 141549 4254	185	Great Ocean Road Coast and Parks Authority	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113131 4910	186	Great Ocean Road Regional Tourism	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	186	Great Ocean Road Regional Tourism	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	186	Great Ocean Road Regional Tourism	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113157 2861	187	Great Ocean Road Tourist Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	187	Great Ocean Road Tourist Park	2025-06-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	187	Great Ocean Road Tourist Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134312 1506	536	Harmony at Tower Hill	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	536	Harmony at Tower Hill	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	536	Harmony at Tower Hill	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134359 5723	552	Hearn's Beachside Villas	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	552	Hearn's Beachside Villas	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	552	Hearn's Beachside Villas	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134230 3717	534	High View Family Cottages	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	534	High View Family Cottages	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	534	High View Family Cottages	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114951 6731	521	Hotel Warrnambool	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	521	Hotel Warrnambool	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	521	Hotel Warrnambool	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113244 1600	196	Institute for Marine and Antarctic Studies (IMAS) - University of Tasmania	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0516 081751 4258	196	Institute for Marine and Antarctic Studies (IMAS) - University of Tasmania	2025-05-16	Email	In	Confirmed receipt of email, and advised they may be in touch when the responsible person returns from absence.	N/A	N/A
2025 0516 081856 1715	196	Institute for Marine and Antarctic Studies (IMAS) - University of Tasmania	2025-05-16	Email	Out	Passed on thanks for email.	N/A	N/A
2025 0530 112556 7365	196	Institute for Marine and Antarctic Studies (IMAS) - University of Tasmania	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	196	Institute for Marine and Antarctic Studies (IMAS) - University of Tasmania	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 120548 5843	522	Kiki Holiday Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 124805 5800	522	Kiki Holiday Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 115655 1126	522	Kiki Holiday Apartments	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130635 3195	609	Kraken Fishing Charters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	609	Kraken Fishing Charters	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	609	Kraken Fishing Charters	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125135 6215	553	Laneway Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	553	Laneway Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	553	Laneway Apartments	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113808 5661	445	Lochard Motor Inn	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	445	Lochard Motor Inn	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	445	Lochard Motor Inn	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 120604 2399	523	Mahogany Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	523	Mahogany Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	523	Mahogany Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114122 4157	494	Mako Ocean Adventures	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	494	Mako Ocean Adventures	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	494	Mako Ocean Adventures	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130101 6332	598	Mariner Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	598	Mariner Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	598	Mariner Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130653 5804	610	Matthew Hunt Fishing Services	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	610	Matthew Hunt Fishing Services	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	610	Matthew Hunt Fishing Services	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130349 8468	605	Melaleuca Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	605	Melaleuca Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	605	Melaleuca Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114451 2203	502	Mickey Bourke's Koroit Hotel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	502	Mickey Bourke's Koroit Hotel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	502	Mickey Bourke's Koroit Hotel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 120621 8750	524	Mid City Motel Warrnambool	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	524	Mid City Motel Warrnambool	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	524	Mid City Motel Warrnambool	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114525 3406	504	Mt Noorat Hotel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	504	Mt Noorat Hotel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	504	Mt Noorat Hotel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114137 2453	495	Mulloka Cruises	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	495	Mulloka Cruises	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	495	Mulloka Cruises	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130447 9874	615	Nelson Hotel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125121 8283	615	Nelson Hotel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 115933 7846	615	Nelson Hotel	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125404 3606	554	Nivani Port Fairy Colonial Cottages	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	554	Nivani Port Fairy Colonial Cottages	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	554	Nivani Port Fairy Colonial Cottages	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130126 5218	599	NRMA Portland Bay Holiday Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	599	NRMA Portland Bay Holiday Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	599	NRMA Portland Bay Holiday Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0512 120638 7526	525	NRMA Warrnambool Riverside Holiday Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	525	NRMA Warrnambool Riverside Holiday Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	525	NRMA Warrnambool Riverside Holiday Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125427 3717	555	Ocean Ridge Retreat	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	555	Ocean Ridge Retreat	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	555	Ocean Ridge Retreat	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125444 7972	556	Old Market Inn Port Fairy	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	556	Old Market Inn Port Fairy	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	556	Old Market Inn Port Fairy	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114600 1555	506	Peterborough House	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	506	Peterborough House	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	506	Peterborough House	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113855 9959	447	Pitcher Vista	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	447	Pitcher Vista	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	447	Pitcher Vista	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125503 1126	558	Port Fairy Holiday Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	558	Port Fairy Holiday Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	558	Port Fairy Holiday Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125858 1506	592	Portland Bay Lodge	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	592	Portland Bay Lodge	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	592	Portland Bay Lodge	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125956 5723	595	Portland Retro Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	595	Portland Retro Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	595	Portland Retro Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130041 1481	597	Portland Tourist Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	597	Portland Tourist Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	597	Portland Tourist Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114809 4427	493	Pro Red Fishing Charters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	493	Pro Red Fishing Charters	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	493	Pro Red Fishing Charters	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130617 9820	608	Proline Fishing Charters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	608	Proline Fishing Charters	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	608	Proline Fishing Charters	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130309 3374	603	Quest Portland	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	603	Quest Portland	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	603	Quest Portland	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130249 6830	602	Richmond Henty Hotel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	602	Richmond Henty Hotel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	602	Richmond Henty Hotel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113917 2599	448	Ride with Us	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	448	Ride with Us	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	448	Ride with Us	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114018 3882	472	Salty Dog Charters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	472	Salty Dog Charters	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	472	Salty Dog Charters	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114627 6157	507	Schomberg Inn	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	507	Schomberg Inn	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0531 160559 1112	507	Schomberg Inn	2025-05-31	Email	In	Responded to email of 12 May 2025: Passed on thanks for the email, and had good awareness of the industry through direct experience in Australia and overseas. The industry locally supports their accommodation business, and they are supportive of the industry that they believe remains critical. Confident we will carry out our activities in an environmentally responsible manner, and wishes us well with the projects.	No objection or claim of adverse impact.	N/A
2025 0531 160559 3658	507	Schomberg Inn	2025-05-31	Email	In	In response to email of 30 May 2025: Appreciated the offer to attend the drop-in sessions, but unfortunately unable to attend.	No objection or claim of adverse impact.	N/A
2025 0531 161121 1406	507	Schomberg Inn	2025-05-31	Email	Out	Passed on appreciation. for their best wishes.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	507	Schomberg Inn	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113315 7195	323	Sea Foam Villas Port Campbell	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	323	Sea Foam Villas Port Campbell	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	323	Sea Foam Villas Port Campbell	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125524 7846	559	Seacombe House	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	559	Seacombe House	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	559	Seacombe House	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113608 9702	441	Seahorse Coastal Villas	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	441	Seahorse Coastal Villas	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	441	Seahorse Coastal Villas	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130019 7904	596	Seascape Accommodation	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	596	Seascape Accommodation	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	596	Seascape Accommodation	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114040 7176	473	Sharkmen Charters	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	473	Sharkmen Charters	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	473	Sharkmen Charters	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114154 1824	496	Skydive 12 Apostles	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	496	Skydive 12 Apostles	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	496	Skydive 12 Apostles	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113637 3061	442	Southern Ocean Motor Inn	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	442	Southern Ocean Motor Inn	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	442	Southern Ocean Motor Inn	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 074946 7349	570	Subco	2025-05-12	Email	Out	Via webform, requested appropriate contact and sent website link.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received. Did not respond to webform, no contact number shown, consistent with prior consultation efforts.								
2025 0512 113437 1110	346	Superloop	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0512 113646 8261	346	Superloop	2025-05-12	Email	In	Auto response - blank	N/A	N/A
2025 0530 112556 7365	346	Superloop	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0530 112632 6215	346	Superloop	2025-05-30	Email	In	Auto reply	N/A	N/A
2025 0806 141549 4254	346	Superloop	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134312 9546	535	The Bank	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	535	The Bank	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	535	The Bank	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125543 8330	560	The Boatshed Waterfront B&B	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	560	The Boatshed Waterfront B&B	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	560	The Boatshed Waterfront B&B	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114509 9486	503	The Cally	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	503	The Cally	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	503	The Cally	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125755 4361	561	The Coach House	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	561	The Coach House	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	561	The Coach House	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125615 7381	562	The Oak & Anchor Hotel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	562	The Oak & Anchor Hotel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	562	The Oak & Anchor Hotel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113733 9127	443	The Port O Call	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	443	The Port O Call	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	443	The Port O Call	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125633 1408	563	The Star Of The West Hotel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	563	The Star Of The West Hotel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	563	The Star Of The West Hotel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125656 4726	564	The Victoria Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	564	The Victoria Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	564	The Victoria Apartments	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 115534 7437	377	Timboon Action Group	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0811 130538 5982	377	Timboon Action Group	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing Also sent copy of bulk email #2 and apologised for missing them on the advertised community drop-in sessions and webinars. However, a link to the webinar recording was provided instead.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 120654 2156	526	Turn-In Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	526	Turn-In Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	526	Turn-In Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113523 5102	383	Twelve Apostles Tourism & Business Group	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0512 113558 1909	383	Twelve Apostles Tourism & Business Group	2025-05-12	Email	In	Auto reply	N/A	N/A
2025 0530 112556 7365	383	Twelve Apostles Tourism & Business Group	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	383	Twelve Apostles Tourism & Business Group	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113551 3994	397	Victorian Tourism Industry Council (VTIC)	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	397	Victorian Tourism Industry Council (VTIC)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	397	Victorian Tourism Industry Council (VTIC)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125825 9657	568	Vocus	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	568	Vocus	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	568	Vocus	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0512 134312 8843	538	Warreen Killarney BNB	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	538	Warreen Killarney BNB	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	538	Warreen Killarney BNB	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134137 5800	527	Warrnambool Central Court Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	527	Warrnambool Central Court Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	527	Warrnambool Central Court Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134151 6215	528	Warrnambool Diving & Firearms	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	528	Warrnambool Diving & Firearms	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	528	Warrnambool Diving & Firearms	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134206 3606	529	Warrnambool Gallery Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	529	Warrnambool Gallery Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	529	Warrnambool Gallery Apartments	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134230 8330	530	Warrnambool Holiday Village	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	530	Warrnambool Holiday Village	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	530	Warrnambool Holiday Village	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134230 7846	531	Warrnambool Motel and Holiday Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	531	Warrnambool Motel and Holiday Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0605 141549 4254	531	Warrnambool Motel and Holiday Park	2025-05-30	Drop-in session	In	Expressed support for the industry and positive impacts for local business.	No objection or claim of adverse impact.	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	531	Warrnambool Motel and Holiday Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134230 1126	532	Warrnambool Retreat	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	532	Warrnambool Retreat	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	532	Warrnambool Retreat	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 114100 3096	492	Warrnambool Tours	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	492	Warrnambool Tours	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	492	Warrnambool Tours	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 113750 3894	444	Waves Luxury Suites	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	444	Waves Luxury Suites	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	444	Waves Luxury Suites	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 134230 7972	533	Waves Motel and Apartments	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	533	Waves Motel and Apartments	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	533	Waves Motel and Apartments	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125934 4276	594	Whalers Rest Motor Inn	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	594	Whalers Rest Motor Inn	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	594	Whalers Rest Motor Inn	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 130407 8421	612	William Dutton Motel	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	612	William Dutton Motel	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	612	William Dutton Motel	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125719 8763	565	Wyntonia Beachfront Accommodation	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	565	Wyntonia Beachfront Accommodation	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	565	Wyntonia Beachfront Accommodation	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 125736 8114	566	Yambuk Lake Caravan Park	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Per comms with Moyne Shire, no more consultation direct with Gardens Caravan Park is required as they are council owned. See 2025 0513 095930 5671.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received. No further consultation required, as consulting direct with owner – Moyne Shire.								
2025 0513 164304 7904	590	Yumbah Aquaculture Narrawong	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	590	Yumbah Aquaculture Narrawong	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	590	Yumbah Aquaculture Narrawong	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
First Nations 25(1)(d)								
2025 0516 162910 7030	65	Bunurong Land Council Aboriginal Corporation	2025-05-16	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Requested that invitation to consult be shared with members as appropriate.	N/A	N/A
2025 0530 121749 4614	65	Bunurong Land Council Aboriginal Corporation	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars Requested sharing with members as appropriate.	N/A	N/A
2025 0722 130025 7349	65	Bunurong Land Council Aboriginal Corporation	2025-07-22	Call	Out	Passed on thanks for taking call and following up with relevant staff regarding consultation on the two EPs. Forwarded earlier emails to assist.	N/A	N/A
2025 0722 130517 2096	65	Bunurong Land Council Aboriginal Corporation	2025-07-22	Email	In	Passed on thanks for contact, and confirmed email has been passed on to relevant key staff members.	N/A - admin staff only.	N/A
2025 0722 132127 8720	65	Bunurong Land Council Aboriginal Corporation	2025-07-22	Email	Out	Passed on appreciation.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0722 135145 7588	65	Bunurong Land Council Aboriginal Corporation	2025-07-22	Email	In	Expressed we were welcome	N/A	N/A
2025 0811 121531 8330	65	Bunurong Land Council Aboriginal Corporation	2025-08-04	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing2025 0806 141549 4254	N/A	N/A
2025 0811 121954 6861	65	Bunurong Land Council Aboriginal Corporation	2025-08-04	Email	In	Auto reply	N/A	N/A
2025 0811 122335 6628	65	Bunurong Land Council Aboriginal Corporation	2025-08-11	Email	In	Admin confirmed receipt of email.	N/A	N/A
2025 0811 124957 7838	65	Bunurong Land Council Aboriginal Corporation	2025-08-11	Email	Out	Passed on thanks for the confirmation.	N/A	N/A
2025 0811 125521 8286	65	Bunurong Land Council Aboriginal Corporation	2025-08-11	Email	In	Expressed we were welcome	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 16 May 2025 and no request for additional time has been received. Called to confirm receipt, and confirmed information passed on appropriately.								
2025 0423 160850 3185	140	Eastern Maar Aboriginal Corporation (EMAC)	2025-04-23	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 115039 7846	140	Eastern Maar Aboriginal Corporation (EMAC)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars Requested sharing with members as appropriate.	N/A	N/A
2025 0605 123106 7392	140	Eastern Maar Aboriginal Corporation (EMAC)	2025-06-05	Call	Out	Called EMAC CEO and left a message regarding consultation on two EPs, and that we were in Warrnambool should he like to meet.	N/A	N/A
2025 0722 123008 6092	140	Eastern Maar Aboriginal Corporation (EMAC)	2025-07-22	SMS	Out	Called EMAC CEO; left message regarding consultation on the two EPs.	N/A	N/A
2025 0722 123106 6354	140	Eastern Maar Aboriginal Corporation (EMAC)	2025-07-22	Call	Out	Called EMAC CEO and left a message regarding consultation on the two new EPs, requesting a call back.	N/A	N/A
2025 0811 122057 7381	140	Eastern Maar Aboriginal Corporation (EMAC)	2025-08-04	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing Full thread of prior emails appended.	N/A	N/A
2025 0827 110158 7789	140	Eastern Maar Aboriginal Corporation (EMAC)	2025-08-27	SMS	Out	Called (and left message) to follow up on the 2 ECSP EPs we have emailed you on. Noted we will be submitting the Annie-2 development drilling EP to NOPSEMA shortly so requested to advise if any further information required.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 23 April 2025 and no request for additional time has been received. Multiple calls have been made to elicit a response in additional to written materials being provided.								
2025 0722 135451 6920	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-07-22	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0725 100514 8908	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-07-25	Email	In	Passed on thanks for email, and advised previous contact was no longer there. The replacement will commence early June, and GLaWAC admin staff will connect us.	N/A	N/A
2025 0725 104202 7748	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-07-25	Email	Out	Passed on thanks. Advised Admin person that we will try to call after the 6th August (after new person starts).	N/A	N/A
2025 0725 125528 9493	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-07-25	Email	In	Admin team member confirmed they will connect us once the new team settles in.	N/A	N/A
2025 0812 133327 1534	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-08-05	Email	Out	Email noting phone call. Passed on thanks for offering to forward email to the new team. Also forwarded email from previous GLaWAC team member as a reference as promised during the call.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Invited contact if further information was required.		
2025 0817 155940 7905	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-08-17	Email	Out	GLaWAC admin staff introduced Amplitude Energy to new team members, and shared prior correspondence.	N/A	N/A
2025 0818 095520 7425	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-08-18	Email	In	New team member passed on thanks for the information. Advised they would review and consult internally, and checked as to whether we could extend the response time.	N/A	N/A
2025 0818 162113 4996	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-08-18	Email	Out	Passed on thanks for time taking call earlier same day. Confirmed request for additional time was not unreasonable, but requested that response be received by end of month as discussed during call. Noted the low likelihood of any impacts to GLaWAC Country. Noted GLaWAC's prior advice to us for our offshore projects " that GLaWAC *be contacted in such an emergency so that the right knowledge holders can be consulted. This is to ensure appropriate protection of any cultural heritage sites and cultural values that could be affected by a spill or response activities."* As discussed during consultation on our ongoing offshore operations and previous projects, confirmed our agreement with GLaWAC on the importance of this approach, and that we carry this commitment forward in relevant Environment Plans. We confirm that this commitment has been captured in the ECSP: Annie 2 Development Well EP. Noted intention to submit EP in the next 2-3 weeks, but confirmed that ongoing consultation provided further opportunity in influence how we carry out our activities. Advised we would be pleased to travel to meet in September to introduce team members to Amplitude Energy"s activities. Requested that GLaWAC advise if any further information or clarifications were required.	N/A	N/A
2025 0827 095027 7349	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-08-27	Email	Out	Referred to discussion on a potential meeting in September related to a new EP under development, and an overview of Amplitude Energy's activities. (Unrelated to this EP, but included in log for context).	N/A	N/A
2025 0828 141512 7349	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-08-28	Email	In	Confirmed prior advice that in the event of an emergency GLaWAC be contacted so that knowledge holders be consulted to ensure appropriate protection of any cultural heritage sites and values that could be affected by a spill or response activities. Looked forward to meeting in September (regarding other EP under development).	No objection or claim of adverse impact. Reasonable request to be notified in the case of an emergency event such as a hydrocarbon spill agreed as per Event ID 2025 0828 151110 5800.	GLaWAC included in emergency response contact register. Sections 7.7 and 8.3 of the EP have been updated to reflect. Annie-2 EP stakeholder notifications register updated accordingly.
2025 0828 151110 5800	191	Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)	2025-08-28	Email	Out	Appreciated the response, and confirmed we would capture the advice in the EP.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 22 July 2025 and no request for additional time has been received. Outcomes of consultation have been captured in the EP.								
2025 0519 192130 3741	588	Southern Oceans Protection Embassy Collective (SOPEC)	2025-05-19	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) via Facebook to SOPEC social media account	N/A	N/A
2025 0829 112354 9496	588	Southern Oceans Protection Embassy Collective (SOPEC)	2025-08-18	Social media message	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Also sent copy of bulk email #2 and apologised for missing them on the advertised community drop-in sessions and webinars. However, a link to the webinar recording was provided instead.		
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 22 July 2025 and no request for additional time has been received. Relevant person was missed on notification for drop-in sessions/webinar, but flexible opportunity to meet was provided on in Bulk Mailout #1, and a link to the recorded webinar was provided.								
2025 0501 091759 4777	398	Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC)	2025-05-01	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 115316 8330	398	Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars Requested sharing with members as appropriate.	N/A	N/A
2025 0530 121749 7867	398	Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC)	2025-05-30	Email	Out	Resending Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0530 121800 7339	398	Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC)	2025-05-30	Email	In	Auto reply out of office, noting alternate email address.	N/A	N/A
2025 0811 140823 2411	398	Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC)	2025-08-04	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing Full thread of prior emails appended.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received. WTOAC has previously advised that it does not require it be consulted on these activities but does wish to be informed. The sharing of correspondence with members has still been encouraged, and the opportunity for 2-way dialogue has remained open. Reasonable efforts have been made to ensure WTOAC is informed per its requests.								
Fishery licence holder or representative body 25(1)(d)								
2025 0520 150124 7349	670	A B Hunter Fishing Nominees Pty Ltd	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125541 5491	670	A B Hunter Fishing Nominees Pty Ltd	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160808 6534	670	A B Hunter Fishing Nominees Pty Ltd	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	670	A B Hunter Fishing Nominees Pty Ltd	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0512 145002 6604	7	Abalone Council Victoria	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	7	Abalone Council Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	7	Abalone Council Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 145225 6830	8	Abalone Victoria (Central Zone) Ltd (AVCZ)	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	8	Abalone Victoria (Central Zone) Ltd (AVCZ)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	8	Abalone Victoria (Central Zone) Ltd (AVCZ)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 145603 3374	17	Apollo Bay Fishermen's Cooperative	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	17	Apollo Bay Fishermen's Cooperative	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	17	Apollo Bay Fishermen's Cooperative	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 150447 3514	37	Australian Southern Bluefin Tuna Industry Association (ASBTIA)	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0520 121746 6215	37	Australian Southern Bluefin Tuna Industry Association (ASBTIA)	2025-05-20	Email	In	Noted their understanding of the purpose of consultation, but do not need to be consulted further on these activities. Would still like to receive project updates. Would require consultation on any projects that involved exploration activities such as seismic. In general, encouraged responsible use of existing infrastructure as opposed to greenfields developments.	No objection or claim of adverse impact. Reasonable request to receive project updates, and to be consulted on any future seismic data acquisition activities.	Confirmed we will continue to provide project updates, and consult should any projects involve seismic data acquisition. (See Event ID 2025 0520 134839 8306) Annie-2 EP stakeholder notifications register updated accordingly.
2025 0520 134839 8306	37	Australian Southern Bluefin Tuna Industry Association (ASBTIA)	2025-05-20	Email	Out	Passed on thanks for response. Confirmed we will provide project updates and invite further consultation should we consider undertaking seismic surveys.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received. Noted no further consultation needed.								
2025 0512 151105 8468	38	Australian Wildcatch Fishing	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	38	Australian Wildcatch Fishing	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	38	Australian Wildcatch Fishing	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 151301 8421	82	Commonwealth Fisheries Association (CFA)	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted we were also consulting with a number of Commonwealth fisheries licence holders via SETFIA, Tuna Australia and ASBTIA.	N/A	N/A
2025 0530 112556 7365	82	Commonwealth Fisheries Association (CFA)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	82	Commonwealth Fisheries Association (CFA)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0520 151252 3717	574	Cull Fisheries Management/Cull Fisheries Pty Ltd	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125735 4392	574	Cull Fisheries Management/Cull Fisheries Pty Ltd	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars.	N/A	N/A
2025 0616 093402 9859	574	Cull Fisheries Management/Cull Fisheries Pty Ltd	2025-06-16	Email	In	Responded via quick response table, to request that we continue to consult via email.	N/A	N/A
2025 0708 140238 9382	574	Cull Fisheries Management/Cull Fisheries Pty Ltd	2025-07-08	Email	Out	Passed on thanks for response. Confirmed that we will continue to provide the opportunity to consult as requested, and will also advise when we are nearing dates when we will submit the respective EPs to the regulator (NOPSEMA) for assessment. In the meantime, advised they could contact us at any time if you have any queries or concerns.	N/A	N/A
2025 0811 141058 2049	574	Cull Fisheries Management/Cull Fisheries Pty Ltd	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0512 161707 3195	437	Fishermen Direct Pty Ltd	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted we were also consulting via SIV	N/A	N/A
2025 0513 085513 3606	437	Fishermen Direct Pty Ltd	2025-05-12	Email	In	Passed on appreciation for the email.	N/A	N/A
2025 0513 144502 6215	437	Fishermen Direct Pty Ltd	2025-05-13	Email	Out	Passed on thanks for email.	N/A	N/A
2025 0530 112556 7365	437	Fishermen Direct Pty Ltd	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	437	Fishermen Direct Pty Ltd	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0806 161612 7846	437	Fishermen Direct Pty Ltd	2025-08-06	Email	Out	Noted now representing a particular company. Also able to organise guard and scout boats.	N/A	N/A
2025 0807 084812 7349	437	Fishermen Direct Pty Ltd	2025-08-07	Email	Out	Wished him well, and advised information would be shared with operations team.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 151918 9874	283	Port Campbell Professional Fishermens Association	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	283	Port Campbell Professional Fishermens Association	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	283	Port Campbell Professional Fishermens Association	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0520 154137 4276	688	Raptis Fishing Licences Pty Ltd	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	688	Raptis Fishing Licences Pty Ltd	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	688	Raptis Fishing Licences Pty Ltd	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 150452 5800	671	Relevant Person ID 671	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	671	Relevant Person ID 671	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	671	Relevant Person ID 671	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 150903 6215	672	Relevant Person ID 672	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	672	Relevant Person ID 672	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	672	Relevant Person ID 672	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 151027 3606	673	Relevant Person ID 673	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	673	Relevant Person ID 673	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 162245 2303	673	Relevant Person ID 673	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	673	Relevant Person ID 673	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.3.3. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 151509 7972	674	Relevant Person ID 674	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	674	Relevant Person ID 674	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160228 7100	674	Relevant Person ID 674	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Details can be found here **https://amplitudeenergy.com.au/consultation**		
2025 0806 141549 4254	674	Relevant Person ID 674	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 151658 1126	675	Relevant Person ID 675	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	675	Relevant Person ID 675	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 161218 2771	675	Relevant Person ID 675	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	675	Relevant Person ID 675	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 151811 7846	676	Relevant Person ID 676	2025-07-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	676	Relevant Person ID 676	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	676	Relevant Person ID 676	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 151916 8330	677	Relevant Person ID 677	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0520 192039 1043	677	Relevant Person ID 677	2025-05-20	Email	In	Passed on thanks for the email. Noted that company operates SSJF and the BSCZSF, with operations based out of Portland, and focus area offshore Otway, including areas near Peterborough. 1. Noted overlap of proposed activities area with region that they actively fish for arrow squid, with the main season running from November through to May/June each year. Concerns raised: a) disruption to squid aggregation from noise, traffic and light b) Temporary exclusion areas during activities c) Cumulative pressures on operations if activities prolonged or staggered withing the operating window 2026-2030 2. Noted that currently their scallop fishing activities are east of Cape Otway, so direct impacts would not be expected. But this could change in future seasons. 3. In order to provide an informed response, request:	No objections or claims. Reasonable concerns raised with respect to a) disruption from noise, traffic and light, b) temporary exclusion zones and c) cumulative impacts responded to in Event ID 2025 0609 184241 7349. Reasonable request for further information: a) coordinates or shapefiles, b) impact assessments, and c) outline of mitigations proposed; responded to in Event ID 2025 0609 184241 7349. Reasonable request to continue to be consulted, to meet and to be provided project updates confirmed in response in Event ID 2025 0609 184241 7349. No objection or claim of adverse impact.	Section 4.4.3 -Social Receptors, updated to note likely activity.

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						a) Coordinates or shapefiles of activities footprint. b) Information on impact assessments with respect to commercial fisheries, arrow squid in particular. c) Outline of mitigations proposed, including potential seasonal or operational buffers. 4. Noted they wish to continue to be consulted as relevant persons and would like to be notified on updates to the EPs, and have the opportunity to meet to discuss operational overlap and risk mitigations. Requested confirmation of receipt of the response, and next steps. Noted appreciation in being consulted.		
2025 0523 164505 9337	677	Relevant Person ID 677	2025-05-26	Email	In	Passed on thanks for response. Advised that could not meet in-person while Amplitude Energy in Portland as will be away. Please to continue the discussion over email, and happy to provide information about the fishing operations as needed.	No objection or claim of adverse impact.	N/A
2025 0526 084804 4132	677	Relevant Person ID 677	2025-05-26	Email	Out	Appreciated the response, and noted that the EPs were still under preparation and would revert soon on queries.	N/A	N/A
2025 0529 113606 7290	677	Relevant Person ID 677	2025-05-27	Email	Out	Apologised for getting person's name wrong.	N/A	N/A
2025 0609 184241 7349	677	Relevant Person ID 677	2025-06-09	Email	Out	Provided shapefiles as requested, and the following responses to queries and concerns: Potential Interaction with Squid Fishing Grounds We note that you actively fish in the proposed operational areas, with the main season running from November through to May/June. Concerns a) Disruption to squid aggregation and migration patterns from underwater noise, vessel traffic, and light interference. In the Offshore Project Proposal (**NOPSEMA OPP**), Amplitude have assessed impacts from those aspects as follows: <u>Vessel traffic</u> Our project will result in increased vessel traffic, though not by a great deal. We will use 1-4 vessels (sometimes including a rig) to do our project activities. We hire vessels temporarily when we need them (and when they are available), and we tend to mobilise them out of Portland or Geelong. Our project operational areas overlaps 4.02% of the low intensity area of the Southern Squid Jig Fishery (Figure 6-78 of the OPP), though please note, the operational areas are not an exclusion area, you can still fish throughout most of it (see information on exclusion zones below), it's just you will be more likely to see a vessel we have hired in that area. Once the vessels have completed their scopes, they leave. We then bring a vessel back into the area for inspections and maintenance every ~3-5 years. We have been doing these inspection and maintenance activities in this region over our existing subsea equipment for over 20-years. Once the subsea	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						equipment has reached the end of its useful life, we bring vessels back in to decommission it. <u>Underwater noise</u> Underwater noise will be generated from well construction and installation activities and is similar in nature and scale to other shipping noise in the region. We know that the vessels will generate levels of noise that can disturb marine fauna, though the modelling we have completed indicates that the risk of disturbance to marine fauna is localised around the vessels. For more information please refer to Sections 8.1 and 8.2 of the **Amplitude Energy Offshore Project Proposal**, which assesses the whole development. Impacts associated with the noise emissions from the activities specific to the Annie-2 Development well EP & the ECSP Wells Connection EP currently in preparation will be assessed and described in these EPs bespoke to the location and type of each activity. <u>Light interference</u> Well construction, vessel and MODU operations are expected to introduce additional light into the marine environment from flaring, navigation and safety lighting. This introduces a potential risk of change in fauna behaviour. Water depths within the operational area are suitable for arrow squid, that are highly attracted to artificial light at night hence light being used as a tool by squid fishers to attract squid. Light emissions from the vessels we use would be expected to temporarily attract squid. Behavioural changes to marine invertebrates from artificial light at night is expected to be localised and short term and gone once the vessels have completed their scopes. Light from flaring of gas during well construction can take 24-60-hours and will be an additional light source for that short period. For more information please refer to Section 8.3 of the **Amplitude Energy Offshore Project Proposal**. Impacts associated with the light emissions for each of the activities specific to the Annie-2 Development well EP & the ECSP Wells Connection EP currently in preparation will be assessed and described in these EPs bespoke to the location and type of each activity. b) Temporary exclusion from productive fishing grounds during drilling, installation, or integrity operations. <u>ECSP: Annie-2 development well EP:</u> The development well will take up to 60 days to drill, and a temporary exclusion zone of 3km radius will be in place for safety purposes. While the activity may take place in the window of 2026-2029, this is a discrete activity that will only occur once. The EP also includes provision for plug and abandonment activities, in the event that the targeted reservoir is not commercially viable. <u>ECSP: Wells connection EP</u> The flowline and umbilical laying and connections will be planned for a single activity taking up to 120 days across the project area during that time, and these activities require the completion of the development wells to connect to. There is provision for some additional geophysical survey (not seismic) work that may take up to 60 days. (refer to section 4.3.1 of the **Amplitude Energy Offshore Project Proposal**, for more detail on what these surveys entail)		

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						<u>Both EPs:</u> Both EPs provide for routine inspection, maintenance and repair work of up to 60 days. These are only occasional events similar to those activities currently undertaken on our existing infrastructure. Summary: There appears to be good opportunity to have minimal disruption to fishing activities through the setting up of good communications. If you like, this is something we can explore further when we meet, and it would be good to get an understanding of how interactions with past operations may have affected your fishing, and how we can learn form that experience. c) Cumulative operational pressure if activities are prolonged or staggered over the multi-year window (2026â€“2030). As per b. above, operations are of limited duration over various locations within the operational area defined in the OPP, and different times within that 5-year combined window. They are staggered with significant time periods between successive operations likely, but activities are not prolonged. Request d) We request consideration be given to the seasonal nature of the squid fishery and that operations are scheduled to avoid the key fishing period wherever possible. We will consider the seasonal nature of the squid fishery during our planning for activities, however it's worth being transparent at this stage that avoiding a particular time of year is often impracticable for the activities we do because we are at the mercy of the international markets for specialist vessel availability, and weather windows, which can be few and far between in the Otway as you would know. Avoiding the entire window November through to May would not be possible for our activities, though once the subsea systems are operational, most years we will not have vessel out there. 2. Scallop Fishery Consideration Based on the fishing data from 2016 to present, Amplitude note that you currently don't fish west of Cape Otway, so impacts from our activities would be unlikely. Should this change, our environment plans provide for ongoing consultation throughout the life of the EP, so opportunities to meet with us and understand how our activities may impact you remain available. 3. Requests for Further Information a) Detailed coordinates or shapefiles of the proposed activity footprint, so we can assess any spatial overlap with our known fishing grounds. Shapefiles are attached for both EPs. Please refer to **Figures 6 -66 and 6-76 in the OPP** showing the position of the operational area relative to the fishery reporting grids and relative intensity. b) Clarification on environmental impact assessments relating to commercial fisheries â€" particularly arrow squid. Broad overview of assessment is as follows, and specific elements have been provided in 1.b. above. The OPP assesses the changes to the functions, interests and activities of other marine users as impacts likely to be localised and temporary due to small and temporary exclusion zones, and the low level of use of the		

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						operational area by commercial fisheries, the small proportion of fishery management areas covered by the operational area. (See **OPP Section 8.9)**. The OPP defines acceptable levels for each impact to evaluate acceptability and whether activities are managed to reduce impacts and risks to a low as reasonably practicable. The OPP defines the acceptable level of impact as shown below, and the evaluation concluded that the impacts and risks were acceptable: Social and commercial amenity values of the Commonwealth Marine Area within the region are maintained consistent with the rights of all marine users Impacts and risks to other marine users associated with activities defined in this OPP will not lead to substantial adverse effects on the sustainability of commercial fisheries c) An outline of any specific mitigation strategies proposed to minimise disruption to fishing activities, including potential seasonal restrictions or operational buffers. The likely control measures to be included within the EPs for these activities include: Marine exclusion and caution zones (not exceeding distances needed for safe operations) applied around vessels and the MODU (drilling rig) requested via notice to mariners, issued by the Australian Hydrographic Office (AHO). All installed subsea infrastructure charted on relevant mariners charts as well as petroleum safety exclusion areas Marine Assurance Processes to ensure vessels and MODU adhere to navigational safety requirements Fisheries damages protocol to compensate for fishing equipment damage (if damaged by project infrastructure). Ongoing consultation As touched on above, we consider the best approach is to maintain an ongoing dialogue (consultation) that provides for good planning and communications prior to and during the proposed activities. Ideally upon the conclusion of each activity, discussions with interested commercial fishing operators could be used to improve how future operations would then be coordinated through lessons learned. But the opportunity to meet would allow us to further consider the best approach. 4. Ongoing Consultation We confirm that we will continue to consider you a relevant person under Section 25 of the OPGGS(E) Regulations and that we will: a) Notify you of updates to the proposed activities to be carried out under these environment plans b) Further consultation prior to the first activities to be carried out under these EPs, to establish any on-water communications and cooperation protocols if not established prior. Provision of 14 days' notice prior to commencement of any activities to be carried out under these EPs, or as otherwise agreed under 4.b. above.		

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						c) We would be pleased to meet online or via phone, or in person on your return from leave.		
2025 0811 192710 9495	677	Relevant Person ID 677	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 152055 7381	678	Relevant Person ID 678	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	678	Relevant Person ID 678	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 162826 1560	678	Relevant Person ID 678	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	678	Relevant Person ID 678	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 152201 1408	679	Relevant Person ID 679	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	679	Relevant Person ID 679	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	679	Relevant Person ID 679	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 152306 4726	680	Relevant Person ID 680	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	680	Relevant Person ID 680	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 161058 1940	680	Relevant Person ID 680	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	680	Relevant Person ID 680	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 152422 8763	681	Relevant Person ID 681	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	681	Relevant Person ID 681	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0804 163551 5884	681	Relevant Person ID 681	2025-08-04	SMS	In/Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation** RP 681 advised he understood the industry with years of experience working in a refinery. Confirmed he also had trawl and scallop licenses in addition to squid jig. We wished him well with fishing, and thanked him for confirmation on licences held.	N/A	N/A
2025 0806 141549 4254	681	Relevant Person ID 681	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 153254 8114	682	Relevant Person ID 682	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	682	Relevant Person ID 682	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 161814 7465	682	Relevant Person ID 682	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	682	Relevant Person ID 682	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 153355 4361	683	Relevant Person ID 683	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	683	Relevant Person ID 683	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 155533 9664	683	Relevant Person ID 683	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	683	Relevant Person ID 683	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 153450 9657	684	Relevant Person ID 684	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	684	Relevant Person ID 684	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 164147 9391	684	Relevant Person ID 684	2025-08-04	Email	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	684	Relevant Person ID 684	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 153551 8843	685	Relevant Person ID 685	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	685	Relevant Person ID 685	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 163638 6710	685	Relevant Person ID 685	2025-08-04	Email	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	685	Relevant Person ID 685	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 153742 1506	686	Relevant Person ID 686	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	686	Relevant Person ID 686	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 162338 2637	686	Relevant Person ID 686	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	686	Relevant Person ID 686	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 153843 9546	687	Relevant Person ID 687	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	687	Relevant Person ID 687	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 161947 3264	687	Relevant Person ID 687	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	687	Relevant Person ID 687	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 154302 5723	689	Relevant Person ID 689	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	689	Relevant Person ID 689	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	689	Relevant Person ID 689	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 154402 7904	690	Relevant Person ID 690	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	690	Relevant Person ID 690	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160427 1322	690	Relevant Person ID 690	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	690	Relevant Person ID 690	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 154612 1481	691	Relevant Person ID 691	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	691	Relevant Person ID 691	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160046 3724	691	Relevant Person ID 691	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	691	Relevant Person ID 691	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 154830 5218	693	Relevant Person ID 693	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	693	Relevant Person ID 693	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	693	Relevant Person ID 693	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 154906 3683	694	Relevant Person ID 694	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	694	Relevant Person ID 694	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 162700 9830	694	Relevant Person ID 694	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	694	Relevant Person ID 694	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 154946 6604	695	Relevant Person ID 695	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	695	Relevant Person ID 695	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 161312 8969	695	Relevant Person ID 695	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	695	Relevant Person ID 695	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 155026 6830	696	Relevant Person ID 696	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	696	Relevant Person ID 696	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	696	Relevant Person ID 696	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 155120 3374	697	Relevant Person ID 697	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	697	Relevant Person ID 697	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 163814 8842	697	Relevant Person ID 697	2025-08-04	Email	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Details can be found here **https://amplitudeenergy.com.au/consultation**		
2025 0806 141549 4254	697	Relevant Person ID 697	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0520 155405 3514	698	Relevant Person ID 698	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	698	Relevant Person ID 698	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160713 7562	698	Relevant Person ID 698	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	698	Relevant Person ID 698	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0521 090323 9960	699	Relevant Person ID 699	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	699	Relevant Person ID 699	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 164330 6101	699	Relevant Person ID 699	2025-08-04	Email	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	699	Relevant Person ID 699	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 090450 2597	700	Relevant Person ID 700	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	700	Relevant Person ID 700	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 163000 5087	700	Relevant Person ID 700	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	700	Relevant Person ID 700	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 090935 5883	701	Relevant Person ID 701	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	701	Relevant Person ID 701	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 163100 4717	701	Relevant Person ID 701	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	701	Relevant Person ID 701	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 091130 4619	702	Relevant Person ID 702	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0521 091201 2245	702	Relevant Person ID 702	2025-05-21	Email	In	Auto reply	N/A	N/A
2025 0530 112556 7365	702	Relevant Person ID 702	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	702	Relevant Person ID 702	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 091227 9062	703	Relevant Person ID 703	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	703	Relevant Person ID 703	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160615 5790	703	Relevant Person ID 703	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	703	Relevant Person ID 703	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 092305 4466	704	Relevant Person ID 704	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	704	Relevant Person ID 704	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0805 093823 4666	704	Relevant Person ID 704	2025-08-04	Email	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	704	Relevant Person ID 704	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 092622 4361	706	Relevant Person ID 706	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	706	Relevant Person ID 706	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 161626 4872	706	Relevant Person ID 706	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	706	Relevant Person ID 706	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 092728 2835	707	Relevant Person ID 707	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	707	Relevant Person ID 707	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160855 7085	707	Relevant Person ID 707	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	707	Relevant Person ID 707	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 092816 1406	708	Relevant Person ID 708	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	708	Relevant Person ID 708	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	708	Relevant Person ID 708	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 092859 9653	709	Relevant Person ID 709	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	709	Relevant Person ID 709	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 161444 9057	709	Relevant Person ID 709	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	709	Relevant Person ID 709	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 093028 6216	710	Relevant Person ID 710	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	710	Relevant Person ID 710	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 162059 9089	710	Relevant Person ID 710	2025-08-05	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	710	Relevant Person ID 710	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 093117 6053	711	Relevant person ID 711	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	711	Relevant person ID 711	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 162149 3235	711	Relevant person ID 711	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	711	Relevant person ID 711	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 093153 3654	712	Relevant Person ID 712	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	712	Relevant Person ID 712	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160939 8145	712	Relevant Person ID 712	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	712	Relevant Person ID 712	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 093318 5450	713	Relevant Person ID 713	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	713	Relevant Person ID 713	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	713	Relevant Person ID 713	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 093614 4447	714	Relevant Person ID 714	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	714	Relevant Person ID 714	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	714	Relevant Person ID 714	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0521 093657 2738	715	Relevant Person ID 715	2025-05-21	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	715	Relevant Person ID 715	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	715	Relevant Person ID 715	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 21 May 2025 and no request for additional time has been received.								
2025 0530 155009 6215	717	Relevant Person ID 717	2025-07-30	Email/Phone call	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Bulk mailout #2 - notification of community drop-in sessions and webinars Noted from discussions: The Bass Strait Scallop Industry Association doesn't effectively exist There is large overlap in licence holdings across the Cth, Tasmanian and Victorian managed scallop fisheries. The current activity level in the Victorian managed fishery is relatively low Through MSC certification work with them, Relevant Person ID 717 is able to assist in supporting consultation with a small number of licence holders who actually represent around 50% of the Cth quota This should simplify the consultation effort for them	No objection or claim of adverse impact.	N/A
2025 0811 144517 5195	717	Relevant Person ID 717	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0811 144559 2975	717	Relevant Person ID 717	2025-08-11	Email	In	Auto reply	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 30 July 2025 and no request for additional time has been received.								
2025 0512 152117 9198	317	Scallop Fishermens Association Inc.	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0519 143706 8566	317	Scallop Fishermens Association Inc.	2025-05-12	Email	In	Auto response - warning- email not yet delivered. (No rejection email received and subsequent emails OK)	N/A	N/A
2025 0530 112556 7365	317	Scallop Fishermens Association Inc.	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	317	Scallop Fishermens Association Inc.	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 152353 3041	318	Scallop Fishermens Association of Tasmania	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	318	Scallop Fishermens Association of Tasmania	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	318	Scallop Fishermens Association of Tasmania	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0515 193944 7349	327	Seafood Industry Victoria (SIV)	2025-05-15	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4). Provided information sheets and suggested wording for SIV members.	N/A	N/A
2025 0516 123808 9102	327	Seafood Industry Victoria (SIV)	2025-05-16	Email	In	Under SIV agreement all correspondence is sensitive unless otherwise advised.	No objection or claim of adverse impact.	N/A
2025 0519 131408 3426	327	Seafood Industry Victoria (SIV)	2025-05-16	Email	Out	Passed on thanks for response.	N/A	N/A
2025 0530 163817 1580	327	Seafood Industry Victoria (SIV)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars. Sought advice on best way to get this to members given timing.	N/A	N/A
2025 0602 092550 8071	327	Seafood Industry Victoria (SIV)	2025-06-02	Email	In	SIV offered to email information about drop-in sessions and webinars to members, along with the relevant information sheets.	No objection or claim of adverse impact.	N/A
2025 0602 093115 4760	327	Seafood Industry Victoria (SIV)	2025-06-02	Email	Out	Confirmed that the suggestion was very good, and requested they proceed to email members.	N/A	N/A
2025 0603 153940 5330	327	Seafood Industry Victoria (SIV)	2025-06-02	Email	Out	Confirmed information would be sent to members 2 June 2025.	N/A	N/A
2025 0807 092935 5800	327	Seafood Industry Victoria (SIV)	2025-08-07	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing Checked as to best way to share Bulk mailout #3 - notification this phase of consultation is closing and provided a link to the mailout.	N/A	N/A
2025 0808 072700 4038	327	Seafood Industry Victoria (SIV)	2025-08-08	Email	In	Provided options for distribution.	No objection or claim of adverse impact.	N/A
2025 0808 143553 2570	327	Seafood Industry Victoria (SIV)	2025-08-08	Email	Out	Passed on thanks, and suggested an option for distribution.	N/A	N/A
2025 0812 114705 6368	327	Seafood Industry Victoria (SIV)	2025-08-12	Email	In	Confirmed link to Bulk mailout #3 - notification this phase of consultation is closing would be sent to members.	No objection or claim of adverse impact.	N/A
2025 0812 144405 9248	327	Seafood Industry Victoria (SIV)	2025-08-12	Email	Out	Passed ion thanks	N/A	N/A
2025 0814 085747 7349	327	Seafood Industry Victoria (SIV)	2025-08-14	Email	Out	Query regarding exclusion zones (Consultation with SIV is not to be published unless specifically agreed otherwise by SIV)	No objection or claim of adverse impact.	N/A
2025 0815 104432 7349	327	Seafood Industry Victoria (SIV)	2025-08-15	Email	Out	Responded to query on safety zones, For the Annie-2 well, we anticipate the gazettal of a 500m radius Petroleum Safety Zone (PSZ) which would apply to all fishing methods.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						Regarding the new flowlines /umbilicals [different EP but included here for completeness], these would be marked on charts, but we would not anticipate any associated PSZs. Trawling would not be allowed across these flowlines, nor anchoring, but there would be no other fishing restrictions such as restrictions on the deployment of lobster pots.		
2025 0818 080735 1367	327	Seafood Industry Victoria (SIV)	2025-08-18	Email	In	Passed on thanks, and would contact if further queries.	No objection or claim of adverse impact.	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 15 May 2025 and no request for additional time has been received. SIV has shared consultation materials with members, which enables their members to respond directly or via SIV should they choose to. No issues were raised by SIV or its members.								
2025 0520 154656 6332	692	Ship Agencies Australia Pty Ltd	2025-05-20	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	692	Ship Agencies Australia Pty Ltd	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0804 160524 8862	692	Ship Agencies Australia Pty Ltd	2025-08-04	SMS	Out	Noted that we previously made contact by email inviting consultation on 2 environment plans for gas field development activities offshore Peterborough Victoria. Advised this is just a reminder in case there was a wish to comment. Details can be found here **https://amplitudeenergy.com.au/consultation**	N/A	N/A
2025 0806 141549 4254	692	Ship Agencies Australia Pty Ltd	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 20 May 2025 and no request for additional time has been received.								
2025 0516 154915 2476	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-16	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0520 133423 4165	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-20	Email	In	Noted SETFIA were working on this and would respond,	No objection or claim of adverse impact.	N/A
2025 0520 133423 8987	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-20	Email	Out	Confirmed mailout sent to SETFIA and SSIA members. Noted that proposed activities area appeared to overlap several Victorian managed fisheries (SIV), and the shark and squid fisheries. Suggested discussing the production of an updated data report using new techniques.	No objection or claim of adverse impact.	N/A
2025 0520 134817 4493	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-20	Email	Out	Noted SPF were not active in the area. Regarding SIV, confirmed we are in touch with respect to Victorian managed fisheries. Regarding squid, advised we were planning to contact individual SSJF members. Suggested discussing the data report on next catch-up.	N/A	N/A
2025 0530 145350 3358	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0530 150759 6345	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-30	Email	In	Checked if message was on a website that could be used.	No objection or claim of adverse impact.	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 152533 4900	338	South East Trawl Fishing Industry Association (SETFIA)	2025-06-30	Email	Out	Considered weblink a good idea, and sent link along with suggested note to members advising of drop in sessions and link to details.	N/A	N/A
2025 0530 180706 9746	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-30	Email	In	Confirmed message would be sent next day.	No objection or claim of adverse impact.	N/A
2025 0531 160717 2437	338	South East Trawl Fishing Industry Association (SETFIA)	2025-05-31	Email	Out	Passed on our appreciation.	N/A	N/A
2025 0811 151826 3583	338	South East Trawl Fishing Industry Association (SETFIA)	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing Provided version for SMS with weblink.	N/A	N/A
2025 0811 154034 9547	338	South East Trawl Fishing Industry Association (SETFIA)	2025-08-11	Email	Out	Confirmed SMS with link to Bulk mailout #3 - notification this phase of consultation is closing will be sent next day.	No objection or claim of adverse impact.	N/A
2025 0811 155940 4049	338	South East Trawl Fishing Industry Association (SETFIA)	2025-08-11	Email	Out	Passed on thanks.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 16 May 2025 and no request for additional time has been received. Consultation covers SETFIA and SSIA members. SPF members not active in area. SETFIA has shared consultation emails with members, which enables their members to respond directly should they choose to. No issues were raised by SETFIA or its members.								
2025 0512 151542 6302	184	Southern Ocean Mariculture	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 085512 7349	184	Southern Ocean Mariculture	2025-05-13	Email	In	Noted we had reached Ocean Road Abalone (Southern Ocean Mariculture), not Great Ocean Road Abalone.	No objection or claim of adverse impact.	N/A
2025 0513 085948 3717	184	Southern Ocean Mariculture	2025-05-13	Email	Out	Passed on thanks for clarifying the correct entity. Advised we would update records accordingly. Noted that Southern Oceans Mariculture is invited to consult.	N/A	N/A
2025 0519 142911 2895	184	Southern Ocean Mariculture	2025-05-13	Email	In	Confirmed trading name as Ocean Road Abalone	N/A	N/A
2025 0530 112556 7365	184	Southern Ocean Mariculture	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	184	Southern Ocean Mariculture	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 152702 7256	341	Southern Rock Lobster Limited	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	341	Southern Rock Lobster Limited	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	341	Southern Rock Lobster Limited	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0516 154915 2476	342	Southern Shark Industry Alliance (SSIA)	2025-05-16	Email	Out	Bulk mailout #1, and all subsequent correspondence sent via SETFIA. See SETFIA summary.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 16 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0512 162858 5804	575	Trinsand Fisheries Pty Ltd	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125229 8462	575	Trinsand Fisheries Pty Ltd	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 153033 5160	575	Trinsand Fisheries Pty Ltd	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0516 145149 3163	382	Tuna Australia	2025-05-16	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0523 095936 7806	382	Tuna Australia	2025-05-23	Email	In	Noted they will start consultation with members next week.	N/A	N/A
2025 0526 084734 5572	382	Tuna Australia	2025-05-23	Email	Out	Passed on thanks.	N/A	N/A
2025 0530 144826 5163	382	Tuna Australia	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0620 102153 1633	382	Tuna Australia	2025-06-20	Email	In	Noted the three tuna fisheries relevant to these activities as being the Eastern Tuna and Billfish (ETBF), the Southern Bluefin Tuna Fishery (SBTF) and the Australian Skipjack Fishery (east) (ASF) Noted the ASF is not active in the area, but members are members of Tuna Australia and were included in consultation. Some Tuna Australia members also hold SBT fishing rights Recommended contacting ASBTIA to ensure consultation with the purse seine sector of the SBF fishery Provided an overview of eastern tuna fisheries excluding SBT Currently 79 Longline SFR holders and 83 Minor Line SFR holders in the ETBF, potentially 162 boats operating in the fishery Provided overview of TACC by species SBT Regarding SBT, noted quota managed by CCSBT who allocate TAC for Australia. 5% of that TAC is allocated to the recreational sector Longline share of SBT has grown markedly over the last 5 years All current longline SBT effort occurs on southeast coast Longline fishing for SBT generally occurs from May to October With increasing biomass and general easterly shift of stock early in the season, effort will likely increase in both longline and minor line. Young adult SBT likely to be prevalent in the operations area. Longliners have increased effort and local port usage off Tasmania, Portland and the Bass Strait, with Portland now one of the primary ports for SBT fishers. Consultation Tuna Australia engaged with all concession holders in the ETBF and permit holders in the ASF (east) There was a 100% delivery rate and a relatively high engagement rate with the material provided.	No objection or claim of adverse impact. Reasonable concerns raised regarding: 1) Potential exclusion zones/spatial conflict - per Event ID 2025 0721 110532 7349, noted limited risk and view that best managed through good communications. 2) Cumulative impact – per Event ID 2025 0721 110532 7349 responded on these concerns, noting discrete nature of activities and limited impact on long line operations. Reasonable request made for notifications; agreed on variation to notifications as per Event ID 2025 0721 110532 7349 and 2025 0722 111345 1840	Sections 5.1.1.3 and 5.1.1.6 of the Description of the Environment updated to reflect data provided. Agreed notifications to be provided. Annie-2 EP stakeholder notifications register updated accordingly.

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						The relatively small number of responses suggested the proposal was not controversial. Concerns raised Potential spatial conflict, noting exclusion zones, support vessels and infrastructure But also noted this would not significantly hinder longline operations, particularly considering location and water depths Advance notice and 48-hour lookaheads are suggested to limit potential spatial conflicts Several concession holders raised concerns about cumulative impact noting multiple exploration proposals. While noting the project was considered relatively low risk, particularly considering pelagic nature of the fishing operations, noted concerns about concurrent and future activities of other oil and gas exploration activities in the area. Noted that adequate commentary was provided by Amplitude Energy about risks and mitigations in respect of these projects Need to also consider cumulative impacts of energy exploitation in the Otway Basin beyond that of Amplitude Energy Welcomed further dialogue to deconflict any possible issues before they arise.		
2025 0721 110532 7349	382	Tuna Australia	2025-07-21	Email	Out	Passed on thanks for the comprehensive consultation report. Noted that no specific objections or claims of adverse impacts are raised, but acknowledged the request for notifications and general concerns by some fishers regarding cumulative impacts. Consultation Appreciated that information was shared with all concession and permit holders within the Eastern Tuna and Billfish Fishery and the Australian Skipjack Fishery, and agreed the rate of engagement with the material was good. Also agreed with their conclusion that response levels were low due to the nature and scale of the activities, noting we also saw generally low levels of response compared with some other activities in the region. Confirmed we have consulted directly with ASBTIA in regards these proposed activities. Navigation and Deconflicting with fishing operations Agreed the best approach to avoiding conflict is through good communications and confirm that we will provide at least 72-hours' notice ahead of any activity commencing under these EPs. Committed to also provide notification after completion of any activities carried out under these EPs. Given the nature of the activities covered by the EPs, considered that the 48-hour look ahead is probably not so beneficial (as it might be for seismic operations where the vessel is moving faster and covering larger areas)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						due to the limited spatial extent and sequential nature of each activity. For example, for wells connection activities, there is between 5-10 km of flowline laying (slow moving vessel) for each manifold (refer Figure below excerpted from the published approved OPP). Similarly, vessels operating for inspection, maintenance and repair works move slowly over areas of infrastructure. Noted that for the drilling Annie-2 development well, the drilling unit operates in a static location for up to 60 days. For any survey activities, vessels have reasonable manoeuvrability and will work in well-defined areas of limited spatial extent. Cumulative impacts Noted general concerns about cumulative impacts of exploration and energy exploitation in the Otway Basin. These are discussed further below. Development drilling and well connection activities Noted some members raised general concerns about cumulative impacts from the ECSP activities, particularly in relation to other exploration activities proposed in the area. The suggestion that we consider an assessment of our activities in the context of other activities likely to overlap the timeframe and general area of our planned activities, and options for delaying or otherwise deconflicting concurrent activity was noted. Considered that best way to ensure no temporal overlap of drilling activities was through the use of a common drilling rig amongst petroleum operators planning relevant activities in the area. This step has already been taken, and the reasonably foreseeable drilling activities will be carried out using one mobile offshore drilling unit (MODU) in a sequential manner, so the spatial impact at any time is limited from a drilling perspective. Similarly, there are few pipelaying vessels available in the market, so it is unlikely that concurrent pipelaying would occur. The potential for a seismic data acquisition campaign to overlap temporally with drilling or pipelaying activities remains, but our activity footprint is small compared to that of the seismic data acquisition footprint, so the contribution is limited. However, while we cannot speak on behalf of a seismic data acquisition operator, from a practical viewpoint seismic data acquisition is unlikely to occur concurrently with drilling or pipelaying activities in the same area as that would require working around the vessels and leaving a significant gap in the data acquired. Our EP does consider cumulative impacts of our activities and concludes that they are unlikely to have a discernible cumulative impact on commercial fisheries when considered alongside other reasonably known energy related activities such as seismic data acquisition or renewal energy activities, and that our activities will not have a substantial adverse effect on the sustainability of a commercial fishery. Any impacts from the rig, pipe-laying vessel or support vessels will be of a relatively short-term duration and a relatively low footprint compared with some other proposed energy related activities, and as you have noted our resulting		

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						infrastructure does not substantially hinder long line fishing that is pelagic in nature. Interaction with Energy Exploitation Activities We note you have suggested further dialogue in the context of cumulative impacts of energy exploitation activities in the Otway Basin. With respect to the ECSP EPs, these comprise discrete activities during the life of the EPs, the longest being the wells connection activities of up to 120 days (this assumes that the vessel has to travel to & from Port for flowline reels and weather downtime). However, spatially each activity impacts a relatively small area (greatest length of flowline tieback is approx. 10km) in terms of how it could affect long-line fishing, and only the PSZ around the Annie-2 well presents a longer-term impact to access. Based on the rig sequencing, we have assessed it unlikely that the drilling activity will have discernible cumulative impact. We recognise the increasing number of offshore proponents consulting in the area, particularly with the release of offshore wind acreage, and this is something we are considering as part of our longer-term development planning. We addressed this firstly in our East Coast Supply Project Offshore Project Proposal (OPP), which considers what a holistic Otway development could look like following exploration success. We previously consulted with you on the OPP, which has recently been accepted by NOPSEMA, and can be found on NOPSEMA's site here: **Offshore project proposals | NOPSEMA**. The cumulative impact assessment can be found in Section 11 on page 788. Measures adopted or confirmed • We have checked information you provided in the "background" section and confirm that it is consistent with the description of environment for these EPs; • We have reviewed the information provided on the "current activity" of the relevant fisheries. It has provided useful confirmation of our understanding of the tuna fisheries, consistent with that provided last year, and confirms information contained within the "description of the environment". • We will provide 72-hour advance notifications and completion notifications as described above, and/or other notifications as otherwise agreed; and • We confirm that reasonably foreseeable Otway drilling activities are part of a rig-share consortium such that various proposals using the drilling rig will be sequential using the one rig, not concurrent. Noted our appreciation of the effort taken to reach all concession and permit holders in both fisheries, and in preparing a thorough report. Considered this closed out any current concerns regarding proposed activities under the 2 ECSP EPs, but requested they advise if there were any further queries or concerns.		

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2025 0722 111345 1840	382	Tuna Australia	2025-07-22	Email	In	Noted that the 48-hour look-ahead was a general request, but confirmed 72 hour notice was more than adequate based on nature of our operations.	No objection or claim of adverse impact.	Agreed on method for notifications. Annie-2 EP stakeholder notifications register updated accordingly.
2025 0722 120340 1235	382	Tuna Australia	2025-07-22	Email	Out	Passed on thanks for quick response, and advised to get in touch if any further queries.	N/A	N/A
2025 0811 153233 5138	382	Tuna Australia	2025-08-04	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing Requested it be shared with members.	N/A	N/A
2025 0812 081329 7464	382	Tuna Australia	2025-08-12	Email	In	Confirmed the update was sent to members, and noted a change of personnel within Tuna Australia.	No objection or claim of adverse impact.	N/A
2025 0813 120055 7054	382	Tuna Australia	2025-08-06	Email	Out	Passed on thanks, and queried where based.	N/A	N/A
2025 0813 120113 4171	382	Tuna Australia	2025-08-13	Email	In	Noted based in Brisbane, and staff are based in different states.	No objection or claim of adverse impact.	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 16 May 2025 and no request for additional time has been received.								
2025 0512 152901 9820	411	Western Abalone Divers Association	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Noted we were also consulting via SIV	N/A	N/A
2025 0530 112556 7365	411	Western Abalone Divers Association	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	411	Western Abalone Divers Association	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
Interest groups								
2025 0519 133947 7349	3	3280-3284 Warrnambool Beach Patrol	2025-05-19	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 143518 5003	3	3280-3284 Warrnambool Beach Patrol	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0604 111019 2484	3	3280-3284 Warrnambool Beach Patrol	2025-06-04	Email	In	Advised intention to attend Warrnambool drop-in session. Noted the Minerva type plastic saddle clamps won't be used on our flowlines. Requested information as to how the pipes are secured to the seabed. Requested confirmation as to whether we will be installing concrete mattresses for the ECSP: Wells Connection project similar to that of nearby operators. Noted that plastics is not listed as a key potential impact of the ECSP EPs, and expressed interest in getting a full list of plastics that will be used, and details on related risk assessments and mitigations. Would also like to know the brands of bulk drink bottles that will be consumed ion the vessels.	No objection or claim of adverse impact. Reasonable request for information on other EP (provided). Reasonable request for additional information on plastics responded to in Event ID 2025 0611 154748 9024,	Will share a list of bulk drink bottle brands to be used upon mobilising of vessels for the proposed activities. See Event ID 2025 0611 154748 9024, Annie-2 EP stakeholder notifications register updated accordingly.
2025 0611 120023 7790	3	3280-3284 Warrnambool Beach Patrol	2025-06-04	Email	Out	Passed on thanks for email. Confirmed presence at the Warrnambool drop-in sessions, and suggested we could go over queries then. Enquired as to which session was likely to be attended.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0611 120037 2543	3	3280-3284 Warrnambool Beach Patrol	2025-06-05	Email	In	Indicated likely time to attend the drop-in session, asking if one-on-one chats were available. Noted limited time available.	No objection or claim of adverse impact.	N/A
2025 0611 120022 4577	3	3280-3284 Warrnambool Beach Patrol	2025-06-05	Email	Out	Confirmed setup allows for one-on-one chats, and looked forward to the meeting.	N/A	N/A
2025 0605 141549 4254	3	3280-3284 Warrnambool Beach Patrol	2025-06-05	Drop-in session	In	Requested project updates.	No objection or claim of adverse impact. Reasonable request for project updates agreed.	Annie-2 EP stakeholder notifications register updated accordingly.
2025 0611 154748 9024	3	3280-3284 Warrnambool Beach Patrol	2025-06-11	Email	Out	Passed on appreciation for meeting during our community drop-in sessions. We discussed your queries below when we met, and I have summarised our responses as follows: 1. How our pipes/flowlines (and umbilicals) are secured to the sea floor -These are held to the sea floor by their own weight, augmented by regularly spaced overlaid concrete mattresses. 2. Will concrete mattresses be used? -Yes, they are spaced regularly during pipelaying, and additional mattresses may be laid as a result of ongoing inspection work during the life of the operations if needed -for example if any instability or scouring is noted on inspection 3. Plastics were not noted as a key potential impact on our information sheets -Plastics are considered in our environment plans and are assessed under risk impacts associated with loss of materials overboard. As mentioned when we met, through the implementation of the environment plans and assurance against these, Amplitude work closely with the vessel contractors to have no unplanned release of waste/objects to the marine environment. If this occurs it is reported to NOPSEMA and investigated by Amplitude, and if possible the waste/ objects retrieved. 4. Full list of plastics to be used -Plastics are in widespread use across all aspects of operations, so the provision of a full list of where all plastics are used would be quite difficult to provide. As we discussed, more relevant is the release of plastics or any equipment or objects into the marine environment. As one of our staff members outlined during the drop-in session, in spite of the mitigations in place, the dropping of objects, for example, can occasionally happen, and are recordable or reportable incidents in our heavily regulated industry. We would be happy to advise you of any such instances occurring so there are no surprises for your team 5. Bulk drink bottle brands -We do try to limit these types of plastic consumables, but as discussed during the drop-in sessions, would be happy to share a list upon mobilising of vessels for the proposed activities. We also committed to following up on your query related to the blue plastic twine that washed up both recently, and during 2023 (coinciding with timing of another operator's offshore activities). If you could share the photos, we will follow up to try to determine a possible source, and whether it is something we need to consider during our activities. It was considered this covered the queries and discussions, but requested confirmation in case of any corrections or omissions.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0611 171332 8764	3	3280-3284 Warrnambool Beach Patrol	2025-06-11	Email	In	Passed on thanks for the response, and shared images of the twine that had been found on the beaches. Noted that another operator had shown images of twine in their old concrete lined pipelines.	No objection or claim of adverse impact. (Discussion related to wells connection EP and another operator's activities.	N/A
2025 0612 115531 1795	3	3280-3284 Warrnambool Beach Patrol	2025-06-12	Email	Out	Passed on thanks for the images, and advised we couldn't be certain where that comes from. Sent images of typical mattresses, and while they used a form of twine, they were much thicker than those found on the beaches. Noted our engineers did not consider that the twine would break free in the same manner as those washed ashore. As such we did not envisage such risk from our mattresses. We noted that similar polypropylene is used in our umbilicals and sent an image of a cutaway umbilical section. This showed how the twine was fully encapsulated in the outer sleeve, so again, it was a highly unlikely source of any twine washed ashore. Offered to collect any similar material found in future for assessment to determine if it could have resulted from any of our activities.	N/A	N/A
2025 0811 154314 8130	3	3280-3284 Warrnambool Beach Patrol	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 19 May 2025 and no request for additional time has been received.								
Interest group 25(1)(d)								
2025 0512 163930 1957	18	Apollo Bay Landcare	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	18	Apollo Bay Landcare	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	18	Apollo Bay Landcare	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 164113 9994	20	Apollo Bay Sailing Club	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	20	Apollo Bay Sailing Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	20	Apollo Bay Sailing Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 164250 7085	22	Apollo Bay Surf Lifesaving Club	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	22	Apollo Bay Surf Lifesaving Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	22	Apollo Bay Surf Lifesaving Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								

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2025 0513 125524 3041	463	AusOcean	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 143034 7086	463	AusOcean	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 154501 6482	463	AusOcean	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0512 164522 1141	28	Australian Coastal Society Victorian Chapter	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125315 5404	28	Australian Coastal Society Victorian Chapter	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 154611 3540	28	Australian Coastal Society Victorian Chapter	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 164901 6176	30	Australian Conservation Foundation	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	30	Australian Conservation Foundation	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	30	Australian Conservation Foundation	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0512 165023 1900	32	Australian Marine Conservation Society	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	32	Australian Marine Conservation Society	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	32	Australian Marine Conservation Society	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0605 141549 4254	669	Citizen Scientists - Southern Right Whales	2025-06-5	Drop-in session	In	Expressed a strong interest in Southern Right Whales, and highlighted how they captured and uploaded photos to a public domain site. Attended with the mistaken belief the drop-in session was regarding offshore wind which they opposed, They were pleased to share photos with us showing how they identified returning Southern Right Whales.	No objection or claim of adverse impact.	N/A
2025 0612 150917 7349	669	Citizen Scientists - Southern Right Whales	2025-06-12	Email	Out	Passed on Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4). Noted that while they attended thinking the drop-in session was related to offshore wind, we considered them relevant persons given their strong interest in conservation of southern right whales. Noted how they upload their photos to the whaleface site 9where we also now send ours). Noted that we appreciated them sharing the great photos they had gathered over a period of time, and offered to share our historical and future sightings data. They were pleased to accept this offer.	N/A	Provided historical marine mammal observations.

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						As per our commitment made during the session, we attached our historical sightings data with this follow up email.		
2025 0623 112826 7349	669	Citizen Scientists - Southern Right Whales	2025-06-23	Email	Out	Shared sightings data from recent survey as per commitment made when met during drop-in session.	N/A	N/A
2025 0806 141549 4254	669	Citizen Scientists - Southern Right Whales	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0806 141549 4254	669	Citizen Scientists - Southern Right Whales	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 June 2025 and no request for additional time has been received.								
2025 0512 165209 1927	147	Environment Victoria	2025-05-12	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125404 4864	147	Environment Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 154738 6211	147	Environment Victoria	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 12 May 2025 and no request for additional time has been received.								
2025 0513 074520 3560	153	Fight for the Bight Port Fairy	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 085013 3929	153	Fight for the Bight Port Fairy	2025-05-13	Email	In	Email bounced	N/A	N/A
2025 0513 090911 7972	153	Fight for the Bight Port Fairy	2025-05-13	Email	Out	Noted usual email address bounced. Re-sent Bulk mailout #1 to alternate address. (No bounce)	N/A	N/A
2025 0517 035112 4663	153	Fight for the Bight Port Fairy	2025-05-17	Email	In	Final failure message from first email address used (2nd address was OK)	N/A	N/A
2025 0530 143728 2535	153	Fight for the Bight Port Fairy	2025-05-30	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0609 082429 5038	153	Fight for the Bight Port Fairy	2025-06-08	Email	In	Suggested a general catchup and discussion on gas.	N/A	N/A
2025 0609 083617 3606	153	Fight for the Bight Port Fairy	2025-06-09	Email	Out	Provided suggested times.	N/A	N/A
2025 0610 082857 9586	153	Fight for the Bight Port Fairy	2025-06-09	Email	In	Enquired as to suggested format for the meeting.	N/A	N/A
2025 0610 083041 9639	153	Fight for the Bight Port Fairy	2025-06-10	Email	Out	Suggested phone call should work, and interested as to whether interested in project specific discussion, or more broad.	N/A	N/A
2025 0610 084737 8059	153	Fight for the Bight Port Fairy	2025-06-10	Email	In	Confirmed a call was fine.	N/A	N/A
2025 0613 103555 6215	153	Fight for the Bight Port Fairy	2025-06-13	Call	In/Out	A general discussion was had that covered non-EP matters, including LNG imports, current status of rig (with Woodside at the time), renewables technology, business opportunities presented by virtual power plants. No objections or claims regarding the activities to be carried out under this EP were raised. Wished the participant well with his business ventures.	No objection or claim of adverse impact.	N/A
2025 0811 154846 7095	153	Fight for the Bight Port Fairy	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0513 105541 7846	166	Friends of Bay of Islands Coastal Park	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	166	Friends of Bay of Islands Coastal Park	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	166	Friends of Bay of Islands Coastal Park	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 120242 8330	167	Friends of the Earth - Melbourne	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	167	Friends of the Earth - Melbourne	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	167	Friends of the Earth - Melbourne	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 125604 7256	467	Game Fishing Association of Victoria	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	467	Game Fishing Association of Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	467	Game Fishing Association of Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 120413 7381	189	Greenpeace	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 121020 2709	189	Greenpeace	2025-05-13	Email	In	Auto reply	N/A	N/A
2025 0530 112556 7365	189	Greenpeace	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0530 112931 1126	189	Greenpeace	2025-05-30	Email	In	Auto reply	N/A	N/A
2025 0806 141549 4254	189	Greenpeace	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0806 141716 5800	189	Greenpeace	2025-08-06	Email	In	Auto reply	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 120503 1408	197	International Fund for Animal Welfare (IFAW)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	197	International Fund for Animal Welfare (IFAW)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	197	International Fund for Animal Welfare (IFAW)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0513 120625 4726	220	Life Saving Victoria	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	220	Life Saving Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	220	Life Saving Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 120712 8763	227	Marine Mammal Foundation	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	227	Marine Mammal Foundation	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	227	Marine Mammal Foundation	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 132533 1957	586	No Offshore Windfarm Zone - Warrnambool and District	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 141808 7085	586	No Offshore Windfarm Zone - Warrnambool and District	2025-05-13	Email	In	Passed on thanks for email and noted they will respond soon. Requested clarity as to whether seismic data acquisition was involved with any of the proposed activities.	N/A	N/A
2025 0513 141957 1141	586	No Offshore Windfarm Zone - Warrnambool and District	2025-05-13	Email	Out	Confirmed no seismic data acquisition will be undertaken under these EPs.	N/A	N/A
2025 0519 131815 7787	586	No Offshore Windfarm Zone - Warrnambool and District	2025-05-15	Email	In	Provided the following feedback on behalf of the network: Passed on thanks for the opportunity to provide feedback. The precautionary principle should guide risk management for potential impacts such as underwater noise, vessel activity, and seabed disturbance, particularly in relation to: 1. The Logans Beach Whale Nursery. 2. Migration, breeding, and feeding areas of marine mammals in the Southern Ocean. 3. Biologically Important Areas (BIAs) and Habitats Critical to the Survival (HCTS) of the endangered Southern Right Whale. 4. The migration routes of short-finned eels to and from the Coral Sea. The National Recovery Plan for the Southern Right Whale (effective 31 July 2024 under the EPBC Act) highlights the importance of applying the precautionary principle in protecting the species, which is also emphasized here. It is understood that neither of the two Environmental Plans (EPs) propose seismic data acquisition. If this changes, immediate notification is requested. The involvement of First Nations groups in consultation should be ensured if they wish to contribute. Finally, ongoing updates are requested, especially regarding future consultation opportunities.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 142206 3313	586	No Offshore Windfarm Zone - Warrnambool and District	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars. Noted that we will revert soon on outstanding queries, and offered to meet while in Warrnambool.	N/A	N/A
2025 0606 115344 1967	586	No Offshore Windfarm Zone - Warrnambool and District	2025-06-04	Email	Out	Passed on thanks for feedback. Provided following responses to queries: Application of the precautionary principle The Precautionary Principle (as a component of Ecologically sustainable development) is something that we must and do apply as part of our OPP and EP development, under the OPGGS (Environment) Regulations. The regulator will not accept our plans unless we can demonstrate that we will do our activities not out-with the principles of ESD. To ensure we take appropriate levels of precaution we start by defining our project and potential impact areas, and then undertake EPBC Act protected matters searches. We then review the list of matters and all relevant conservation advice, for every listed species, including the southern right whale recovery plan issued in 2024. We take this advice into account, including the key threats the advice highlight (this might be subsea noise, vessel strike or marine debris for example) to understand the sensitivity of each component of the environment relative to the activities we are undertaking. In our case the main elements of the project which introduce stressors, and which you've started to allude to in your email, are temporary use of vessels, and installing equipment on the seabed. We evaluate the options to either avoid impacts and risks associated with those stressors, or otherwise manage them to acceptable levels, and to as low as reasonably practicable (ALARP). EPBC Act conservations advice and recovery plans also inform what an acceptable level is. Our OPP and EPs demonstrate how we will meet or beat acceptable levels of impact. Then within our EPs we go a step further in our impact and risk reduction efforts by applying the ALARP principle, and reducing impacts and risks to the lowest practicable level. We have applied this standard process while developing the OPP (**OPP - East Coast Supply Project - Rev 2 - December 2024.pdf**). The Environment Plans for proposed the East Coast Supply Project activities, which are in preparation include evaluations for underwater sound (impulsive and continuous), physical presence and seabed disturbance. The OPP evaluates that the East Coast Supply Project is consistent with the precautionary principle (refer to Tables 8-13, 8-33 and 9-9 in the OPP link provided above), and for each of these aspects (with the implementation of control measures) because: The highest ranking consequences and risks did not result in serious or irreversible environmental damage Potential impacts and risks were well-understood, we have confidence that the management measures we have proposed will manage the residual impacts and risks, and both our plans and our performance are closely regulated in Australian waters. The evaluations considered Logans Beach, Southern Right Whale BIAs and HCTS and migration of short-finned eels. Of note: Logans beach is ~24km from the operational area of the OPP (these activities are undertaken within this area). We have commissioned subsea	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						noise modelling by subsea acoustics specialists and scenarios and at no point do our activities result in levels of noise which will disturb whales within the Logans Beach reserve. There are no overlaps with behavioural disturbance (noise associated) contours from activity vessels There is potential that some infrequent vessel activities could result in behavioural disturbance thresholds for noise being exceeded just inside southern right whale HCTS, though not within the shallower preferred calving and nursing habitat. EPOs and control measures have been developed to ensure that the risk of behavioural disturbance to southern right whales inside BIA's and HTCS, is minimised. The behavioural reaction by eels to subsea noise has been assessed to be minor and local (i.e. if the eels are swimming within tens of metres of the activities) and we have no large electromagnetic fields associated with our project which might influence migration behaviour. We confirm that the objectives, actions and measures described within the OPP, and the activity specific Environment Plans are consistent with the objectives and actions of the 2024 SRW national recovery plan. No seismic data acquisition is contemplated under the OPP or either of these EPs. Should that change, we would necessarily re-consult with all relevant persons, including your organisation. We appreciate and agree with the view that relevant First Nations groups should be consulted, and confirm that we have invited the three closest Registered Aboriginal Parties (RAPs) to consult on these activities. Confirmed we will keep the organisation updated on these activities, and will invite your comment on future EPs in the offshore Otway Basin.		
2025 0605 133757 8883	586	No Offshore Windfarm Zone - Warrnambool and District	2025-06-05	Email	In	Passed on thanks for response. Advised unable to meet during drop-in sessions.	N/A	N/A
2025 0811 155713 6443	586	No Offshore Windfarm Zone - Warrnambool and District	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0812 135559 2414	586	No Offshore Windfarm Zone - Warrnambool and District	2025-08-12	Email	In	Noted there was no further input at this time.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 120804 8114	262	Ocean Racing Club of Victoria	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	262	Ocean Racing Club of Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	262	Ocean Racing Club of Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 120841 4361	263	Ocean Watch	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0514 165305 6558	263	Ocean Watch	2025-05-14	Email	In	Limited resources and unable to respond.	N/A	N/A
2025 0519 133433 8628	263	Ocean Watch	2025-05-19	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 144510 1525	263	Ocean Watch	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 190437 4259	263	Ocean Watch	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 120954 9657	266	Otway Climate Emergency Action Network (OCEAN)	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	266	Otway Climate Emergency Action Network (OCEAN)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	266	Otway Climate Emergency Action Network (OCEAN)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 121056 8843	271	Paddle Victoria	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	271	Paddle Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	271	Paddle Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 121310 1506	273	Peterborough Golf Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 121758 9546	273	Peterborough Golf Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) Sent to alternate email address	N/A	N/A
2025 0530 125624 4256	273	Peterborough Golf Club	2025-05-30	Email	In	Advised via quick response table: Do not wish to be consulted further	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 132733 9994	281	Port Campbell Community Group	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	281	Port Campbell Community Group	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	281	Port Campbell Community Group	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 122443 4276	285	Port Campbell Rifle Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	285	Port Campbell Rifle Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	285	Port Campbell Rifle Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 122718 5723	286	Port Campbell Surf Life Saving Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	286	Port Campbell Surf Life Saving Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	286	Port Campbell Surf Life Saving Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 125818 3195	470	Port Fairy Angling Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	470	Port Fairy Angling Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	470	Port Fairy Angling Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 122813 7904	289	Port Fairy Yacht Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	289	Port Fairy Yacht Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	289	Port Fairy Yacht Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0606 115735 1643	718	Protect the West	2025-06-06	Email	In	Registered for webinar for 9 June 2025. Initially contacted us as a result of advertisement in regional press.	N/A	N/A
2025 0609 1234562576	718	Protect the West	2025-06-09	Webinar	In/Out	Attended webinar which contained numerous slides describing the activities and potential impacts and risks. Noted their main interest was the protection of the environment in Western Victoria. With regard to gas production, was not happy with the recently announced long term extension of permits for the NW Shelf. Conveyed a strong interest in sustainability and expressed general concerns about climate change. Appreciated Amplitude Energy's approach to offering the webinar as she had been unable to attend the drop-in session. Requested we send a link to the pre-recorded webinar so it could be shared with other members.	No objection or claim of adverse impact. Reasonable request to send link to uploaded webinar. Link sent as per event ID 2025 0625 095132 7349.	N/A
2025 0625 095132 7349	718	Protect the West	2025-06-25	Email	Out	Passed on thanks for joining the webinar on Friday 9 June; appreciated the interest and time, and the opportunity to learn a little about the organisation's interests. Noted they were primarily concerned with major	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						expansion of long-life oil and/or gas projects such as the recently announced extension to the NW Shelf project. Advised as promised that we had now uploaded a pre-recorded version of the webinar, and provided the link: **ECSP: Annie-2 development well**. Noted the webinar could be found under the drop-in sessions table on that page, or on the **ECSP: Wells connection EP** page. Noted we also added Protect the West as a â€œRelevant Personâ€ with respect to consultation on our environment plans, with you as the primary contact. Requested advice if there was a different preference. Provided a copy of the general mailout sent to other relevant persons. (Bulk mailout #1)		
2025 0811 190737 9169	718	Protect the West	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 6 June 2025 and no request for additional time has been received.								
2025 0513 130332 5804	576	Relevant Person ID 576	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 143428 5800	576	Relevant Person ID 576	2025-05-13	Email	In	Requested to opt out of any further consultation on Amplitude Energy projects.	N/A	N/A
2025 0519 142939 5418	576	Relevant Person ID 576	2025-05-13	Email	Out	Acknowledged request to opt out of consultation.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 122907 1481	322	SCUBA Divers Federation of Victoria	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	322	SCUBA Divers Federation of Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	322	SCUBA Divers Federation of Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 122947 6332	325	Sea Shepherd Australia	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	325	Sea Shepherd Australia	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	325	Sea Shepherd Australia	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 123035 5218	352	Surfers for Climate	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	352	Surfers for Climate	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0806 141549 4254	352	Surfers for Climate	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 123113 3683	354	Surfrider Foundation Australia	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	354	Surfrider Foundation Australia	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	354	Surfrider Foundation Australia	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 123208 6604	389	Victoria Game Fishing Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	389	Victoria Game Fishing Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	389	Victoria Game Fishing Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0515 154003 7349	394	Victorian Recreational Fishing Peak Body (VRFish)	2025-05-15	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4). Noted previous feedback received during consultation on the OPP will be considered in developing these two EPs.	N/A	N/A
2025 0530 112556 7365	394	Victorian Recreational Fishing Peak Body (VRFish)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0606 115402 6302	394	Victorian Recreational Fishing Peak Body (VRFish)	2025-06-06	Email	In	Passed on thanks for the information, and intends to get in touch when back from leave.	N/A	N/A
2025 0606 115553 7815	394	Victorian Recreational Fishing Peak Body (VRFish)	2025-06-06	Email	Out	Passed on thanks for the email.	N/A	N/A
2025 0806 141549 4254	394	Victorian Recreational Fishing Peak Body (VRFish)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 15 May 2025 and no request for additional time has been received.								
2025 0513 124723 6830	402	Warrnambool Coastcare Landcare Network	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 125458 9376	402	Warrnambool Coastcare Landcare Network	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0811 190953 8755	402	Warrnambool Coastcare Landcare Network	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 125740 9820	469	Warrnambool Offshore & Light GFC	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0530 112556 7365	469	Warrnambool Offshore & Light GFC	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	469	Warrnambool Offshore & Light GFC	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 124907 3374	404	Warrnambool Surf Life Saving Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	404	Warrnambool Surf Life Saving Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	404	Warrnambool Surf Life Saving Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 124956 3514	407	Warrnambool Yacht Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 143400 7349	407	Warrnambool Yacht Club	2025-05-13	Email	In	Responded via quick response table No need for further consultation on this project, but would like project updates. In future would like to be consulted on all activities other than Decommissioning.	No objection or claim of adverse impact. Reasonable request made related to future consultation preferences agreed as per Event ID2025 0513 192210 7349.	No further consultation on this project, but will consult on relevant future decommissioning. See 2025 0513 192210 7349
2025 0513 192210 7349	407	Warrnambool Yacht Club	2025-05-13	Email	Out	Passed on thanks for quick response. Confirmed that we will: Cease consultation emails on this project, but send you project updates Consult with you in future on all other activities other than any relevant decommissioning.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 125055 8468	412	Whale and Dolphin Conservation Australia	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	412	Whale and Dolphin Conservation Australia	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	412	Whale and Dolphin Conservation Australia	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 125202 8421	413	Wilderness Society Melbourne	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	413	Wilderness Society Melbourne	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	413	Wilderness Society Melbourne	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
2025 0513 125245 6302	418	Windsurfing Victoria	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	418	Windsurfing Victoria	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	418	Windsurfing Victoria	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 125315 9874	423	World Wildlife Fund	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 125350 6450	423	World Wildlife Fund	2025-05-13	Email	In	Auto reply	N/A	N/A
2025 0530 112556 7365	423	World Wildlife Fund	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	423	World Wildlife Fund	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 125434 9198	425	Wye River Surf Life Saving Club	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	425	Wye River Surf Life Saving Club	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	425	Wye River Surf Life Saving Club	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
Local government and elected officials 25(1)(d)								
2025 0513 161510 9657	79	Colac Otway Shire	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4) It was noted that based on previous advice, shire council only wish to be consulted on seismic data acquisition activities. The proposed activities do not include any seismic, so we are sending this for information purposes only.	N/A	N/A
2025 0522 112443 6127	79	Colac Otway Shire	2025-05-21	Email	In	Passed on thanks for contacting the shire regarding the 2 ECSP EPs. Noted that as there is no seismic involved, would just like to receive project updates. Noted via quick response table: Do not need to be consulted further on these two projects Would still like to receive project updates Only wish to be consulted on any seismic projects.	No objection or claim of adverse impact. Reasonable request for project updates, and noted consultation only required in future for any relevant seismic data acquisition projects – responded to in Event ID 2025 0522 191812 8209.	Confirmed we would provide project updates, and that no seismic was to be acquired under this EP. Event ID 2025 0522 191812 8209, Annie-2 EP stakeholder notifications register updated accordingly.
2025 0522 191812 8209	79	Colac Otway Shire	2025-05-22	Email	Out	Passed on thanks for response, and confirmed we will continue to provide project updates as requested. Confirmed no seismic data acquisition being planned under either of these two EPs.	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 162028 8843	86	Corangamite Shire Council	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4). Noted from our most recent meeting that council does not need to be consulted on these activities, so sharing for information purposes.	N/A	N/A
2025 0514 120411 7349	86	Corangamite Shire Council	2025-05-14	Email	In	Response via quick response table: No further consultation required on these projects Would still like to receive project updates.	No objection or claim of adverse impact. Reasonable request to receive project updates confirmed in Event ID 2025 0514 120523 5800	Will provide project updates as per event ID 2025 0514 120523 5800. Annie-2 EP stakeholder notifications register updated accordingly.
2025 0514 120523 5800	86	Corangamite Shire Council	2025-05-14	Email	Out	Passed on thanks.	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0515 155818 5800	177	Glenelg Shire Council (Portland)	2025-05-15	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0530 112556 7365	177	Glenelg Shire Council (Portland)	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0806 141549 4254	177	Glenelg Shire Council (Portland)	2025-08-06	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 15 May 2025 and no request for additional time has been received.								
2025 0513 072817 2952	243	Moyne Shire Council	2025-05-13	Email	In	Noted that one of the shire"s caravan parks had received our invitation to consult, and was checking as to whether we had also been in direct touch with Moyne Shire Council.	N/A	N/A
2025 0513 073114 5138	243	Moyne Shire Council	2025-05-13	Email	Out	Passed on thanks for the email, and noted Moyne"s direct email would go out later in the day.	N/A	N/A
2025 0513 073703 8477	243	Moyne Shire Council	2025-05-13	Email	In	Provided a direct email address.	N/A	N/A
2025 0513 094353 1126	243	Moyne Shire Council	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0513 094417 9410	243	Moyne Shire Council	2025-05-13	Email	Out	Auto response	N/A	N/A
2025 0513 095930 5671	243	Moyne Shire Council	2025-05-13	Email	In	Asked to remove the following businesses from our relevant persons list as they are owned by Moyne Shire Council (that we are consulting directly with): The Gardens, Southcombe Park, Killarney and Yambuk Caravan Parks.	N/A	N/A
2025 0530 144244 4224	243	Moyne Shire Council	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars	N/A	N/A
2025 0530 144312 7717	243	Moyne Shire Council	2025-05-30	Email	Out	Auto reply	N/A	N/A
2025 0811 191323 9239	243	Moyne Shire Council	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
2025 0811 191353 9790	243	Moyne Shire Council	2025-08-11	Email	In	auto reply	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								
2025 0513 163045 9546	401	Warrnambool City Council	2025-05-13	Email	Out	Bulk mailout #1 – initial invitation to comment, with information sheet (see full summary in EP Table 11-4)	N/A	N/A
2025 0516 105323 9211	401	Warrnambool City Council	2025-05-16	Email	Out	Responded via quick response table: Provide information on: Cetaceans (migration paths) and *Eudyptula minor* Little Penguins Provide information on: requirements/needs of Warrnambool airport May be interested in meeting We would like to know how you manage impacts to the following species: 1. *Eubalaena australis* Southern right whale 2. *Megaptera novaengliae* Humpback whale 3. *Balaenoptera musculus* Blue Whale 4. *Eudyptula minor* Little penguin	No objection or claim of adverse impact. Reasonable request for additional information on 1) Little Penguins, and impact management on 1) Southern Right Whale 2) Humpback Whale 3) Blue Whale and 4) Little Penguin Information provided in Event ID 2025 0604 221247 8160, and offer to meet made in Event ID 2025 0530 121749 2087. Query related to use of Warrnambool Airport outside scope of EP, and responded to via separate correspondence.	Relevant requested information has been provided in Event ID 2025 0604 221247 8160,
2025 0530 121749 2087	401	Warrnambool City Council	2025-05-30	Email	Out	Bulk mailout #2 - notification of community drop-in sessions and webinars. Also advised that we were preparing a response to their earlier email, but were available to meet during the drop-in sessions in Warrnambool.	N/A	N/A
2025 0604 221247 8160	401	Warrnambool City Council	2025-06-04	Email	Out	Noted we were in Warrnambool next day and could meet at the drop-in sessions, or between sessions, at their convenience. Regarding queries: **Cetacean migration paths** Species such as Mink, Sei, Blue, Fin, Pygmy Right, Southern Right and Humpback whales occur in the Otway region at particular times of year, and at those times, may move through the areas we propose to work,. Further information, including their presence and timing in the region, for all of the cetacean species which are known, likely or which may occur are provided within our **Offshore Project Proposal section 6.5.8.1.** We would recommend looking at both the **South East Marine region profile** and the DCCEEW Species Profile and Threats Database - **Australian marine species pages** (within the Movement pattern sections) for more detail on any particular species. Below is an excerpt from the *Seasonality of Key Sensitivities within the Otway Basin* table within the East Coast Supply Project OPP (published here - **OPP - East Coast Supply Project - Rev 2 - December 2024.pdf**). The cetacean species listed below typically occur within the region. Some species may occur year-round, whilst some may be transient, or have a seasonal occurrence. The arrival of some species to the region is linked to physical processes such as seasonal upwellings in the region and may vary from year to year. This information is used to inform the impact and risk assessment, including the likelihood of a particular consequence eventuating. **Little Penguins** Little penguins are the smallest species of penguin, and are endemic, permanent residents on several inshore and offshore Australian and New Zealand islands. Their diet includes small school fish, squid and krill and	N/A	N/A

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						they are listed as marine under the EPBC act. Our OPP and map below show the Foraging and breeding Biologically Important Areas (BIAs) for the little penguin that are present in the southeast, as defined by the Commonwealth government. We are also aware of the little penguin colony on middle island (Warrnambool) under close management under the Middle Island Project* We describe the rookeries and breeding colonies of the Otway region in **section 6.3.1.1 of the OPP**, and note that Breeding occurs between September and February. The figure below (excerpted from the OPP) shows the Little Penguin BIAs in proximity to the Operational Area for the East Coast Supply Project activities. **side note our environment advisor now has 2 x mini Maremma guardian dogs from the Flagstaff shop which his kids have named oddball.* **Requirements/needs of Warrnambool airport** We understand the interest in this, but being outside the scope of these EPs, our External Affairs Manager, Bindi Gove, will contact you separately to discuss further. **Managing impacts to the following species** **2,3 Southern Right, Humpback, and Blue Whales** Attached is an information sheet on potential impacts to whales, including the above three species. **Little penguin** Threats to the Little Penguin include injury and mortality through vessel interaction and oil pollution, in addition to changing ocean conditions that could affect food sources and terrestrial issues such as predation. Impacts from planned operations on Little Penguins are considered unlikely given the limited nature and scale of our activities. We manage the potential stressors from the activity on little penguins and other marine life through a variety of measures including: - minimising lighting and subsea noise as far as practicable to reduce the chance of influencing animal behaviour, and - preventing the release of marine debris such as plastic, into the sea which could cause harm by ingestion. - ensuring we do not have a spill of hydrocarbons. Our entire activity, from its inception to it actually happening is planned to ensure we do not lose containment of the hydrocarbons we access and produce from offshore. Nevertheless, we do have emergency response plans in place, including tactical response plans which outline considerations for little penguins should hydrocarbons overlap with their range, and provisions for long-term monitoring studies to track the impact of a spill on marine fauna and their		

Event ID	Relevant Person ID	Relevant Person	Date	Event Method	In/Out	Event Summary	Assessment of Merit	Measures Adopted/Actions taken
						recovery. For more information please see **Tables 9-21 and 9-24 of the OPP**.		
2025 0811 153539 6267	401	Warrnambool City Council	2025-08-11	Email	Out	Bulk mailout #3 - notification this phase of consultation is closing	N/A	N/A
Per regulation 25(2) of the OPGGS(E)R, sufficient information has been provided as described in Section 11.3.2 of the EP. There are no requests outstanding for additional information. Per regulation 25(3) of the OPGGS(E)R, reasonable period has been provided, being more than that described in Section 11.2.4. Consultation commenced on 13 May 2025 and no request for additional time has been received.								

Table 5-2:Relevant persons consultation report – Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC)

Event ID	Date	Event Method	In/Out	Summary of each relevant person response, objection or claim (Reg 24(b)(i))	Amplitude Energy's assessment of merit of general assertions or requests	*Amplitude Energy's assessment of merit of any objection or claim about the adverse impact of each activity to which the EP relates (Reg 24(b)(ii)*	*Amplitude Energy communication, or response to objection or claim (reg 24(b)(iii)) or General Response (Amplitude Energy's response to queries, comments or assertions).* *Unique reference added where needed for clarity.* *(EP references added for context as appropriate)*
2024 1203 123238 7220	2024/12-03	Email	Out				Noted wished to commence consultation on at least two other EPs that are currently in early stages of development, acknowledging the importance of early engagement with GMTOAC and the Gunditjmara people.
2024 1220 102303 6185	2024/12/20	Email	Out		None	None	Email from NRF attaching letter. Letter notes items related to other EPs. Notes previous requests for material to be provided in advance and requests details as to when material should be provided, and whether GMTOAC has particular concerns that Cooper Energy can seek to address in that material.
2025 0121 194346 7349	2025/01/21	Email	Out		None	None	Email from NRF to EJA attach letter which: Notes that Amplitude Energy would still be willing to meet in mid-March 2025, as part of ongoing engagement on this EP and in respect of 2 further environment plans (this refers to the two ECSP EP, including this Annie-2 EP). Requests confirmation as soon as possible as to the date of the proposed meeting in March, provides a copy of the GMTOAC fee schedule (as previously requested), provides information regarding the technical advice obtained by Cooper Energy and provides confirmation as to any expectations or preferences of GMTOAC for that meeting.
FN-GMTOAC-20250129-Email 2025 0129 082251 6215	2025/01/29	Email	In	Email incoming from EJA to NRF noting that EJA are seeking instructions and will aim to respond by the end of that week.	None	None	
FN-GMTOAC-20250205-Email **2025 0205 065930 7349**	2025/02/05	Email	In	Email incoming from EJA to NRF apologising for delay in response and requesting further information about additional EPs prior to responding.	None	None	
2025 0207 171021 7349	2025-02-07	Email	Out				Email and letter from Amplitude Energy to GMTOAC The letter: - notes Amplitude Energy has been in previous correspondence with EJA regarding consultation with GMTOAC and its members on two new EPs. - introduces two new EPs (ECSP - Annie-2 Development Well Ep and ECSP- Wells Connection EP) and notes that Amplitude Energy is reaching out for early engagement (before broader consultation commences) in line with the Consultation & Negotiation Protocol - provides 2 x consultation fact sheets which provide an overview of the proposed activities under each EP - notes that Amplitude Energy has familiarised itself with GMTOAC's published materials (where relevant) including but not limited to the Gunditjmara Sea Country Plan 2022-2033 and GMTOAC's Consultation & Negotiation Protocol - outlines the work that Amplitude Energy has already undertaken to understand the cultural values and sensitivities of GMTOAC,

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							so they can be appropriately considered and proactively addressed in the two new EPs - lists the cultural values that Amplitude Energy understand GMTOAC to have that are relevant to the EPs, i.e. culturally significant species (whales, eels, seals, the Bonney Upwelling and Deen Maar Island; - outlines the work Amplitude Energy has already done to consider the needs and preferences of GMTOAC, so as to plan and tailor the consultation process for the 2 new EPs to the extent appropriate and reasonably practicable - requests that GMTAOC let Amplitude Energy know as soon as possible if they wish to discuss the cultural values and sensitivities or if there are any others To be aware of in the preparation of the EPs - identifies key themes and principles from the Consultation & Negotiation Protocol upon which the consultation process on the 2 new EPs can be adapted. In relation to key themes and principles from the Consultation & Negotiation Protocol: - Early engagement – Notes the preference expressed by GMTOAC in the Consultation & Negotiation Protocol regarding early engagement on projects, and that we have prioritised providing information to them ahead of broader consultation activities. Notes our indicative timeline for closing out consultation is 30 June 2025, which allows over 6 months for GMTOAC to consult with us. Explains that we have used this timeframe, having regard to the timeframes provided for in comparable legislative processes. Notes the steps that have been taken by GMTOAC that will hopefully make consultation on the two 2 EPs more effective and efficient. - Initial meeting – Notes the preference expressed by GMTOAC in the Consultation & Negotiation Protocol regarding holding an initial meeting to establish a relationship prior to commencing consultation on substantive issues. Notes that we first communicated to GMTOAC on 27.11.2024 our desire to discuss the 2 new EPs at a meeting that was proposed by GMTOAC for mid- February 2025, but this meeting was postponed until mid-March 2025. Reiterates request to meet in relation to the 2 new EPs as soon as possible, and confirms availability to attend initial meeting in mid-March. Requests that a further meeting is scheduled on the 2 new EPs, since the Consultation & Negotiation Protocol suggests that more than one meeting will be required. Requests this meeting occur no later than May 2025, to keep the process moving forward and maintain timelines. Invites GMTOAC to suggest a date and confirms that Amplitude Energy can provide further support and funding to facilitate this second meeting. - Staggering/co-ordinating consultation – Notes GMTOAC's suggestion in the Consultation & Negotiation Protocol that proponents may wish to stagger or co-ordinate consultation

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							between proponents and prioritise timing for each proposal amongst them. Explains that there are real-world constraints on the ability of proponents to stagger their projects, including the reasons why they use a rig to perform back-to-back work in a region. Offers to share a meeting with GMTOAC, with Beach, if it reduces the consultation burden and allows for more timely progress of consultation process. - Funding & support – Notes that the Consultation & Negotiation Protocol expresses a need for funding and other support from the Proponent to engage with them on projects. Confirms that Amplitude Energy is happy to meet GMTOAC's reasonable costs arising from its participation in the consultation process for the 2 new EPs. Requests a copy of the schedule of fees referred to in the Consultation & Negotiation Protocol.iInformation – Notes that the Consultation & Negotiation Protocol emphases the need for information to be provided to GMTOAC that is non-technical and in plain English. Notes that Amplitude Energy has familiarised itself with materials on GMTOAC's website and social media pages to get a feel for communication style and emulate it in consultation on the 2 new EPs. Notes that Amplitude Energy plans to prepare an audio presentation for GMTOAC regarding the 2 new EPs to hopefully provide information in a relatable and accessible way. Requests any further guidance or model communications that might be exemplary or instructive for preparing information on the 2 new EPs. - Cultural value assessments – Notes the Consultation & Negotiation Protocol states that a cultural values assessment may be required prior to commencement of consultation. Confirms that Amplitude Energy is proactively considering the cultural values and sensitivities based on GMTOAC's published material and previous consultation feedback, and that it has plans to undertake cultural heritage survey. Confirms that we will share updates about this in due course. - Cumulative impact assessments – Notes the Consultation & Negotiation Protocol expresses that GMTOAC may require a cumulative impact assessment to be undertaken by the Proponent for activities with a risk to impact upon Country and Sea Country. Confirms that we are currently undertaking a cumulative impact assessment in respect of the activities under the 2 new EPs, in the context of the activities of other proponents, and will share more detailed information with GMTOAC in due course, tailored to this concern. Notes that Amplitude Energy looks forward to hearing from GMTOAC as soon as practicable and asks whether they have any preferences as to how they receive further communications for the 2 new EPs.
2025 0207 182536 5800	2025-02-07	Email	Out				Copy of 2025 0207 171021 7349 sent to EJA apologising for direct correspondence to GMTOAC. Hoped the materials would assist EJA's client in considering the proposed new EPs and looked forward to a substantive response and confirmation of the March 2025 meeting

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2025 0218 130036 7349	2025/02/18	Email	Out		None	None	Passed on thanks for recent email. Enquired as to update to when we might receive a response to our correspondence dated 21 January 2025. Noted Amplitude Energy remains eager to meet with GMTOAC in March (as part of ongoing engagement on another EP and in relation to 2 new environment plans [ECSP EPs]) and would like to confirm details of that meeting as soon as practicable.
2025 0220 190339 7349	2025/02/20	Email	In	EJA noted it is still waiting for instructions from GMTOAC following their native title meetings on February 14-15, 2025. No decision was made on February 14 regarding a meeting in March. EJA was not present during the February 15 meeting. EJA noted they would follow up for instructions and would aim to respond next week.	None	None	
2025 0227 154143 7349	2025/02/27	Email	In	EJA noted the following relevant points in its correspondence:[1] (Other points noted are related to a different EP) A1. Referred to letter from Cooper Energy dated 21 January 225 and subsequent email correspondence from EJA. Proposed meeting A2. GMTOAC proposed a meeting to progress consultation with Cooper Energy on 12 April 2026. A5. Subject to further instructions from Gunditjmara native title holders at a closed meeting in mid-March, EJA and GMTOAC propose to schedule an additional day of meetings for its next native title meeting on 12 April 2025 to meet Cooper Energy and discuss consultation on: a. Athena Supply Project EP (currently under assessment with NOPSEMA; b. Annie-2 Development EP (in development with Cooper Energy); c. Wells Connections EP (in development with Cooper Energy); and d. Otway Offshore Operations EP (accepted by NOPSEMA). A7. If Cooper Energy could meet on 12 April 2025, GMTOAC would be grateful to receive as soon as possible requested: a. PowerPoint presentation(s) with slides for the: i. Proposed agenda items at par [8] of the letter, including Cooper Energy's draft position on such items; ii. Topics identified at par [8] of the letter dated 15	A7 – Cooper Energy has considered the information requests made (noting that the requests were made in connection with a number of other EPs in addition to this EP) and provided reasonable and detailed information. The requested information sheets and slides sought to address all of the queries raised by GMTOAC (notwithstanding the extensive nature of the information request submitted and the resources required to fulfil this request).	None	

[1] This correspondence raised issued in respect of other EPs that were being prepared by Amplitude Energy, but those issues are not summarised here as they are not relevant for the purpose of this EP.

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				November 2024 and any additional matters identified in par [7](b) of this letter. EJA requested that any such PowerPoint presentation should include, where relevant, images or other visual aids that clearly convey the information requested or topic nominated. Also, wherever possible, the amount of text per slide should be limited so as to avoid key messages being lost. b. Plain English information sheets on these matters, including identification of impacts and risks on, from and/or towards: i. Gunditjmara Nyamat Mirring and Mirring, including due to greenhouse gas emissions and climate change impacts in connection with the EPs; ii. Operational areas and environments that may be affected (EMBA) by the proposed activities within the EPs; iii. Sensitive ecosystems, protected areas (including Commonwealth and/or Victorian marine parks), sites of national significance, sites of international significance (e.g. only, Ramsar Wetlands and the Budj Bim Cultural Landscape, including the latter's integral outstanding values, such as the endangered *Kooyang* which is listed as near threatened under the International Union for Conservation of Nature's Red List of Threatened Species); iv. Totemic, Dreaming, and culturally significant animal species (such as *Kooyang* (short-finned eels), *Karntubul* (whales), and *Koorn Moorn* (seals)); v. All *Karntubul* species, but in particular, the endangered Pygmy Blue Whale and Southern Right Whale, including separate information sheets for both species covering topics such as: A. How the proposed activities are consistent with the EPBC Act Recovery Plan for each *Karntubul*; B. How the EPs address the actions within each Recovery Plan; C. Summaries of the best available scientific literature on the impacts of the proposed activities within the EPs on these species; vi. *Kooyang*, including studies or research on impacts on its lifecycle, its migration through the EMBAs and/or Operational Areas of the EPs, and any associated impacts on the Budj Bim Cultural Landscape; vii. Noise and light pollution, including but not limited			

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				in relation to the above and below matters; viii. Unplanned oil and hydrocarbon spills and/or any other unplanned events (such as vessel collisions or vessel discharge events); ix. Cumulative impacts of the proposed activities (within Cooper Energy's EPs but also across the Otway Basin EPs, and how these have been assessed in accordance with the Objects of the Regulations, including s 3A of the EPBC Act); x. Responses to request for information in Attachment A of this letter. c. copies of correspondence from NOPSEMA to Cooper Energy, including in respect of requests for further information, variations or inclusions required under Pt 4 Div 4 of the Regulations: regs 29-32; and d. the most current version of the EPs (if finalised) listed at par [5]. A8. Subject to further instructions, the following draft agenda was proposed: a. Introduction/ Update on the EPs listed in the letter; b. Discussion of the Consultation Protocol; c. Co-design of consultation process (to include consultation milestones and timeframes); d. Consultation costs; e. Confidentiality and intellectual property requirements; f. Strategic regional environmental and cultural assessment; A9. Time permitting, a brief discussion about how the materials requested at par [7] above (and any further materials required for consultation) will be addressed in future consultation meetings. A10. For those materials outlined at par [7](a)(i) of the letter (including PowerPoint slides on the draft agenda items contained at par [7] above), GMTOAC requested to receive these materials by 14 March 2025. A11. For those materials outlined at pars [7](a)(ii), [7](b) of the letter – [7](d), GMTOAC requested to receive these materials within 28 days of the letter, noting that it is unlikely they will be discussed, and if so, only in a cursory fashion, at an initial co-design meeting about consultation between GMTOAC, Gunditjmara and Cooper Energy on 12 April 2025. Next steps A16. As requested by Cooper Energy, enclosed is a cost estimate for the proposed meeting in April 2025 (Attachment B).			

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				A17. If there are matters for clarification, please contact EJA directly at the earliest opportunity. Otherwise GMTOAC look forward to receiving the requested materials per the timeframes indicated in the letter. Attachment A – Requests for Information The letter sets out an attachment which includes requests for information relating to the following matters: A18. How are the EPs consistent with r 4 of the Regulations, that is, to ensure that any petroleum activity or greenhouse gas activity carried out in an offshore area is: a. Carried out in a manner consistent with the principles of ecologically sustainable development set out in section 3A of the EPBC Act; and b. Carried out in a manner by which the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable; and c. Carried out in a manner by which the environmental impacts and risks of the activity will be of an acceptable level. A19. How do the EPs respond to and address the principles of ecologically sustainable development under section 3A of the EPBC Act, including that: a. Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations; b. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation; c. The principle of intergenerational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations; d. The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making; e. Improved valuation, pricing and incentive mechanisms should be promoted. A20. Further to s 3A of the EPBC Act and the Gunditjmara Nyamat Mirring Plan 2023-2033, how do the EPs ensure that the proposed activities are consistent with the best available scientific data and internationally agreed goal of a safe climate by reducing greenhouse gas emissions? How have the threats identified in the Gunditjmara Nyamat Mirring Plan, including but not limited to Table 1, page 22 "Existing or future threats to			

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				Nyamat Mirring – Climate Change", been addressed and mitigated? A21: How do the EPs account for and describe Gunditjmara rights, functions, interests and values in relation to the "environment" (as broadly defined under r 5 of the Regulations), including: a) Ecosystems and their constituent parts, including people and communities; and b) Natural and physical resources; and c) The qualities and characteristics of locations, places and areas; and d) The heritage value of places; and which includes social, economic and cultural interests and values in the matters mentioned in paragraphs (a) –(d) above? A22: How do the EPs account for and describe Gunditjmara rights, functions, interests and values in relation to the "environment" (as broadly defined under r 5 of the Regulations), including: a) Ecosystems and their constituent parts, including people and communities; and b) Natural and physical resources; and c) The qualities and characteristics of locations, places and areas; and d) The heritage value of places; A23: What if anything, does Cooper Energy, require from GMTOAC in order to more accurately describe the "environment" in the EPs as defined under the Regulations? A24: How do the proposed activities within the EPs ensure that no adverse action, interference, and/or inconsistency arises in connection with Gunditjmara people, communities, heritage, and/or social, economic and cultural interests? A25: Where such impacts are identified, on what basis does Cooper Energy justify that these impacts are of an acceptable level? Similarly, on what basis does Cooper Energy conclude that these impacts are mitigated to as low as reasonably practicable? A26: How has Cooper Energy demonstrated to NOPSEMA, that its proposed activities are not inconsistent with and/or do not contravene any recovery plans under the EPBC Act, per s 268 of that Act, including but not limited to the recovery plans for species of Karntubul (whales) such as the Southern Right Whale and the Blue Whale? A27: How do the proposed activities in the EPs ensure that no adverse action, interference, and/or inconsistency arises in connection with recovery actions and/or implementations of the			

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				above-mentioned recovery plans? A28: Given the nature of the proposed activities and associated impacts, how does Cooper Energy propose to avoid key foraging, breeding/calving and transit to and from BIA for key Karntubul species? A29: How has Cooper Energy considered the impact of its proposed activities on Kooyang (shortfinned eel)? How and in what manner do the EPs consider potential impacts of their proposed activities on the Outstanding International Values of the Budj Bim Cultural Landscape, including on the integrity of threatened Kooyang populations (and Kooyang husbandry and associated native title rights and interests concerning aquaculture) on which the World Heritage Area's Outstanding Universal Value is dependent? How will any identified impacts be mitigated to the legal standard required? If not already done, what is Cooper Energy's response to relevant actions, including in respect of Kooyang, within the Budj Bim Indigenous Protected Area Plan of Management 2022-2027 (for example only, see sections 5.5.2 – 5.5.7, Actions 29-31, 43)? What research has been commissioned or conducted in relation to the lifecycle of Kooyang and its migration through the EMBAs and/or Operational Areas for the proposed activities? A30: What steps has Cooper Energy taken to avoid impacts from the proposed activities on the Bonney Coast Upwelling and to address the critical cultural heritage values associated with this Upwelling? A31: How and in what manner have risks of harm on the cultural (or social) environment been described in the EPs? How and on what basis does Cooper Energy propose that those risks have been reduced to as low as reasonably practicable? A32: How and in what ways do measures within the EPs address and respond to cumulative risks and impacts (both direct and indirect) reasonably associated with the proposed activities, in light of the: a) Other activities, be that past, current or anticipated, in the Otway Basin; and b) Best available scientific literature and practice in the design of cumulative impact assessments? To avoid doubt, please identify how and in what ways such cumulative impact assessments adopt and reflect Aboriginal cultural heritage considerations. A33: How has Cooper Energy considered the risk of hydrocarbon or other vessel spills and/or collisions in their proposed activities, including from routine vessel traffic and/or rig operations? If so, how have any such environmental impacts been assessed and mitigated?			

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				A34: How and in what manner have all environmental factors within the environment (as defined under r 5) been considered in cumulative impact assessments undertaken by Cooper Energy? A35: How and in what manner have acoustic impacts of the proposed activities (including through the use of geophysical surveys) in the EPs on cultural heritage values (including harms to key mammal species, as well as the broader ecosystem and food chain) been considered in the EPs? A36: How and to what extent have acoustic impacts been considered in cumulative impact assessments, including cumulative impact assessments of the cultural environment? A37: What chemicals does Cooper Energy plan to use in its exploration well drilling and evaluation ANNEXURE B – FEE SCHEDULE - A template cost estimate provided.			
2025 0307 081546 5800	2025/03/07	Email	Out		None	None	Email and letter from NRF to EJA Confirmed that we appreciate the opportunity to meet with GMTOAC, and accept the invitation to meet on 12 April 2025. Requested confirmation of the proposed venue and time, in order to make travel arrangements. Acknowledged the effort involved in GMTOAC arranging such notified meetings. Requested that one additional item be added to the agenda, in the interests of building a two-way dialogue and common understanding between the parties. The proposed agenda item would be GMTOAC/Gunditjmara providing an overview of cultural values and sensitivities within their Sea Country/Nyamat Mirring associated with our activities offshore near Port Campbell, particularly any additional to those outlined in their published Nyamat Mirring Plan and previous correspondence. Confirmed we are currently reviewing EJA and GMTOAC's requests for information and will endeavour to provide materials within the requested timeframes. Requested confirmation as soon as possible that the proposed meeting on 12 April 2025 will proceed, noting that EJA had indicated in previous correspondence that the proposed meeting may be subject to the outcome of GMTOAC's upcoming meeting in mid-March 2025. Requested confirmation if the fee schedule included in previous correspondence represented the total cost sought for the meeting and a

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							breakdown of those costs. Requested that, to the extent that GMTOAC anticipates that an additional follow-up meeting will be required to progress consultation (i.e. following the 12 April 2025 meeting), then this meeting be scheduled for May 2025. Requested that GMTOAC advise if any date in May 2025 would suit, having regard to their upcoming native title meetings, and confirmed that further funding and support could be provided to facilitate that additional meeting.
2025 0314 163531 5800	2025/03/14	Email	Out		None	None	Email from NRF to EJA: Referred to previous correspondence. Attached proposed draft slides for the April meeting. Noted the slides are in draft form, as minor updates will be made before the meeting (e.g. to add in maps showing the relative position of the various EP activities). Noted that previous letter sent to EJA on 7 March 2025 requested confirmation that the April meeting would proceed, and that we are still waiting to receive confirmation. Requested confirmation that the meeting would be going ahead (or failing that, an update on when they expect to be able to confirm) so that travel arrangements can be made.
2025 0318 105249 5800	2025/03/18	Call	Out		None	None	Phone call from NRF to EJA: EJA confirmed that Amplitude Energy is invited to a meeting on Friday 11 April 2025, from 1pm to 3.30pm. The venue is to be advised, but will be on country so likely Portland or Hamilton. EJA noted it would send correspondence to confirm the above and respond to previous letters. NRF requested confirmation of who will be in attendance and breakdown of costs for the meeting. EJA confirmed that Amplitude Energy would be the only group meeting with GMTOAC on that day, and it would be attending to its own internal matters in the morning.
2025 0318 122925 6215	2025/03/18	Email	In	Email from EJA: EJA noted call with NRF earlier in the afternoon and confirmed that Cooper Energy would present to GMTOAC/Gunditjmara on 11 April 2025 from 1-3.30pm. EJA noted the location of the meeting was yet to be finalised but would be on Gunditjmara Country. EJA noted GMTOAC would update us with the meeting location as soon as it is confirmed and also contact us with a reply to the letter dated 7 March 2025 and feedback on the proposed PowerPoint slides.	None	None	
2025 0328 114547 3606	2025/03/28	Email	In	Email from GMTOAC attaching a letter dated 21 March 2025: GMTOAC noted the following points: B1. Thanked Amplitude Energy for the letter dated 7 March 2025, responding to EJA's letter dated 27 February 2025.	None	None	

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				Confirmed receipt of draft PowerPoint slides in email dated 15 March 2025. B2: Noted this letter was being sent direct from GMTOAC and not their lawyers at EJA, as a first step towards independently managing consultation with of offshore petroleum proponents in the Otway Basin in accordance with the Gunditjmara Consultation and Negotiation Protocol. B3: Noted in response to our letter, GMTOAC confirms that: a. due to operational reasons, the proposed meeting will need to be rescheduled to Friday 11 April, and GMTOAC apologies for this and hopes the date is suitable for Amplitude Energy; b. the meeting will be held at 39 Hammond Street, Hamiton VIC 3300 from 1pm to 3:30pm. c. if there is time, and subject to Gunditjmara's agreement and feeling adequately informed about the d. proposed activities, the additional agenda item suggested in Amplitude Energy's letter is in principle agreed; e. the cost estimates attached to previous correspondence was a generic estimate, and as Amplitude Energy is allocated a 2.5 hour timeslot at the meeting the attendance fee is $13,375, which is inclusive of costs associated with hiring the meeting venue, IT and audiovisual support, catering, postage, staff administration, travel assistance and elders sitting fees; f. the April 2025 meeting will be attended by GMTOAC staff and Gunditjmara native title holders only, with no legal representatives present. It was requested that Cooper Energy has representatives attend at the meeting who have authority to make decisions in relation to consultation and resourcing of consultation on its behalf; and g. in response to Amplitude Energy's request to meet again with GMTOAC and Gunditjmara in May 2025, such further meetings are to be agreed with Gunditjmara, as proposed by the agenda item at paragraph [8](c) of EJA's letter dated 27 February 2025. B4: Thanked Amplitude Energy for sending their draft PowerPoint presentation to GMTOAC in advance of the 11 April 2025 meeting. Provided the following feedback and requests for Cooper Energy to incorporate into its final presentation: a. include timeframes when providing GMTOAC with updates on the EPs, including forecast and actual start/end dates for activities; b. reword agenda item 4 from "Co -design of the consultation process" to "Co -design of the consultation			

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				process in line with the Gunditjmara Consultation & Negotiation Protocol"; c. noted that based on similar initial meetings held with CGG and ConocoPhillips in February 2025, it is unlikely that there will be sufficient time on 11 April 2025 to discuss items 6 - 8 at length in the presentation. It is likely that any discussion of these items, if it occurs on 11 April 2025, will be at a high level only; d. requested that if there is time to address items 6 – 8, Amplitude Energy refers back to the Gunditjmara Consultation and Negotiation Protocol when discussing these items; and e. requested that Cooper Energy not include the image of the Gunditjmara Nyamat Mirring Plan 2023- 2033 in its presentation, as while GMTOAC understand that proponents have used this publicly available document to supplement actual consultation with GMTOAC and Gunditjmara, this document was not created for that purpose. B5: Noted that: a. GMTOAC look forward to receiving the remaining materials requested in EJA's previous letter, as well as a final version of the PowerPoint presentation, as soon as possible. b. After receiving those materials and subject to capacity, GMTOAC would endeavour to provide any feedback on the materials to ensure they are appropriate and adapted for the purpose of the meeting. c. Subject to when GMTOAC received the final versions of the materials, there may or may not be enough time to mail them out to native title holders within the 21-day notice period before our native title meeting on 11 April 2025. If that deadline is missed, GMTOAC will explore opportunities to provide documents by other means but note Gunditjmara's strong preference to receive physical copies of materials three weeks prior to scheduled meetings. B6: Instructed Amplitude Energy to contact GMTOAC directly with any further questions ahead of the meeting.			
2025 0329 120653 6215	2025/03/29	Email	Out		None	None	Email from NRF to EJA with 9 attachments Attached letter dated 29 March 2025 and: a. 4 information sheets setting out information in relation to each of our client's EPs (Athena Supply Project EP, Annie-2 EP, Wells Connection EP and Otway Offshore Operation EP); b. 3 additional information sheets in relation to specific topics (potential impacts on sensitive ecosystems, whales and cultural features); and c. 2 maps (one showing the location of the EPs, and one showing the spatial extent of the EPs).

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							Confirmed that NRF have tried to ensure that the size of these files are manageable, and requested confirmation that GMTOAC was able to receive the information and pass it along to members. Letter enclosed with the email: Confirmed NRF continue to act for Cooper Energy for this matter. Referred to previous correspondence in this matter, including letters dated 27 February 2025 and 28 March 2025. Confirmed Amplitude Energy appreciates the opportunity to meet and is looking forward to progressing consultation with GMTOAC and its members on 11 April 2025. Noted the new timing and location of the meeting. Confirmed that Amplitude Energy has been preparing materials in response to the information requests made in EJA's letter dated 27 February 2025. However, the information request contained in that letter was voluminous and while Cooper Energy has been using all reasonable endeavours to prepare the material for GMTOAC, some of the information sheets are not yet finalised, but will be provided shortly. Confirmed that enclosed with this correspondence, to allow GMTOAC to begin to consider the material, is: a. a plain English information sheet regarding the Athena Supply EP, setting out planned impacts, unplanned impacts and cumulative impacts (and associated control measures) for the activities proposed under that EP; b. a plain English information sheet regarding the Otway Offshore Operations EP, setting out planned impacts, unplanned impacts and cumulative impacts (and associated control measures) for the activities proposed under that EP; c. a plain English information sheet regarding the ECSP - Wells Connection EP, setting out proposed planned impacts, proposed unplanned impacts and potential cumulative impacts (and proposed associated control measures) for the activities proposed under that EP (noting that this EP is still in development); d. a plain English information sheet regarding the ECSP - Annie-2 Development Well EP, setting out proposed planned impacts, proposed unplanned impacts and potential cumulative impacts (and proposed associated control measures) for the activities proposed under that EP (noting that this EP is still in development); e. an information sheet regarding potential impacts on whales; f. an information sheet regarding potential impacts to sensitive ecosystems; g. an information sheet regarding potential impacts to cultural features; h. a map showing the location of the operational areas of each of the EPs in relation to each other and the GMTOAC RAP area; and i. a detailed map showing the spatial extent of the EPs. Noted these materials will be followed shortly by the provision of:

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							a. a recorded copy of an audio visual presentation containing information about the activities proposed under the EPs; and b. an updated slide pack for the meeting on 11 April 2025, which contains GMTOAC's suggested amendments (as set out in their correspondence dated 28 March 2025) and minor amendments proposed by Amplitude Energy Noted that the purpose of providing this information to GMTOAC is to allow it to consider and assess potential impacts of our proposed activities to their functions, interests and activities. Notes that Amplitude Energy considers that not all of the information requested in your letter dated 27 February 2025 is relevant for this purpose and does not propose to provide such information. Notes the Athena Supply Project EP and Otway Operations EP have been submitted to NOPSEMA for acceptance (and in the case of the Otway Operations EP, approved), but Amplitude Energy has nonetheless provided the requested information in relation to each of those EPs as a demonstration of good faith and genuine engagement with GMTOAC. Provides a table which sets out the information requested, and the status of the provision of that information (including, where appropriate, references to the material provided to assist GMTOAC's consideration of the material). Confirms Amplitude Energy will continue to progress the outstanding information requested, and will provide this in due course. Confirms Amplitude Energy is looking forward to progressing meaningful consultation with GMTOAC on 11 April 2025. Invites GMTOAC to contact NRF with any queries, and that NRF otherwise looks forward to receiving its response.
2025 0329 182445 7349	2025/03/29	Email	Out				Email from Amplitude Energy to GMTOAC with 9 attachments Notes that Cooper Energy appreciates the direct correspondence received from GMTOAC on the previous day and looks forward to following up soon. Shares correspondence sent to EJA of the same date (including attachments).
2025 0401 124817 5800	2025/04/01	Email	Out				Email from Amplitude Energy to EJA: Notes the below correspondence received direct from GMTOAC on Friday afternoon. Requests that EJA pass on thanks to GMTOAC for their response. Notes that the letter refers to GMTOAC taking steps to self-manage its consultation processes, and that NRF (and Cooper Energy) had previously understood that all correspondence relating to consultation was to be directed to EJA (rather than GMTOAC directly), in accordance with the wishes of GMTOAC.

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							Requests confirmation if EJA are still GMTOAC's appointed lawyers in relation to consultation on these environment plans. Notes that it is not appropriate or ethical for NRF to correspond with a legally represented party without the consent of the appointed lawyers. Requests clarification whether Cooper Energy should correspond directly with GMTOAC, or if GMTOAC's requirements remain that all matters relating to consultation are directed to EJA. Notes that GMTOAC has provided updated details of the meeting on 11 April 2025. Requests that EJA provide: a. a list of attendees; b. a breakdown of the proposed costs; and c. information about what technology will be available in the meeting room so that our client can plan accordingly.
2025 0402 195256 5800	2025/04/02	Email	Out				Email from NRF to EJA: Notes previous email from NRF to EJA, and GMTOAC's email on 28 March 2025. Attaches a revised copy of the slides which takes into consideration GMTOAC's feedback.
2025 0402 201811 6215	2025/04/02	Email	Out				Email from Amplitude Energy to GMTOAC: Notes correspondence of the same date sent from NRF to EJA. Confirms Amplitude Energy looks forward to meeting in Hamilton the following week.
2025 0403 142541 7349	2025/04/03	Email	Out	Email from EJA to NRF: Thanked NRF for its email. Confirmed that Cooper Energy, and NRF on behalf of Cooper Energy, can contact GMTOAC directly in relation to consultation on Cooper Energy's current EPS. Noted EJA is not presently instructed to act for GMTOAC in relation to the Cooper Energy EPs, and that they would let NRF know if these instructions change. Noted that EJA may, from time to time, provide GMTOAC with discrete assistance in relation to consultation on Cooper Energy's EPs, subject to any further instructions from GMTOAC. Confirmed that any questions in relation to the 11 April 2025 meeting with GMTOAC and Gunditjmara, should be directed to GMTOAC.	None	None	
20251031 234704-9208 **(record of meeting emailed 31/10/2025)**	2025/04/11	Meeting	In/Out	GMTOAC 9208-1 • Queried as to whether there had been any incidents over the last 20 years. GMTOAC 9208-2 • Queried as to how a well was drilled.	Reasonable queries were made by members and GMTOAC and these were responded to during the meeting. GMTOAC 9208-21 – Amplitude notes the time commitment made	None	• Acknowledged Gunditjmara Country, thanked members for their time • Provided overview of agenda as per slide pack already provided • Invited questions at any time during the meeting • Provided brief overview of Amplitude Energy ○ Small Australian ASX listed company with assets in Gippsland and Western Victora

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				GMTOAC 9208-3 • Queried as to the water depths we drill in and whether everything was just sitting on the sea bed once completed. GMTOAC 9208-4 • Noting the pipeline has been there for 20 years and there haven't been any incidents, queried as to the life of the pipeline, what maintenance is done, what controls are in place to protect it? Queried frequency of inspections. GMTOAC 9208-5 • Noting (the wells connection EP) covers installation, queried as to what covers the flowing pipelines. GMTOAC 9208-6 • Queried as to controls about what can be done in this area (meaning the subsea equipment locations). GMTOAC 9208-7 • Queried about decommissioning and whether pipelines are left behind. GMTOAC 9208-8 • Queried as to whether sponge growth on the pipelines was positive or negative GMTOAC 9208-9 • Queried as to whether studies were done on impact of pipe on environment. GMTOAC 9208-10 • Queried as to how long it takes for marine growth to come back, and how long it takes to come back to how it was before the pipeline was put in, and whether there were enough studies to understand it. GMTOAC 9208-11 • Queried as to what happens if gas isn't found when drilling. GMTOAC 9208-12 • Queried the use of the term risk (GMTOAC 9208-11), are you not talking about environment, but talking about the financial risk? And noting that if we went to new areas, we would need seismic, queried as to whether we don't intend to acquire seismic data.	by GMTOAC members, how this affects consultation timeframes and the participatory approach. Sufficient time, information, and flexibility of approach is covered in section 11.4.1 of the EP. GMTOAC 9208-25 - Query as to whether timing could be changed to avoid the Bonney upwelling was not agreed. Annie-2 well is being undertaken as part a rig consortium, over a period of 18-24 months shared across titleholders in the Otway limiting the flexibility to shift activities to avoid seasonal sensitivities. Section 6.2.1 has assessed that Activity will not impact on the values and functions of the Bonney Upwelling KEF no matter the timing of the activity. GMTOAC 9208-27 - Request that materials be provided 3 weeks prior to meetings is reasonable. Our follow up correspondence to GMTOAC requests advanced notice of any meetings to enable us to meet this requested timeframe (See 2025 0507 100837 5800)		○ Gas plant staff live locally, gas is for domestic supply, and focused on maintaining supply through existing infrastructure ○ Small company but important for local economy and local gas market Using prompts, maps and images on pre-supplied slide pack (answers to some queries were also supported visually by the supplementary slide pack) • Provided update on status of the 4 EPs • Highlighted spatial extent and relative locations of the 4 activities/EPs • Provided an overview of activities under the 4 EPs • Plan to submit new EPs in June --- GMTOAC 9208-1 • *Confirmed there have been no incidents categorised as significant, and no spills from vessels, wells or pipelines (but noted this was a risk). But there have been some incidents including the running over of lobster pots on the way out to the field.* --- • Noted the importance of why we were consulting ○ Important to speak with Gunditjmara people to understand Gunditjmara interests ○ GMTOAC have shared some areas of interest/concern, including the culturally important whales, eels, Deen Maar and the Bonney upwelling, but we were hoping to learn more ○ Whatever can be shared by Gunditjmara members will help us better understand impacts and risks • Discussed the Annie-2 well, to be drilled to around 1000m depth below seabed into an already discovered gas field to produce gas through an existing subsea pipeline. --- GMTOAC 9208-2 • *Provided an overview of drilling operations, noting size of hole at top and bottom of well using examples of objects in the room for scale, and how the well is cased* • *Described how pressure in the well is controlled using drilling mud* • *Noted 3 support vessels were used which would operate between the well site and Portland ferrying supplies and taking waste back for safe disposal onshore.* • *Remotely operated vehicles (ROVs) with cameras monitor the subsea operations around the seafloor.* • *Some time prior to drilling, a seabed survey is conducted to understand the seafloor characteristics and any sensitivities to be avoided when drilling* • *The MODU (drilling rig) has a helicopter pad that is used for crew changes, with crew generally onboard for 1 month swings*

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				GMTOAC 9208-13 • Noting gas is not a renewable energy, queried how long it will be before it is all depleted? Queried why government and others were investing in alternatives like solar? GMTOAC 9208-14 • GMTOAC flagged pre meeting topic on codesign of consultation process. GMTOAC 9208-15 • GMTOAC flagged pre meeting topic on consultation costs. GMTOAC 9208-16 • Jokingly queried as to whether Amplitude paid for parking. GMTOAC 9208-17 • GMTOAC flagged pre meeting topic on confidentiality and IP. GMTOAC 9208-18 • Queried as to whether Amplitude would come back to Gunditjmara every time you have an environment plan. GMTOAC 9208-19 • Queried as to whether Amplitude would like a closer relationship based on mutual trust. GMTOAC 9208-20 • GMTOAC flagged pre meeting topic on strategic regional environmental and cultural assessment. GMTOAC 9208-21 • The slides highlight good environmental outcomes, but don't mention working closely with Gunditjmara people. It is hoped that Amplitude take away from today's meeting how Gunditjmara people feel about things and how we do things, and our timeframes. (This was strongly put) GMTOAC 9208-22 • Noting the location, queried as to whether Amplitude was also consulting with other Traditional Owner groups.			• *After drilling into the gas reservoir the well is tested for around 24 hours by flaring the gas; at night the light from the flare would be visible from shore* • *Explained what a gas reservoir was* --- GMTOAC 9208-3 • *Confirmed that Annie-2 is in around 58 m water depth, and the other wells are in around 60-70m water depths* • *Explained that once drilled it will be there for around 10-20 years depending on the life of the field* • *All on the seafloor; nothing visible above the sea surface* • *Flexible pipelines are used, not trenched due to hard seafloor, but spaced concrete "mattresses" are placed on top to ensure no movement that might cause fatigue in the flowlines.* • *The flowlines are installed using a specialist vessel, and the pipeline is reeled from the vessel. The flowlines are tested with water which is then replaced with nitrogen until they are ready to carry the gas.* • *The scope of the ECSP: Wells Connection EP is up to the point of connecting the wells and filling the flowlines with nitrogen. Another EP will cover the flowing/production of the gas* • *There is also an umbilical that controls the flow of the gas via a connection to controls at the Athena gas Plant* • *Vessels will carry out inspections every 2-5 years to ensure integrity of the subsea facilities. The sea has high energy in the Otway, and there is potential for some movement of equipment on the seabed.* --- GMTOAC 9208-4 • *Explained there is potential for erosion/corrosion on both the inside and outside of the pipelines* • *The primary method to prevent leaks is through the selection of suitable materials to limit deterioration* • *Externally, we can identify issues through inspections using vessel with ROV, generally every 2-5 years; internally we monitor the gas for contamination that could indicate erosion, and its rate. The minimum (design) lifetime for the flowlines/pipelines is around 25 years* --- GMTOAC 9208-5 • *Confirmed there is a staged work program prior to getting the flowing of gas from the new wells* • *The next EP for the flowing of the gas will be lodged in 2026 or 2027* • *We are targeting mid-2028 for first gas flow from these projects* --- GMTOAC 9208-6 • *Explained there are 500m radius petroleum safety zones established that prohibit access without authorisation; these are gazetted by NOPSEMA, and we also communicate these to fishers.*

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				GMTOAC 9208-23 • Queried whether the pipeline could be put on Gunditjmara Country instead of where it is shown on the map. GMTOAC 9208-24 • Noted that we have spoken about risk, but queried as to whether Amplitude were saying is there is very little risk based on performance to date and experience. GMTOAC 9208-25 • Queried as to whether Amplitude could change timing of activities around the timing of the Bonney upwelling GMTOAC 9208-26 • Queried as to whether rough weather presented a risk of pipelines coming loose from the vessel when installing the pipeline and whether it could hit a whale if it did? GMTOAC 9208-27 • In the context of discussion about future EPs, it was requested that pre-read materials always be provided 3 weeks in advance of any future meetings			• *Risk of our equipment interacting with fishers is relatively low as there is not much trawling activity in the area; other local fishing activities are generally of the type that would not interact with our equipment in a dangerous way* • *Shared an anecdote of a possible interaction with a seal whereby we think, possibly, that a seal may have dislodged a subsea lead, which we then proceeded to put back in place with an ROV.* --- GMTOAC 9208-7 • *Explained that decommissioning generally occurs after all production is finished, but if a well is drilled without finding gas in suitable quantity, then that well would be decommissioned sooner by sealing the well internally, and recovering any equipment above the seafloor, leaving only the casing below the seabed.* • *With flowlines, we are required to remove these completely and we look to recycle them onshore* • *While a small company, we have experience in decommissioning having recently successfully completed the decommissioning of 7 wells offshore Gippsland.* --- • Discussion moved to the Otway Operations EP; this covers production and will be revised to incorporate the new facilities • Showed images of sponge growth on the pipeline GMTOAC 9208-8 • *Explained that it can be both positive and negative; ecologically its likely positive. There is no negative impact to the pipeline integrity from this kind of marine growth, but when inspecting, we need to remove the growth so as to get a proper visual of the pipeline condition, so with respect to it requiring some work to remove, it can be a negative. Impacts to seabed communities and pipeline inspections are addressed in the (relevant) EPs.* --- GMTOAC 9208-9 • *Confirmed that we do look at the physical presence of the pipeline; we try to locate or orient the pipeline to minimize impacts to sponges, but inevitably there is some impact. Provided a demonstration of the size of our offshore pipelines to provide an indication of the direct disturbance footprint of the equipment, which is relatively small.* --- GMTOAC 9208-10 • *Explained that we know through our inspections that sponge assemblages regrow and overgrow our equipment. In terms of length of time to recover (after disturbance during installation or decommissioning), it will vary, using our existing subsea equipment as an example which have been in place 20-years, we see a lot growth on and around the equipment, including new / additional growth extending with the subsea equipment across areas of seabed with sand cover.* ----

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							GMTOAC 9208-11 • *Noted the difference between our activities (brownfields) and greenfield activities that involved searching further away from existing production where new seismic data may be required and drilling is higher risk (of not finding gas) [Also, see (GMTOAC 9208-7 response.]* --- GMTOAC 9208-12 • *Confirmed we were talking about financial risk as the likelihood of discovery is lower away from known gas fields. Also confirmed that these EPs do not allow for any seismic data acquisition.* --- GMTOAC 9208-13 • *Noted that we understand there is a transition to renewables but also noted that there is a critical need for gas for industry and the current shortage of gas. Our incremental development of relatively small fields supports energy needs through the transition; we're not looking at massive, long-life fields with these plans. They are aimed at maintaining supply rather than expansion. Gas is also considered a good backup for renewables, particularly when coal is being retired.* --- GMTOAC 9208-14 • On co-design, we understand time is required to do things properly, and we also have time constraints. We also need to understand Gunditjmara priorities. We appreciate the commitment you make attending these meetings noting how much time it takes from other priorities. • Plan to submit new ECSP EPs in June 2025 GMTOAC 9208-15 • *Confirmed that Amplitude understands there are costs that are involved, and that Amplitude is happy to assess and share costs as appropriate for consultation. Amplitude is happy to provide support and knows the parties are not specifically resourced to do this and understand it's a cost to them directly. We will look and assess all reasonable costs. Also noted during pre-meeting chat that members are travelling from Naarm and Seymour and other places – we respect the commitment and appreciate the time and costs involved.* --- GMTOAC 9208-16 • *Responded in same spirit, that all reasonable costs covered including breakdowns.* --- GMTOAC 9208-17

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							GMTOAC 9208-17 • *We respect these things and will only use such information for the purposes Amplitude have requested it for (i.e. to develop the EPs). Amplitude is happy to receive guidance on this.* ---- GMTOAC 9208-18 • *Confirmed Amplitude will consult every time but once everyone becomes more familiar with what Amplitude does, it will come down to how deep people wish to go, and that is a matter for Gunditjmara people to decide and convey.* ---- GMTOAC 9208-19 • *Confirmed that we hope that today brings us much closer to that path.* ---- GMTOAC 9208-20 • *Noted that we would need an understanding of what the objectives are for this. We have captured some knowledge from different sources in the EP but acknowledge there may be additional knowledge that we can gain through direct discussions with your knowledge holders, and we need help from you on that.* ---- GMTOAC 9208-21 • *Confirmed we agree and understand this is very important.* ---- GMTOAC 9208-22 • *Confirmed we are consulting with Eastern Maar and Wadawarrung in this region. Gunditjmara has a full participation approach, but other corporations do things differently.* ---- GMTOAC 9208-23 • *Advised that the EP is very explicit and specific as to what activities are undertaken and where they are permitted to be undertaken.* ---- GMTOAC 9208-24 • *Confirmed the proposed activities were relatively low risk to Gunditjmara interests (based on the management measures we plan to implement).* ---- • A general discussion was had on how we manage potential impacts on cetaceans, including queries around cameras, nighttime operations and we described how Amplitude's Whale Disturbance Risk Management Procedure was implemented for

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							previous projects, including the use of 3rd party marine mammal observers who ensure compliance. GMTOAC 9208-25 • *Noted we don't have the flexibility to do this with timing often driven by vessel availability and finding an appropriate weather window.* --- GMTOAC 9208-26 • *Explained that the pipeline installation operations happen in a controlled manner, slowly being reeled off the deck of a vessel. It is very unlikely that a whale would be exposed to a risk like that, but we do observe caution zones around whales to ensure the vessels doing the activities don't actively approach too close to whales.* --- • Asked if there were any further queries; no more raised. Requested GMTOAC advise as to next steps once members had a chance to discuss internally. • Noted we would have more EPs coming up of a similar nature around the same area. It was left with GMTOAC to advise if a further meeting was to be held , with this potentially being August 2025.
2025 0507 100837 5800	2025-05-07	Email	Out		N/A	N/A	Email from Amplitude Energy to GMTOAC: Thanked GMTOAC and the Gunditjmara for their time and engagement at the meeting on 11 April 2025. Requests that GMTOAC advise whether they require any further specific information or would like any written follow up material on any issues raised by members during the meeting, Requests GMTOAC provides any cost estimates they want us to consider, including for cultural value assessments. Requests GMTOAC provides any feedback from members, including whether here are any proposed changes to the format or presentation for further discussions. Requests GMTOAC confirms next steps to progress consultation, and provides cost estimates if further meetings are required. Provides a summary of the matters that were covered at the meeting including what our activities under the EPs are, a status update on each

Event ID	Date	Event Method	In/Out	Summary of each relevant person response, objection or claim (Reg 24(b)(i))	Amplitude Energy's assessment of merit of general assertions or requests	*Amplitude Energy's assessment of merit of any objection or claim about the adverse impact of each activity to which the EP relates (Reg 24(b)(ii)*	*Amplitude Energy communication, or response to objection or claim (reg 24(b)(iii)) or General Response (Amplitude Energy's response to queries, comments or assertions).* *Unique reference added where needed for clarity.* *(EP references added for context as appropriate)*
							EP, our proposed timing for submission of the 2 new EPs for assessment by NOPSEMA, our willingness to provide support costs to GMTOAC for consultation on our EPs, our commitment to respecting IP and confidentiality in any information GMTOAC provides during consultation, and what GMTOAC's environmental values and sensitivities are. Notes that Amplitude Energy is willing to provide support costs to GMTOAC for the purpose of consultation on this EP, subject to receiving cost estimates for consideration. Confirms Amplitude Energy is committed to respect GMTOAC's intellectual property and confidentiality in any information provided during consultation. Attaches the supplementary slide deck, elements of which were used to support responses to specific queries raised during the meeting. Notes hard copies of the supplementary slides were also left at the meeting venue. Notes we are finalising our response to Attachment A to EJA's letter dated 27 February 2025 and will respond in due course. Notes GMTOAC's request that material be provided in advance of any further meetings and respectfully request that they provide any requests for further written information as early as practicable so that we can meet the requested timeframes Notes that Amplitude Energy's team enjoyed meeting and speaking with members, and looks forward to building a closer relationship based on mutual trust.
2025 0512 120216 7955	2025-05-12	Email	In	Email related to invoicing for the recent meeting.	N/A	N/A	
2025 0512 123859 8692	2025-05-12	Email	Out		N/A	N/A	Email from Amplitude Energy to GMTOAC: Discussion regarding invoicing for meetings.
2025 0512 125324 5583	2025-05-12	Email	In	Provided cost details for recent meeting.	N/A	N/A	
2025 0512 160203 5028	2025-05-12	Email	Out		N/A	N/A	Email from Amplitude Energy to GMTOAC: Notes that we would organise a PO for costs associated with recent meeting.
2025 0522 191741 1225	2025-05-22	Email	Out		N/A	N/A	Email from Amplitude Energy to GMTOAC Shares dates for planned webinars and community sessions, in case the opportunities are of interest, but notes that Gunditjmara have indicated they prefer to be consulted via planned group meetings. Suggests a general catch up while Amplitude Energy is in the Portland region for these community sessions.

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							Attaches a response to the extensive questions from EJA's letter of 27 February 2025. The response is 13 pages long, addressing all 19 questions contained in EJA's correspondence of 27 February 2025. The responses are presented in a table format, and numbered, for ease of review. Where appropriate, responses direct to relevant sections of the information sheets that were previously provided. Where questions are more specific, detailed response are given that provide new information not previously covered by the information sheets – for example, lists of existing literature that has been considered in relation to whale species, and our responses to various actions from the Budj Bim Indigenous Protected Area Plan of Management.
2025 0620 124140 8749	2025-06-20	Email	Out		N/A	N/A	Email from Amplitude Energy to GMTOAC Provides an update on the progress of the ECSP Annie-2 Development Well and ECSP Well Connections EPs. Provides access to our interactive webinar covering the ECSP: Annie-2 Development Well and the ECSP: Wells Connection EPs that was made available to the public for 4 sessions over late May/early June, and a pre-recorded version has been uploaded to our website. Confirms QR codes for the consultation pages were previously included on the information sheets provided during the meeting in April 2025. Confirms the cultural heritage assessment based on public data and geophysical survey data has been progressed. This will be used to inform our preparation of the 2 new EPs. Offers to share an overview at a suitable time if of interest. Confirms the cumulative impact assessment for the purpose of preparing the 2 new EPs was also progressed. Notes this topic was discussed at the April meeting in some detail; requests they advise if any further questions on that is required. Requests confirmation of whether members have confirmed they would like to meet again in August, and that details be provided regarding date, location and proposed agenda. Notes that timing of submission of the two EPs had changed from prior to August to by the end of August for the Annie-2 Development Well EP, and around November 2025 for the ECSP Wells Connection EP. Notes we look forward to hearing from GMTOAC, will keep in touch and remain available to meet.
2025 0722 145431 2053	2025-07-10	Call	Out		N/A	N/A	Called 30 May 3 June 4 June 2 July 10 July
2025 0723 165810 1008	2025-07-23	Email	Out		N/A	N/A	Exchanged text messages 3 June and 2 July, but no opportunity to meet or speak emerged.
20251105 182619-7385	2025-10-05	Email	In	Confirmed the summary was ok, and noted the number of attendees was 28 in-person and 4 online.	N/A	N/A	

Event ID	Date	Event Method	In/Out	Summary of each relevant person response, objection or claim (Reg 24(b)(i))	Amplitude Energy's assessment of merit of general assertions or requests	*Amplitude Energy's assessment of merit of any objection or claim about the adverse impact of each activity to which the EP relates (Reg 24(b)(ii)*	*Amplitude Energy communication, or response to objection or claim (reg 24(b)(iii)) or General Response (Amplitude Energy's response to queries, comments or assertions).* *Unique reference added where needed for clarity.* *(EP references added for context as appropriate)*
20251105 183931-1203	2025-10-05	Email	Out		N/A	N/A	Passed on thanks, and noted attendee numbers.
20251105 184007-1854	2025-10-05	Email	In	Auto reply out of office (from cc)	N/A	N/A	

Table 5-3: Consultation demonstration - GMTOAC

Consultation demonstration			
Item	Regulation/guidance	Description	How achieved
Sufficient information	Regulation 25(2)	For the purpose of the consultation, the titleholder must give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person.	• Information was provided to GMTOAC about this EP in an iterative manner over a period of more than 6 months. Throughout this period, information was provided to GMTOAC in numerous forms including via detailed correspondence, tailored information sheets, in-person and recorded audio-visual presentations, Q&A responses (both in-person and in writing) and the general consultation website. All information was prepared, having regard to GMTOAC's communication requirements as set out in its Consultation & Negotiation Protocol, i.e. (to the extent possible) in plain English and non-technical language and incorporating visual elements. • We first flagged to GMTOAC that we would be consulting on this EP in December 2024, to allow advanced planning of any in-person meeting(s) they required. • We followed up with more detailed communications in early February 2025, after the holiday period. This included a consultation sheet on this EP, which provided a summary of the proposed activities, their expected timing and duration, and a summary of key potential environmental risks and impacts and how they would be managed. The letter also outlined the cultural values and sensitivities of Gunditjmara that Amplitude Energy was aware of from previous consultation activities and its Sea Country Plan, and that we understood that GMTOAC might want further information about such matters as how significant animal species could be impacted and are being protected, what involvement GMTOAC would want in an oil spill scenario, and what cumulative impacts may arise from cumulative activities in the region. • In this correspondence, we also invited GMTOAC to provide any guidance around communication (e.g. advice or resources, or model communications) so that we could tailor our consultation materials accordingly. We also invited suggestions about information to include on our consultation website and/or the planned pre-recorded video to make it more valuable to the Gunditjmara community. • In March 2025, we prepared additional, bespoke consultation materials for GMTOAC, that were either in response to specific information requests from EJA (who were acting on their behalf at the time) or were prepared for the purpose of attending GMTOAC's native title meeting to consult with members in-person. • The consultation materials provided in response to EJA's requests included maps of the spatial extent and location of our current and proposed activities (including under this specific EP), and a very detailed information sheet on this specific EP which separately summarised: 1) the impacts, risks and control measures for planned activities; 2) the impacts, risks and controls for unplanned activities; and 3) the cumulative impacts and risks and control measures for foreseeable projects and activities. This was accompanied by 3 additional information sheets that were tailored to key areas of concern for GMTOAC, namely: 1) Potential Impacts to Whales 2) Potential Impacts to Sensitive Ecosystems 3) Potential Impacts to Cultural Features • Additionally, a draft agenda and PowerPoint presentation slides were prepared for the Native Title Meeting, and that content was reviewed by, and incorporated feedback from GMTOAC, prior to the meeting. • In April 2025, we attended GMTOAC's native title meeting in Hamilton, Victoria, and held a ~2 hour interactive session with members, utilising the agreed PowerPoint presentation slides, the printed maps and information sheets referred to above, and some supplementary PowerPoint presentation slides. The maps and information sheets appeared to have been distributed to members by GMTOAC, in advance of the meeting, as some members had brought hard copies with them. We also brought hard copies with us, and handed them out during the meeting. • The members meeting allowed us to present information in a verbal format, and there was Q&A discussion throughout the presentation, which allowed for a meaningful two-way dialogue. The Q&A discussion covered a wide range of topics including the specific elements of Sea Country that were of particular importance to, Gunditjmara and the measures being implemented to manage associated risks and impacts of our activities. The volume and quality of the questions raised during this meeting demonstrated that the audience engaged with our presentation, and that they had considered and understood the proposed activities and the potential risks and impacts. The presentation was delivered by subject matter experts from Amplitude Energy, who were able to answer all questions put forward by the audience and no matters remained outstanding at the end of the meeting. • At the Native Title Meeting we also provided members with a handout with a QR code that directed to our consultation website. This website went live a few days after the meeting, and provided further information about the activity, the location and timing of the activity, potential unplanned events, and the associated impacts and risks. The website provided information in a clear and user-friendly format and had contact details available should a visitor to the website seek further information. This website also provided a link to the NOPSEMA brochure "Consultation on offshore petroleum plans- information for the community".

Consultation demonstration			
			• Following the Native Title Meeting, further information was provided to GMTOAC during April and May 2025, in response to requests from GMTOAC and/or EJA (whilst they were still acting on their behalf). This included providing the shape files for the operational area for this EP and preparing a detailed response (of 13 pages) to a list of 19 questions that were received in correspondence from EJA in February 2025. This response was provided to GMTOAC, for completeness, and notwithstanding that they advised that EJA were no longer acting for them in relation to this EP. This response was prepared by subject matter experts from Amplitude Energy, and drew upon and was tied back to the maps and information sheets that had been provided previously to GMTOAC. • In June 2025, further correspondence was sent to GMTOAC that included a link to our pre-recorded audio-visual presentation on this EP and updates on the progress of our cultural heritage assessment and cumulative impact assessments, with offers to share an overview or answer any further questions about them. • We have responded to all questions received in correspondence from GMTOAC, and its legal representatives EJA, that were received during the substantive consultation period. We have also repeatedly checked with GMTOAC, throughout this period, if they require any further information or meetings with us. • No outstanding feedback or requests for additional information from GMTOAC, or individual members, remain as at the time of submission of this EPs. As part of ongoing engagement, Amplitude Energy will continue to provide reasonable and relevant information to GMTOAC about this EP.
Sufficient time	Regulation 25(3)	The titleholder must allow a relevant person a reasonable period for the consultation.	• Amplitude Energy made initial contact with GMTOAC in December 2024 to foreshadow that we were preparing, and consulting on, this EP. • Further information was provided to GMTOAC on 7 February 2025 outlining the proposed activities under this EP, the expected timing and duration, and the key potential environmental risks and impacts and how they would be managed. • There have been multiple communications and interactions between us since this time, as shown in the consultation summary table. GMTOAC have been provided with a reasonable period to engage in consultation, including the opportunity to request further information or meetings, as desired by its members. • We published advertisements in the Koori Mail, the National Indigenous Times, the Australian, the Herald Sun, and in regional media along the western Victorian coastline in early May 2025 advising of the proposed activities, directing readers to our activities website and seeking feedback from relevant persons. Geo-targeted social media was also run. • Our activities website has been published since April 2025, and a link and QR code were included in hard copy materials shared on 11 April 2025, and again via email in June 2025. • We have provided information to, and engaged in discussions with GMTOAC on this specific EP, for over 6 months, demonstrating a reasonable period for consultation. Applicable benchmarks for activities of this nature and scale (and greater than) apply consultation periods typically of between 4-12-weeks. • More than 4 months have passed since our in-person presentation to GMTOAC in April 2025, and consistent contact has been made with GMTOAC over this period, with offers to answer any further questions and/or attend follow up meetings . • We advised GMTOAC on 20 June 2025 of our intention to submit this EP to NOPSEMA by end of August, after initially indicating submission in June 2025, and have not receive any further response to that update.
Sensitive information	Regulation 25(4)(a)	The titleholder must tell each relevant person the titleholder consults that: (a) the relevant person may request that particular information the relevant person provides in the consultation not be published;	• Early in the consultation process, we advised GMTOAC in writing that it could request that particular information provided in the consultation process not be published.
Ongoing consultation	Regulation 22 (15)(b)	15) The implementation strategy must provide for appropriate consultation with: (b) other relevant interested persons or organisations.	• We will engage in ongoing consultation with all relevant persons throughout the life of the project, and this been articulated to GMTOAC.
Summary of each response	Regulation 24(b)(i)	The environment plan must contain the following: b) a report on all consultations under section 25 of any relevant person by the titleholder, that contains: (i) a summary of each response made by a relevant person;	• A summary of each response is included in the EP.
Assessment of claims and objections	Regulation 24(b)(ii)	The environment plan must contain the following: b) a report on all consultations under section 25 of any relevant person by the titleholder, that contains:	• We have assessed the objections and claims (as defined by the Regulations) raised by GMTOAC during the consultation process, and undertaken a merit assessment of each of these objections and claims. GMTOAC raised four specific concerns regarding culturally significant species and cultural heritage, being: o Deen Maar Island (Lady Julia Percy Island) o Kooyang (short-finned eel) o Karntubul (whales)

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		(ii) an assessment of the merits of any objection or claim about the adverse impact of each activity to which the environment plan relates	○ The Bonney upwelling • We have captured our assessment of these claims and objections in the consultation summary tables.
Response to claims and objections	Regulation 24(b)(iii)	The environment plan must contain the following: b) a report on all consultations under section 25 of any relevant person by the titleholder, that contains: (iii) a statement of the titleholder's response, or proposed response, if any, to each objection or claim	• We have responded to all correspondence received from GMTOAC, and its legal representative EJA (when previously acting), and provided our feedback on each objection or claim made therein. • We have captured our responses to GMTOAC in the consultation summary tables.
Full text	Regulation 24(b)(iv)	The environment plan must contain the following: b) a report on all consultations under section 25 of any relevant person by the titleholder, that contains: (iv) a copy of the full text of any response by a relevant person	• The full text record of our exchanges with GMTOAC are contained in the sensitive information file, including all relevant attachments.
Consultation appropriate to relevant person	NOPSEMA Guideline - *Consultation in the course of preparing an environment plan*	…. carefully considering what the appropriate consultation processes are for each relevant person and adapting those processes to the nature of the authority, persons and organisations to be consulted.	• We were guided by GMTOAC's Consultation & Negotiation Protocol and sought advice from GMTOAC on how best to consult with Gundijmara. • We sought to engage with GMTOAC early (i.e. December 2024), in line with the Consultation & Negotiation Protocol, and ahead of consulting with other broader stakeholders. This was also done to allow enough time to hold more than one in-person meeting, if they required. • In our early correspondence to GMTOAC in February 2025, we outlined key themes and principles that we had identified from their Consultation & Negotiation Protocol, and opportunities we had identified to tailor our consultation process accordingly. We invited their feedback on these suggestions and opportunities, and welcomed any further guidance they wished to provide in respect to communication.
Consultation informs an understanding of the environment	NOPSEMA Guideline - *Consultation in the course of preparing an environment plan*	The requirement to include details of the environmental impacts and risks into an environment plan cannot be met without an understanding of the social, economic and cultural features of the environment.	• We have addressed specific concerns in the EP raised by GMTOAC regarding culturally significant species and cultural heritage, being ○ Deen Maar Island (Lady Julia Percy Island) ○ Kooyang (short-finned eel) ○ Karntubul (whales) ○ The Bonney upwelling • We also reviewed the published GMTOAC Gunditjmara Nyamat Mirring (Sea Country) plan to better understand their environmental values and cultural sensitivities, and used this to further inform the impact and risk assessment within the EP. • We understood from correspondence with GMTOAC via EJA that GMTOAC are concerned about cumulative impacts of activities within their Sea Country. We took these concerns into account when preparing the EP and have specifically considered cumulative impacts in the EP.
Genuine and meaningful consultation	NOPSEMA Guideline - *Consultation in the course of preparing an environment plan*	Consultation should be a genuine and meaningful two-way dialogue in which relevant persons are given sufficient information and time to allow them to make an informed assessment of the possible consequences of the activity on their functions, interests or activities	• We sought to engage early with GMTOAC, in accordance with the preferences expressed in their Consultation & Negotiation Protocol. We first contacted them in December 2024 to flag the preparation of this EP, and request a meeting to discuss our activities. This was well in advance of commencing consultation with broader stakeholders, which occurred in May 2025. • We consulted with GMTOAC in April 2025 at a Native Title members meeting and materials presented were guided by GMTOAC's requests and preferences. GMTOAC provided us prior notice of the values and sensitivities important to them through EJA's letter dated 27 February 29025; our presentation was developed and delivered in a manner that acknowledged and discussed the activities, impacts and risks in relation to these particular values and sensitivities. The presentation allowed for Q&A throughout, with members online and in person, which provided meaningful two-way dialogue. A copy of the PowerPoint slides was provided to GMTOAC in advance of the meeting, with the agreed content. On the day of the meeting, the presentation was recorded by GMTOAC on video. Amplitude Energy attended the meeting represented by senior team members who were able to address queries raised by GMTOAC members from the floor. • Since the meeting, we have remained co-operative, amicable and open to further meetings, questions or requests for information. • We have also had written exchanges with GMTOAC, and/or their legal representatives EJA, for 8 months which demonstrates a two-way dialogue. In these exchanges, we have answered all questions, objections and claims that have been raised. • We have made numerous attempts over the consultation period to check the appetite for additional meetings and engage in in-person, two-way dialogue.

Consultation demonstration			
			• We have also provided a clear point of contact, in our extended enquiry efforts, should any individual GMTOAC members want to be consulted directly. • Our openness and availability to consult are apparent from the consultation summary report.
Consultation method should be appropriate	NOPSEMA Guideline - *Consultation in the course of preparing an environment plan*	Where interests are held communally, the method of consultation will need reasonably to reflect the characteristics of the interests affected by the proposed petroleum activity	• We have reviewed relevant Country plans, regulatory guidance and case law, in planning our consultation method for First Nations groups with communal interests, to ensure that it is respectful, effective and appropriately adapted. • Emails were sent to GMTOAC requesting advice on how consultation on this EP could be conducted, including whether they had any other guidance around communication that they wanted to share, including any examples they wanted us to consider or model our communications on. • We have attended the GMTOAC members meeting, which was organised by, and set up in a format designed by, GMTOAC. GMTOAC provided us prior notice of the values and sensitivities important to them; these are consistent with the Gunditjmara Nyamat Mirring Plan 2023-2033 that was noted on the GMTOAC website in March 2024. Our presentation was developed and delivered in a manner that acknowledged and discussed the activities, impacts and risks in relation to these particular values and sensitivities.
Demonstration consultation is appropriate and adapted	NOPSEMA Guideline - *Consultation in the course of preparing an environment plan*	A titleholder will need to demonstrate to NOPSEMA that what it did constituted consultation appropriate and adapted to the nature of the interests of the relevant persons.	• Ahead of our meeting in April 2025, we were aware from long running consultation with GMTOAC, of the values and sensitivities important to them and their members; these are consistent with the since publicly available Gunditjmara Nyamat Mirring Plan 2023-2033. • Our consultation materials were developed and delivered in a manner that acknowledged and discussed our activities and associated impacts and risks in relation to these particular values and sensitivities. • Our presentation allowed ample time for Q&A with members online and in person, which provided meaningful two-way dialogue. We ensured that all Amplitude Energy representatives were sufficiently knowledgeable of the relevant issues so as to ensure that questions could be meaningfully answered on the day. The presentation was provided electronically to GMTOAC in a format requested by them, and we were also informed that the meeting was being recorded on video, to be provided to by GMTOAC to members who may not have been able to attend the meeting. Handouts were provided to members on the day. • Amplitude Energy provided flexibility in making its staff available to meet when and where GMTOAC preferred. • To further ensure that our consultation process was appropriate and adapted to GMTOAC, we also engaged a specific cultural heritage adviser to review the planning and consultation material used for the April meeting and the subsequent drop-in sessions to ensure that materials were culturally appropriate should any Traditional Owners attend. • We were conscious of GMTOAC's role as the representative body for Gunditjmara people and accepted at face value its statements that it was the appropriate body to engage in consultation (noting that individual members of Gunditjmara were always welcome to self-identify outside of the representative structure should they elect to do so). We sought to be respectful of GMTOAC's role as the primary body capable of speaking for Gunditjmara cultural heritage as stated in the Consultation and Negotiation Protocol. • We were understanding of the limited resources of GMTOAC and the potential for delay due to competing demands on their time.. We specifically sought to ensure that we did not apply any undue pressure on GMTOAC over the course of consultation. Noting the limited resources of GMTOAC, we were pleased to assist with funding GMTOAC to participate in consultation.
Obligation to consult discharged	NOPSEMA Guideline - *Consultation in the course of preparing an environment plan*	The obligation to consult with relevant persons must be discharged prior to submitting an environment plan to NOPSEMA.	• Given compliance with the regulations as shown above, and alignment with the Guidelines that were informed by case law, Amplitude Energy considers the obligation to consult with GMTOAC has been discharged in a reasonable and practical manner, that supports the objects of the Regulations.

6.0 Other stakeholders

Table 6-1 Other stakeholders-summary of engagement

Event ID	Relevant Person ID	Stakeholder	Date	Event Method	In/Out	Event Summary
2025 0515 160459 6215	52	Bev McArthur MP, Member for Western Victoria Region	2025-05-15	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0519 195131 4493	90	Dan Tehan MP, Federal Member for Wannon	2025-05-19	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0519 122504 6215	151	Federation of Victorian Traditional Owner Corporations	2025-05-19	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0519 122640 3606	155	First Nations Legal & Research Services (Vic)	2025-05-19	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0519 122842 3717	193	Gunditjmara Aboriginal Cooperative Ltd	2025-05-19	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0515 160538 3606	571	Jacinta Ermacora MP - Member for Western Victoria	2025-05-15	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0519 195153 2425	202	Joe McCracken MP- Member for Western Victoria Region	2025-05-19	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0515 160459 6215	310	Richard Riordan MP-Member for Polwarth	2025-05-15	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0515 160459 6215	233	Roma Britnell MP - Member for South West Coast	2025-05-15	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons
2025 0519 123011 7972	414	Winda Mara Aboriginal Corporation	2025-05-19	Email	Out	Provided bulk mailout #1 for information purposes and to seek additional relevant persons